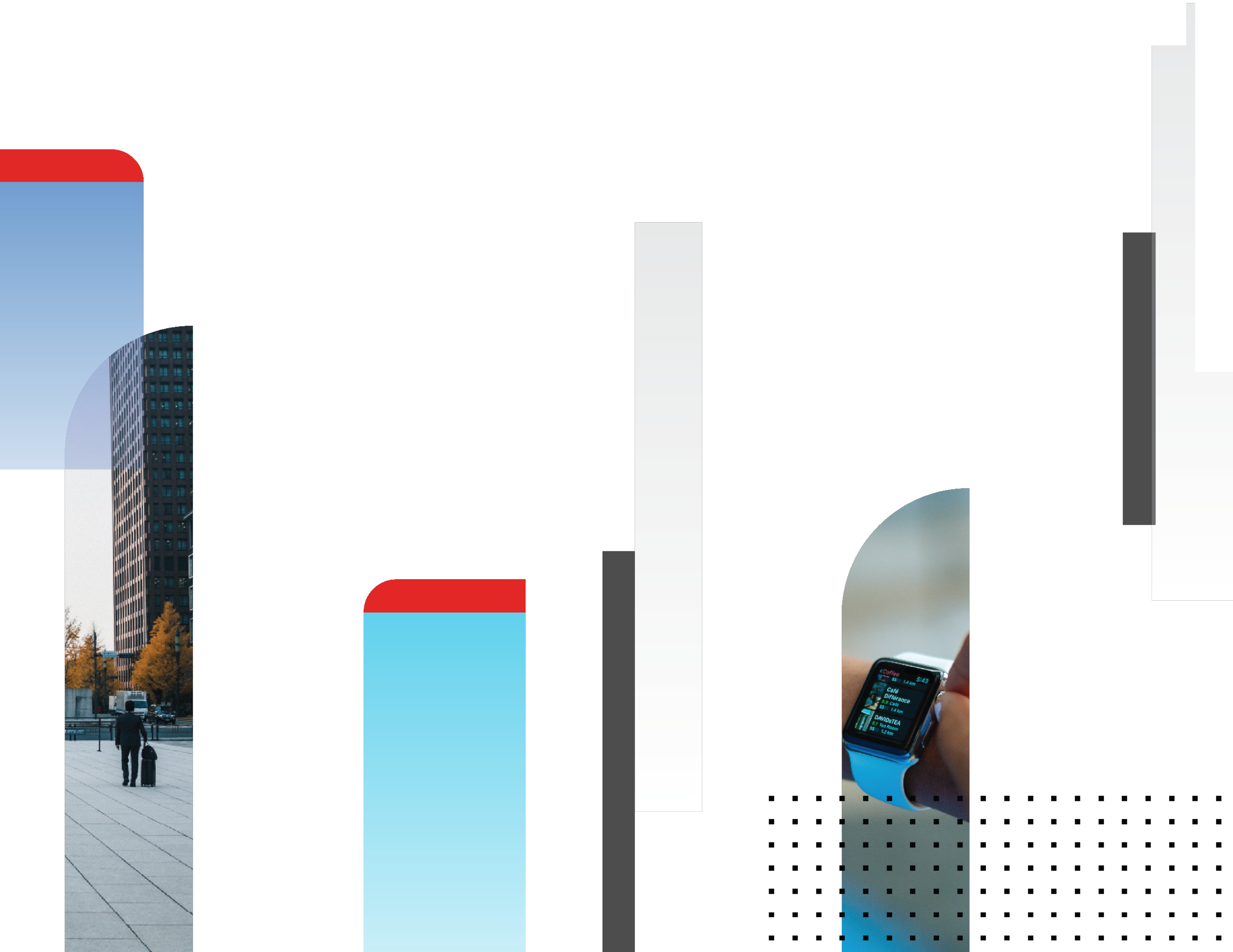
User Guide

FortiSIEM Version 6.3.3



FORTINET DOCUMENT LIBRARY

http://docs.fortinet.com

FORTINET VIDEO GUIDE

http://video.fortinet.com

FORTINET BLOG

https://blog.fortinet.com

CUSTOMER SERVICE & SUPPORT

https://support.fortinet.com

FORTINET TRAINING & CERTIFICATION PROGRAM

https://www.fortinet.com/support-and-training/training.html

NSE INSTITUTE

https://training.fortinet.com

FORTIGUARD CENTER

https://fortiguard.com/

END USER LICENSE AGREEMENT

http://www.fortinet.com/doc/legal/EULA.pdf

FEEDBACK

FORTINET®
12/22/2021
FortiSIEM - User's Guide

TABLE OF CONTENTS

Overview

FortiSIEM is an advanced Security Information and Event Management (SIEM) solution that combines advanced log and traffic analysis with performance/availability monitoring, change analysis, and accurate knowledge of the infrastructure to provide accurate threat detection, remediation, incident response and compliance reporting.

FortiSIEM can be deployed as a hardware appliance, a virtual appliance, or as a cluster of virtual appliances to scale-out to large infrastructure deployments.

Scale-Out Architecture

FortiSIEM scales seamlessly from small enterprises to large and geographically distributed enterprises and service providers.

For smaller deployments, FortiSIEM can be deployed as a single all-in-one hardware or virtual appliance that contains full functionality of the product. The virtual appliance can run on most common hypervisors including VMware ESX, Microsoft Hyper-V, and RedHat KVM, and can be deployed on premise or in Amazon AWS Cloud. For larger environments needing greater event handling throughput and storage, FortiSIEM can be deployed in cluster mode. There are three types of FortiSIEM nodes – Collector, Worker and Supervisor.

Collectors are used to scale data collection from various geo-separated network environments potentially behind a firewall. Collectors communicate to the devices, collect the data, parse the data, and send it to the Worker nodes over a compressed secure HTTP(S) channel. Supervisor and Worker nodes reside inside the data center and perform data analysis functions using distributed co-operative algorithms. For scalable event storage, FortiSIEM provides two solutions – FortiSIEM NoSQL event database with data residing on a NFS Server and Elasticsearch.

As compute or storage needs grow, you can add Collector nodes, Worker nodes, disks on the NFS server and Elasticsearch Data Nodes.

FortiSIEM also provides Windows Agents that enable log collection from a large number of Windows Servers. Windows Agents can be configured to send events to Collectors in a highly available load balanced manner.

Multi-tenancy

FortiSIEM allows you to manage multiple groups of devices and users (Organizations) within a single FortiSIEM installation. Devices and IP addresses can overlap between Organizations. FortiSIEM provides strict logical separation between organizations at the application layer. Users of one Organization cannot see another Organization’s data including devices, users and logs. Users belonging to a Manage Service Provider Organization can see all Organizations.

Infrastructure Discovery and Automated CMDB

For complete situational awareness, the user needs to know the network and server infrastructure in depth. FortiSIEM’s inbuilt discovery engine can explore an IT infrastructure (on premise and cloud, physical and virtual), discover and categorize network devices, servers, users and applications in depth. A wide range of information is discovered including hardware information, serial numbers and licenses, installed software, running applications and services, and device configurations. Some special topological relationships can be discovered, for example - WLAN Access Points to WLAN Controllers, and VMware guests to physical hosts. This rich information populates an integrated configuration management database (CMDB), which is kept up to date through scheduled rediscoveries.

A novel aspect of FortiSIEM discovery is that the system automatically discovers what can be monitored and which log can be pulled using the provided credentials. This approach reduces human error, since FortiSIEM autonomously learns the true network configuration state.

High Performance Log Collection and Flexible Parsing

FortiSIEM has a flexible distributed log collection and parsing architecture. For logs pushed to FortiSIEM (such as Syslog), devices can load balance the logs across various Workers or Collectors. For logs pulled by FortiSIEM (such as Windows WMI or Cloud services via REST API), the pulling functionality is automatically load balanced across Workers and Collectors. Logs are immediately parsed at the point at which they are received. This distributed processing speeds up log collection and analysis.

FortiSIEM has a patented XML based log parsing language that is both flexible and computationally efficient. Flexibility comes from the fact that users can easily write their own parsers (XML files) or edit system provided ones using the FortiSIEM GUI. The parser XML files are compiled at run-time and executed as an efficient code. This makes log parsing very efficient, almost as efficient as writing code in native programming languages.

Performance and Availability Monitoring

Zero-day malware can create performance issues on a server, for example, malware can consume large memory, or ransomware scanning and encrypting files can slow the performance of other applications. By shutting down certain services and creating excessive network traffic, malware can cause availability issues. To properly detect and remediate security issues, an investigator needs to know the performance and availability trends of critical infrastructure services. Powered by its discovery capabilities, FortiSIEM can seamlessly collect a rich variety of performance and availability metrics to help the investigator hunt for threats. FortiSIEM can also alert users when it receives metrics outside a normal profile, correlating such violations with security issues to create high fidelity alerts.

Network Configuration and File Integrity Monitoring

Unauthorized or inadvertent changes to key system configuration files (such as httpd.conf) or router/firewall configuration can lead to security issues. Malware can modify key system files. Bad actors (for example, insider threats) can steal forbidden files. It is important to maintain control of key files and directories.

FortiSIEM provides mechanisms for tracking and detecting key file changes. It can monitor start-up and running configuration of network devices via SSH. It can monitor configuration files on servers. FortiSIEM agents can efficiently monitor large server infrastructures. An alert is created when a file changes from one version to another or deviates from a blessed hardened configuration.

Custom Device and Application Support

While FortiSIEM provides turnkey support for a large number of devices and applications, users can build their own full-fledged support from the GUI. System log parsers, performance monitors, and configuration change detectors can be modified. New device and application types, performance monitors, and configurations change detectors can be defined, and new log parsers can be integrated to work with FortiSIEM.

User Identity and Location Tracking

By combining DHCP logs, VPN logs, WLAN logs, and Domain Controller logon events, FortiSIEM is able to maintain an audit trail for IP address to user and geo-location mappings over time. While IP address to User mapping is important for look-up purposes by its own right, this feature enables FortiSIEM to detect stolen credentials as they tend to get used from distant locations over a short period of time.

External Threat Intelligence Integration

External websites can provide cyber threat information in terms of:

- Malware IP
- Malware Domain
- Malware hash
- Malware URL
- Anonymity Networks

FortiSIEM has a flexible framework to connect to a wide variety of threat sources (both free and paid), efficiently downloading this information and find matches in real-time in the environment it is running. Some threat sources can have a large number (millions) of bad IPs and URLs. FortiSIEM's distributed search and rule engines find matches with such large sets of data at a very high event rate.

Distributed Event Correlation and Threat Detection - the Rule Engine

FortiSIEM has a distributed event correlation engine that can detect complex threats in near real-time. Threats are users or machine behavioral anomalies and can be specified in terms of event patterns sequenced over time. A threat can be alternatively looked at as a SQL query evaluated in a streaming mode. FortiSIEM has an inbuilt profiling engine that can handle threats defined using statistical thresholds, using mean and standard deviation.

What makes the FortiSIEM rule engine powerful is (a) the ability to include any data in a rule, for example: performance and change metrics along with security logs, (b) distributed in-memory computation (patent-pending) involving Supervisor and Worker nodes for near real-time performance with high event rates, (c) the ability for a rule to generate a dynamic watch list which can be used recursively in a new rule to create a nested rule hierarchy, (d) use of CMDB Objects in Rule definition, and (e) unified XML based language for rules and reports which makes it easy to convert a report into a rule and vice-versa.

Several machine learning based UEBA models are part of the FortiSIEM inbuilt rule library – (a) detection of simultaneous logins from two different countries, (b) detection of simultaneous logins from two improbable geo-locations,

(c) login behavior anomaly – logins to servers at times that one does not typically log on, etc., (d) detection of traffic to dynamically generated domains.

FortiSIEM has a large number of in-built behavioral anomaly rules that work out of the box, but can also be adapted by the user for their own environment. A framework is provided where the user can write new rules via the GUI, test them with real events, and then deploy in the system.

Device and User Risk Scoring

By combining with asset criticality, user role and importance, incident severity, frequency of occurrence and vulnerabilities found, FortiSIEM assigns a risk score to users and machines. This score is displayed in a dashboard with drill-down capabilities to identify the underlying factors.

Incident Response and Mitigation

FortiSIEM provides a number of mitigation scripts that can run an action when an incident happens. The scripts can be invoked automatically when an incident happens or can be invoked on-demand. Some examples include blocking an IP or a MAC, deactivating a user from active directory, removing an infected file, putting a user into a watch list, restarting a process or rebooting a server, and so on. You can also write your own mitigation scripts and deploy on a running system.

Search, Threat Hunting, Compliance Reports and Dashboards

FortiSIEM provides a flexible and unified search framework. The user can search data based on keywords or in a structured way using FortiSIEM parsed attributes. In real-time mode, the matched data streaming in from devices is displayed. In Historical mode, events in the event database are searched. Supervisor and Worker nodes perform search in a distributed manner.

A large number of inbuilt reports (search templates) are provided, based on the device type, and functionality, such as availability, performance, change and security.

Two novel aspects of FortiSIEM search are event unification and drill-down or threat hunting capabilities. With event unification, all data is analyzed and presented the same way, whether it is presentation aspects (real-time search, reports, rules) or context (performance and availability metrics, change events or security logs). Using drill-down, you can start from a specific context, such as Top Authentication Failed Users, and select attributes to further analyze data and iteratively, get to the root cause of a problem. As an example, the investigation of 'Top Authentication Failed users' could be followed by picking a specific user from the list and selecting Destination IP, and Ports to see which machines the user communicated with, followed by selecting the raw logs for real evidence.

FortiSIEM contains a wide selection of compliance reports out of the box – PCI, COBIT, SOX, ISO, ISO 27001, HIPAA, GLBA, FISMA, NERC, GPG13, SANS Critical Control, NIST800-53, and NIST800-171.

FortiSIEM provides a wide variety of visual dashboards for the data it collects and for incidents that have triggered - Summary dashboards, Widget dashboards, Business Service dashboard, Incident dashboard, and Identity and Location dashboard.

Internal Ticketing System and Two-way Third-party Ticketing Integration

FortiSIEM has a built-in ticketing system for managing incidents via tickets. It supports the full ticket life cycle of opening, escalating, closing, reopening and creating cases with attachments for evidence.

FortiSIEM can also integrate with third-party ticketing systems. When an incident occurs in FortiSIEM, a ticket can be created in the external ticketing system and linked to an existing device or a new device can be created in the external system. You can customize various FortiSIEM incident fields to the external ticketing system field. When the ticket is closed in the external ticketing system, the ticket is closed in FortiSIEM.

Several third-party external ticketing systems are supported out of the box, for example, ServiceNow, Salesforce, ConnectWise and Remedy. An API is provided so that other integrations can be built.

Business Service Analytics

Business Service enables you to prioritize incidents and view performance/availability metrics from a business service perspective. A Business Service is defined within FortiSIEM as a smart container of relevant devices and applications serving a common business purpose. Once defined, all monitoring and analysis are presented from a business service perspective.

FortiSIEM enables you to easily define and maintain a Business Service. Since FortiSIEM automatically discovers the applications running on the servers as well as the network connectivity and the traffic flow, you can easily choose the applications and respective servers and be intelligently guided to choose the rest of components of the Business Service.

What’s New

The following sections provide release specific information about new features, enhancements, and resolved issues:

What's New in 6.3.3

This release includes a new feature, fixes, enhancements, and known issue.

- New Features
- Bug Fixes and Enhancements
- Known Issues

New Features

- Windows Discovery, Monitoring and Log Collection via OMI

Windows Discovery, Monitoring and Log Collection via OMI

This release adds Windows OMI method for discovery, monitoring and log collection for Windows Servers. Windows OMI can be used in cases where WMI has stopped working because of Microsoft Security Update KB5005573. (Bug 749146)

Windows OMI works just like WMI. In **ADMIN > Setup > Credentials**, choose OMI instead of WMI as the **Access Protocol**. Then all the relevant information, performance metrics and logs are collected as in WMI. The command line utility is `omic` instead of `wmic`, but the arguments are the same. The event types are identical except PH_DEV_MON_WMI_PING_STAT has analogous PH_DEV_MON_OMI_PING_STAT. All rules, reports and dashboards are modified if needed. Windows host names are now in FQDN format and existing servers will have the new name after re-discovery via OMI. OMI has been tested to run on all WMI supported servers. In addition, OMI works for Microsoft Windows Server 2022 while WMI does not.

Note: If FortiSIEM is set up in FIPS mode, then OMI based communication between FortiSIEM and Windows servers will not work. This is because current OMI code uses NTLM authentication via RC4 encryption which is not FIPS compliant. In future releases, Kerberos based authentication may be used to make it work in FIPS mode.

For details on OMI, see https://github.com/microsoft/omi.

Bug Fixes and Enhancements

1. Fix of the Log4J Remote command execution vulnerability (CVE-2021-44228). This is done by upgrading the log4j-core version to 2.17 for use by SVNLite module and deleting the appropriate log4j-core versions 2.13 and 2.6 from the system. These file deletions do not impact functionality, except potentially the logging functionality in the 3rd party ThreatConnect SDK, which will be upgraded at a later date. If you have already applied the CVE-2021-44228 mitigations recommended in 6.3.2 and earlier release notes, then you can safely upgrade to FortiSIEM 6.3.3.
2. Upgrade CentOS version to 8.5 to include more security fixes.

   The fixes are listed here:

   https://access.redhat.com/documentation/en-us/red_hat_enterprise_linux/8/html/

   https://docs.rockylinux.org/release_notes/8-changelog/
3. Support for Windows OMI method for discovery, monitoring and log collection for Windows Servers. Windows OMI can be used in cases where WMI has stopped working because of Microsoft Security Update KB5005573. (Bug 749146)
4. Support for Windows 2022 discovery, monitoring and log collection via OMI. WMI does not work for Windows 2022 because of Microsoft Security Update KB5005573. (Bug 748011)
5. Report Bundle with duration 90 days does not produce results. (Bug 768020)
6. Fix the slow upgrade issue mentioned in 6.3.2 release notes. If you are running an earlier version other than 6.3.2, then you will not see the issue while upgrading to 6.3.3. (Bug 768720)

Known Issues

Linux Agent does not work for this release. Since Linux Agent is not vulnerable to log4j vulnerability (CVE-2021-44228), you can keep using Linux Agents from earlier versions (6.3.2 or earlier) to work with the Supervisor, Workers and Collectors in version 6.3.3. In other words:

- For 6.3.3 fresh install environments, use 6.3.2 Linux Agents.
- For upgrade situations, upgrade the Supervisor, Workers and Collectors to 6.3.3, but do not upgrade Linux Agents.

What's New in 6.3.2

This document describes the additions for the FortiSIEM 6.3.2 release.

- New Features
- Key Enhancements

- New Device Support
- Bug Fixes and Minor Enhancements
- Rule and Report Modifications since 6.3.1
- Known Issues

New Features

- Bi-Directional Elasticsearch Cross-Cluster Replication Support

Bi-Directional Elasticsearch Cross-Cluster Replication Support

In the 6.3.1 release, FortiSIEM only supported uni-directional Cross-Cluster Replication (CCR) for Disaster Recovery. However, uni-directional CCR implementation can be time consuming and error prone, involving many manual steps.

This release adds support for bi-directional CCR, which is much easier to implement and maintain. This is the recommended method for Disaster Recovery in Elasticsearch deployments.

Elasticsearch documentation on bi-directional CCR can be found here - https://www.elastic.co/blog/bi-directional-replication-with-elasticsearch-cross-cluster-replication-ccr.

Details on how to make FortiSIEM work with bi-directional CCR can be found here.

Key Enhancements

- Improved Elasticsearch to HDFS Archiving
- Automated CMDB Disk Space Management
- Kafka Consumer Authentication
- Incident Event for Every Incident Trigger
- Show All Incident Trigger Events via Pagination
- Elasticsearch Event Export Tool
- REST API to Return Worker Queue State
- Alert when Entity Risk Reaches Pre-Defined Threshold

Improved Elasticsearch to HDFS Archiving

Elasticsearch to HDFS archiving performance is improved by using:

a. Sliced scrolling and

b. Concurrently archiving multiple indices

Automated CMDB Disk Space Management

If the CMDB disk partition becomes full, then the system may not work correctly. To prevent this from happening, this release introduces a CMDB disk space management framework.

Three parameters are introduced in `phoenix_config.txt`.

- `month_retain_limit`: Number of months for which incidents on the Supervisor node should be retained (default value 6 months).
- `cmdb_disk_space_low_threshold` (in MB): When free CMDB disk space falls below this defined threshold, disk management kicks in (default value 50MB).
- `cmdb_disk_space_high_threshold` (in MB): When disk management kicks in, incidents are purged until CMDB disk space reaches this defined threshold (default value 100MB).

Two audit events are introduced.

- `PH_AUDIT_CMDB_DISK_PRUNE_SUCCESS`: This event indicates that free CMDB disk space fell below the low threshold (`cmdb_disk_space_low_threshold`) and old incidents and identity / location data were pruned to bring the free CMDB disk space above the high threshold (`cmdb_disk_space_high_threshold`).
- `PH_AUDIT_CMDB_DISK_PRUNE_FAILED`: This event indicates that free CMDB disk space fell below the low threshold (`cmdb_disk_space_low_threshold`) and in spite of pruning older incidents and identity / location data, free CMDB disk space stays below the high threshold (`cmdb_disk_space_high_threshold`). To remedy this situation, the user must reduce the number of months of incidents and identity / location data in CMDB (`month_retain_limit`).

Two system defined rules are included.

- FortiSIEM: CMDB Disk space low - Prune successful.
- FortiSIEM: CMDB Disk space low - Prune failed to keep free disk space above high threshold.

Kafka Consumer Authentication

FortiSIEM can already receive events via Kafka. This release adds the ability for FortiSIEM to authenticate to Kafka before receiving events.

For details on configuring Kafka for authentication, see Setting up Consumer under Kafka Settings.

For details on configuring FortiSIEM to authenticate to Kafka, see Setting Up FortiSIEM under Kafka Settings.

Incident Event for Every Incident Trigger

If an Incident triggers for the same rule with identical group by parameters, FortiSIEM keeps the same Incident instance and updates the Incident count, Last Occur Time and Triggering events in CMDB. This is part of the Incident de-duplication feature, which helps to reduce Incident clutter.

In earlier releases, an Incident event of event category 1 was generated when the Incident triggers "for the first time". In this release, similar Incident event of event category 1 is generated *for each subsequent incident triggers*. These events have their own Incident occur timed and triggering events. These events are stored in the event database and can be used for audit purposes.

Show All Incident Trigger Events via Pagination

In earlier releases, the FortiSIEM GUI only showed the last set of Incident Triggering events when you visited the Event tab for a specific Incident from the INCIDENTS > List View tab. In this release, FortiSIEM shows all Triggering events via pagination.

Elasticsearch Event Export Tool

The `phExportESEvent` tool is introduced to export events from Elasticsearch to a CSV file.

For details, see Exporting Events to Files in the Appendix.

REST API to Return Worker Queue State

This release provides a public REST API that can be used to query Worker Event Upload Queue state. The Queue state indicates whether the Worker is able to keep up with incoming event stream. An upstream load balancer can use the information to route events from Collectors to the least loaded Worker.

For details, see REST API to Return Worker Queue State in the Appendix.

Alert when Entity Risk Reaches Pre-Defined Threshold

Two thresholds are system defined :

- EntityRiskThresholdHigh: default 80
- EntityRiskThresholdMedium: default 50

Four audit events are generated based on these thresholds:

- PH_AUDIT_RISK_INCREASE_MED - Host/User risk increased and crossed Medium threshold.
- PH_AUDIT_RISK_INCREASE_HIGH - Host/User risk increased and crossed High threshold.
- PH_AUDIT_RISK_DECREASE_MED - Host/User risk decreased and fell below Medium threshold.
- PH_AUDIT_RISK_DECREASE_LOW - Host/User risk decreased and fell below Low threshold.

Two rules are included. By default, these rules are off and need to be turned on based on your environment.

- Host/User risk increased and crossed Medium threshold
- Host/User risk increased and crossed High threshold

New Device Support

Cisco Umbrella via API

Aruba CX Switch via Syslog

Barracuda Web Application Firewall via Syslog

Bug Fixes and Minor Enhancements

Bug ID	Severity	Module	Description
752220	Minor	App Server	A Report Bundle, when run in the background, may stop running and not produce results.
743631	Minor	App Server	A discovered device may not be added to CMDB Network Segment.
738677	Minor	App Server	ph_dwl_entry_incident table filled up the CMDB disk space making FortiSIEM unaccessible via GUI.
746760	Minor	App Server	After restarting app server, old closed incidents to ServiceNow may be reopened.

Bug ID	Severity	Module	Description
748434	Minor	Data	Source and Destination Host Name were parsed incorrectly in Incident events.
750890	Minor	Data	Barracuda WAF Firewall Parser -- Include eventAction attribute in some ACL and Web Firewall logs.
749293	Minor	Data	Office365 Parser did not parse "Subject" or "Receiver" information from email log.
748351	Minor	Data	"DARKSIDE Domain Traffic Detected" rule with heavy regex needs to be optimized.
737257	Minor	Elasticsearch	For HDFS archive, it must only delete an Elasticsearch event index AFTER it is archived successfully.
744341	Minor	GUI	Incident Target field sometimes showed data from another incident.
741741	Minor	GUI	Elasticsearch ILM Settings in ADMIN > Settings > Database > Online Settings for AWS ES and ES Cloud is meaningless.
746758	Minor	GUI	Notification policy page did not load where there were a large number of CMDB Objects in each policy.
712720	Minor	Parser	Box.com Discovery failed due to redirect_url_missing error.
742893	Minor	Parser	phParser CPU was sometimes high for parsing JSON events at EPS around 1800.
745198	Minor	Parser	IP enrichment for US IP addresses displayed "United States of America" when Country Group looked for "United States".
742922	Minor	Query Engine	QueryMaster to Worker communication stopped because of Interrupted system call.
749132	Minor	System	Expired Self signed Certificate was in FortiSIEM 6.3.1 OVA - ESX install file.
750351	Minor	System	Prevent phDataManager from resetting shared buffer when it falls behind.
745379	Minor	System	fortigate_block_ip_after_5.4.py did not check the result properly, resulting in remediation progress staying at 0%.

Rule and Report Modifications since 6.3.1

The following rules were added:

- ArubaOS-CX: Config Change Detected
- ArubaOS-CX: Multiple Users Deleted
- ArubaOS-CX: User Added

- ArubaOS-CX: User Deleted
- Barracuda WAF: Config Change Detected
- Cisco Umbrella: Failed DNS Requests to Malware Domains: Same source and Multiple Destinations
- Cisco Umbrella: Intelligent Proxy Blocked a Malware Request by Policy
- Cisco Umbrella: Multiple Failed DNS Requests to a Malware Domain: Same source and Destination
- Office365: Abnormal Logon Detected
- Office365: Brute Force Login Attempts - Same Source
- Office365: Brute Force Login Attempts - Same User
- Office365: Brute Force Logon Success
- Office365: Identity Protection Detected a Risky User or SignIn Activity
- Office365: Delete Message Inbox Rule Created
- Office365: Move To Folder Inbox Rule Created
- Office365: Set-Mailbox Forwarding Action Created
- Office365: Strong Authentication Disabled for a User
- Office365: Suspicious File Type Uploaded
- Office365: User Mailbox Forwarding Rule Created
- FortiSIEM: CMDB Disk space low - prune successful
- FortiSIEM: CMDB Disk space low - prune failed to keep free disk space above high threshold
- Host/User risk increased and crossed Medium threshold
- Host/User risk increased and crossed High threshold

The following rules were renamed:

- Windows: RDP over Reverse SSH Tunnel -> Windows: RDP Traffic over Reverse SSH Tunnel
- Windows: RDP Over Reverse SSH Tunnel -> Windows: Svchost hosting RDP over Reverse SSH Tunnel

The following rule was deleted:

- Windows: Detection of Possible Rotten Potato

The following reports were added:

- ArubaOS-CX: Config Change Audit
- ArubaOS-CX: Password Change History
- ArubaOS-CX: Users Added
- ArubaOS-CX: Users Deleted
- Barracuda WAF: Admin Audit Activity
- Barracuda WAF: Network Firewall Allowed Traffic

- Barracuda WAF: Network Firewall Denied Traffic
- Barracuda WAF: System Events
- Barracuda WAF: Web Activity Traffic
- Barracuda WAF: Web Firewall Deny
- Barracuda WAF: Web Firewall Permit
- Cisco Umbrella: Blocked DNS Requests by Source and Destination Domain
- Cisco Umbrella: Intelligent Proxy Blocked a Request
- Cisco Umbrella: Top Allowed DNS Requests by Destination Domain
- Cisco Umbrella: Top Blocked DNS Requests by Destination Domain

The following reports were renamed:

- NERC_CIP_008: Monthly Security Incident Trend -> NERC_CIP_008: Daily Security Incident Trend
- NERC_CIP_008: Monthly Security Incident Resolution Time Trend -> NERC_CIP_008: Weekly Security Incident Resolution Time Trend
- NERC_CIP_008: Monthly Assigned Security Incident User Trend -> NERC_CIP_008: Weekly Assigned Security Incident User Trend
- NIST800-171 3.6.1-3.6.2: Monthly Incident Resolution Time Trend -> NIST800-171 3.6.1-3.6.2: Weekly Incident Resolution Time Trend
- NIST800-171 3.6.1-3.6.2: Monthly Assigned Incident User Trend -> NIST800-171 3.6.1-3.6.2: Weekly Assigned Incident User Trend
- NIST800-171 3.6.1-3.6.2: Monthly Incident Trend -> NIST800-171 3.6.1-3.6.2: Weekly Incident Trend
- NIST800-53 IR-4: Monthly Incident Resolution Time Trend -> NIST800-53 IR-4: Weekly Incident Resolution Time Trend
- NIST800-53 IR-4: Monthly Assigned Incident User Trend -> NIST800-53 IR-4: Weekly Assigned Incident User Trend
- NIST800-53 IR-5: Monthly Incident Trend -> NIST800-53 IR-5: Weekly Incident Trend

Known Issues

Remediation Steps for CVE-2021-44228

Three FortiSIEM modules (SVNLite, phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.14, 2.13 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228).

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor and Worker nodes only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating SVNLite module:
    a. Run the script `fix-svnlite-log4j2.sh` (here). It will restart SVNlite module with `Dlog4j2.formatMsgNoLookups=true` option and print the success/failed status.
3. Mitigating 3rd party ThreatConnect SDK module:
    a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
        i. log4j-core-2.8.2.jar
        ii. log4j-api-2.8.2.jar
        iii. log4j-slf4j-impl-2.6.1.jar
4. Mitigating phFortiInsightAI module:
    a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
        i. log4j-core-2.13.0.jar
        ii. log4j-api-2.13.0.jar
5. Restart all Java Processes by running: `“killall -9 java”`

On Worker Node

1. Logon via SSH as root.
2. Mitigating phFortiInsightAI module:
    a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
        i. log4j-core-2.13.0.jar
        ii. log4j-api-2.13.0.jar
3. Restart all Java Processes by running: `“killall -9 java”`

Slow Upgrade

Release 6.3.2 upgrade contains some SQL commands to cleanup some incident tables in CMDB. These commands may be slow to execute if your CMDB has a large number of incidents (millions). This may slow the upgrade, which may appear to be stuck.

Please follow the following steps to complete the upgrade. There are two cases:

- Case 1: 6.3.2 Upgrade has not started yet
- Case 2: 6.3.2 Upgrade appears stuck and Supervisor snapshot is not available

Case 1: 6.3.2 Upgrade has not started yet

Follow the steps below if you have not started the 6.3.2 upgrade. If you failed on an upgrade, and recovered from a snapshot, then you can follow these steps as well.

1. Download the following SQL file: `632_run_before_upgrade.sql`.
2. Upload the SQL file to the Supervisor under `/tmp/`
3. SSH into the Supervisor as root.
4. Run: `psql -U phoenix -d phoenixdb -f /tmp/632_run_before_upgrade.sql`
5. Proceed with the regular 6.3.2 upgrade.

Case 2: 6.3.2 Upgrade appears stuck and Supervisor snapshot is not available

In this case, the upgrade has started but it is running for an extensive period of time with the following display.

```
[10:44:34] migrate-database : DATABASE | Create Super User | localhost | SKIPPED |
46ms

[10:44:34] migrate-database : DATABASE | Give ALL ACCESS to USER | localhost |
SKIPPED | 46ms
```

Take the following steps:

1. CTRL+C to break out of the upgrade.
2. Download `632_known_issue.tgz` and upload it to the Supervisor under `/tmp`.
3. SSH into the Supervisor as root.
4. Run the following commands.
   ```
   # cd /tmp/

   # tar xvzf /tmp/632_known_issue.tgz
   ```
5. Replace the upgrade playbook by running the following commands.
   ```
   # cd /usr/local/upgrade/

   # mv post-upgrade.yml post-upgrade.yml.orig

   # mv /tmp/modified_post-upgrade.yml post-upgrade.yml

   # chmod 755 post-upgrade.yml
   ```
6. Replace the upgrade task file by running the following commands.
   ```
   # cd /usr/local/upgrade/roles/migrate-database/tasks/

   # mv main.yml main.yml.orig

   # mv /tmp/migrate-database_tasks_main.yml main.yml

   # chmod 755 main.yml
   ```
7. Replace the sql file by running the following commands.
   ```
   # cd /opt/phoenix/deployment/upgrade/

   # mv phoenix_db_up_6.3.1_to_6.3.2.sql phoenix_db_up_6.3.1_to_6.3.2.sql.orig

   # mv /tmp/phoenix_db_up_6.3.1_to_6.3.2.sql phoenix_db_up_6.3.1_to_6.3.2.sql

   # chmod 755 phoenix_db_up_6.3.1_to_6.3.2.sql
   ```

8. Continue the upgrade by running the following command.

   ```
   # ansible-playbook post-upgrade.yml | tee -a logs/ansible_upgrade_continued.log
   ```

What's New in 6.3.1

This document describes the additions for the FortiSIEM 6.3.1 release.

- New Features
- Key Enhancements / Bug Fixes
- New Device Support
- Enhanced Device Support
- Bug Fixes and Minor Enhancements
- Rule and Report Modifications since 6.3.0
- Known Issues

New Features

- Disaster Recovery
- Install and Upgrade in IPv6 Networks
- Backup and Restore for Hardware Appliances

Disaster Recovery

This release adds back the Disaster Recovery feature that was present in FortiSIEM 5.4 release.

To set up Disaster Recovery, the user needs to set up two identical FortiSIEM instances, each with a separate license. Then FortiSIEM will replicate the CMDB (in PostgreSQL database), Configuration data (in SVN-lite), Profile database (in SQLite database) and FortiSIEM EventDB from Primary to Secondary. For Elasticsearch based deployments, procedures for out-of-band *unidirectional* Cross-cluster replication (CCR) is provided.

When the Primary fails, the user has to be manually convert the Secondary FortiSIEM to Primary. When the original Primary is back up, the user has to first make it Secondary and switch roles to make it Primary again.

Secondary is in hot Standby mode. While the user can log in to the Secondary GUI, permissions that involve writing to the PostgreSQL database are not permitted. Hence Analytical queries in the Secondary FortiSIEM is not permitted.

Disaster Recovery works for all EventDB based software deployments and hardware appliances (2000F, 3500F and 3500G) and Elasticsearch deployments using *uni-directional* Cross-cluster replication.

Details for Disaster Recovery Operations in EventDB based environments is available here.

Details for Disaster Recovery Operations in Elasticsearch based environments is available here.

Install and Upgrade in IPV6 Networks

This release enables you to install FortiSIEM in IPV4 only, IPV6 only, or a mixed IPV4/IPV6 network. Upgrading via a IPV6 network is now possible.

For details, see the Installation documentation for your platform.

Backup and Restore for Hardware Appliances

VM based FortiSIEM installs have a snapshot feature that allows customers to go back to the snapshot if an upgrade fails. In contrast, hardware appliance-based installs lack this capability – so if an upgrade fails, then it has to be fixed inline, leading to increased downtime. This release adds a backup and restore feature to hardware based installs.

For details, see the Upgrade Guide.

Key Enhancements / Bug Fixes

- Max Events per Second (EPS) per Collector
- Elasticsearch Enhancements
  - Dynamic Elasticsearch Shard Adjustment to Handle EPS Burst
  - Per Organization Elasticsearch Insert
- Case-Sensitive Regex Search
- Windows Agent 4.1.3 Bug Fixes
- Windows Agent 4.1.4 Bug Fixes
- Windows Agent 4.1.5 Bug Fixes

Max Events per Second (EPS) per Collector

Earlier releases allowed customers to set a *bandwidth limit* for Collectors sending events to Workers - this prevented a Collector from overwhelming the Workers after a prolonged loss of connectivity. However, when a Collector is newly deployed, the Collector may be able to send events at an excessive rate without violating the bandwidth limit. This can also overwhelm the Workers and the event database. This release adds a *per-Collector EPS limit* to prevent this from occurring.

A Collector is never able to send at more than the EPS limit and the bandwidth limit. When any of these limits are hit, events are buffered at the Collector and sent later. Rate limits are enforced at periodic 3 minute intervals.

To set the per-Collector EPS limit, see **Upload EPS Limit** in Adding a Collector.

Elasticsearch Enhancements

- Dynamic Elasticsearch Shard Adjustment to Handle EPS Burst
- Per Organization Elasticsearch Insert

Dynamic Elasticsearch Shard Adjustment to Handle EPS Burst

A shard is the unit of parallelism for Elasticsearch deployments. When EPS is high, you want more shards to be spread across many Data Nodes to keep up with the incoming EPS. This release adds a dynamic shard adjustment mechanism to handle EPS surges. Every 5 minutes, a decision of whether to allocate more shards is made based on the incoming EPS.

This is an internal feature, so no user configuration is required.

Per Organization Elasticsearch Insert

In Service Provider deployments, you can choose to have separate Elasticsearch indices for every Organization. In earlier releases, the Worker nodes combined events from all Organizations into a single HTTPS POST insert request to Elasticsearch. This may introduce a Head-Of-Line Blocking effect – if Elasticsearch is slow in inserting one Organization’s events, then all other Organization’s event inserts may be delayed. This release prevents this situation by inserting different Organization’s events in different HTTPS POST requests to Elasticsearch.

Case-Sensitive Regex Search

In earlier releases, searches involving **CONTAIN**, **NOT CONTAIN**, **REGEXP** and **NOT REGEXP** operators were case-insensitive. In this release, the **REGEXP** and **NOT REGEXP** operator-based searches are made case-sensitive. This allows more flexibility during threat hunting exercises.

Windows Agent 4.1.3 Bug Fixes

The two following issues are resolved.

1. When FortiSIEM monitors DNS Analytical logs, Windows Event Log service memory utilization may be high.
2. Windows Agent may stop sending events if both the Supervisor and Collector go down for more than 10 minutes and then come up.

Windows Agent 4.1.4 Bug Fixes

The two following issues are resolved.

1. File handle leak while interfacing with local SQLite database could cause Windows Agent memory usage to grow over time.
2. File handle leak while interfacing with Windows registry could cause Windows Agent memory usage to grow over time.

Windows Agent 4.1.5 Bug Fixes

The two following issues are resolved.

1. File handle leak while interfacing with local SQLite database could cause Windows Agent memory usage to grow over time.
2. File handle leak while interfacing with Windows registry could cause Windows Agent memory usage to grow over time.

New Device Support

AWS CloudWatch Alarms

FortiProxy

Google Cloud Platform

KVM Audit

Mac OS

Microsoft Advanced Threat Analytics On Premise Platform

Otorio RAM2

UserGate UTM Firewall

Enhanced Device Support

Google Workspace / GSUITE

Zeek Network Security Monitor (Previously Known as Bro)

Bug Fixes and Minor Enhancements

Bug ID	Severity	Module	Description
636110	Major	Discovery	In AD User Discovery, the Last Login Value was incorrect if the user was not set (did not log in) to the AD Server.
749499	Major	Windows Agent	The log file contained a plain text password used to register the agent to the Supervisor. This password was not used for any other purposes. Additionally, an authenticated Windows user could run arbitrary Powershell scripts with Administrator permissions.
748252	Major	Windows Agent	File handle leak while interfacing with Windows registry could cause Windows Agent memory usage to grow over time.
746978	Major	Windows Agent	File handle leak while interfacing with local SQLite database could cause Windows Agent memory usage to grow over time.
727872	Major	Windows Agent	Windows Agent may stop sending events if both the Supervisor and Collector go down for more than 10 minutes and then come up.
723147	Major	Windows Agent	When FortiSIEM monitors DNS Analytical logs, Windows Event Log service memory utilization may be high.
739811	Minor	App Server	Incident dashboard queries could be slow for non-admin users when there were incidents over many months.
737188	Minor	App Server	External LDAP Authentication did not work after upgrading from 5.3.2 to 6.3.0 for CA Directory LDAP Server.
731150	Minor	App Server	Organization info was set incorrectly in PH_DEV_MON_LOG_DEVICE_DELAY_HIGH events from Multi-tenant Collectors.
728925	Minor	App Server	Excessive errors on 2000F were caused by short user field in postgreSQL.
726689	Minor	App Server	Out-of-Range Integer error occurred when trying to change device status in CMDB.
726068	Minor	App Server	Logged In User list in database was not cleared when the Supervisor rebooted or the session closed.

Bug ID	Severity	Module	Description
724935	Minor	App Server	Windows agent events were still received after deleting an Org with windows agent.
722997	Minor	App Server	The timeline date format in exported query results did not display the chosen time format in the GUI.
722650	Minor	App Server	The CMDB Export to ServiceNow via custom transform file did not work.
722130	Minor	App Server	Pull Event Monitor Summary Reports appeared blank at org level (PDF and CSV).
722003	Minor	App Server	Technique and Tactics attributes needed to be added to the Incident XSL for customers to parse the field into ServiceNow.
721572	Minor	App Server	Incident Export (PDF) did not correctly show Tactics and Technique values.
680663	Minor	App Server	Devices in CMDB with triggered incidents could sometimes not be deleted .
514406	Minor	App Server	External Authentication via LDAP did not work for users with $ in their username.
738867	Minor	GUI	Allow Incident Firing on Approved devices only did not take effect; incidents were firing on pending device
729459	Minor	GUI	With the UI Setting set as Dark Theme, the headings in the lower table under **CMDB > Devices** were illegible.
728440	Minor	GUI	From **INCIDENTS > Overview**, if a user clicked a link, went back to **INCIDENTS > Overview**, and then switched to **INCIDENTS > List View**, a filtered list would be displayed. **Note**: The filter should be reset when switching.
727304	Minor	GUI	With the UI Setting set as Dark Theme, Diff under **Installed Software/Configure** in the lower table on the **CMDB > Devices** page was illegible.
727217	Minor	GUI	When both VirusTotal and RiskIQ integration policies were invoked on an incident, only one policy's comment was added.
726972	Minor	GUI	The user was unable to select an org level reporting device for an event dropping rule while logged in as a Super/admin with global view.
726912	Minor	GUI	After adding LDAP users to CMDB Users, if a new user was later added with a new rule exception and FortiSIEM was rebooted, while performing an Edit Rule Exception for the user, the user's value appeared indecipherable. **Note**: The exception rule worked fine, but the value displayed was indecipherable.

Bug ID	Severity	Module	Description
726816	Minor	GUI	If the user went to the **ADMIN > Settings > Event Handling > Forwarding** page, then to **DASHBOARD**, and back to **ADMIN > Settings > Event Handling > Forwarding**, a duplicate Organization column would be added to the Forwarding page.
726770	Minor	GUI	The Trend Chart Bar appeared incorrectly in PDF reports.
726228	Minor	GUI	After adding a CMDB report to a Report Bundle in Report Design, the page orientation could not be set to Landscape.
725816	Minor	GUI	After copy/pasted text is put into the text editor for a custom report in Report Design, the Preview and Export functions fail when selected.
723811	Minor	GUI	From the **ANALYTICS** page, a string containing a comma (using operators = and !=) was not allowed in filter searches.
723628	Minor	GUI	In Super Local view, on the **CMDB > Devices** page, if a user selected a collector, clicked on **Actions** and selected **Real-time Performance**, collectors for other organizations would also appear.
696824	Minor	GUI	From the **CMDB > Devices** page, with a device containing a Supervisor IP selected, if a user clicked on **Actions**, selected **Change Status**, and changed the status to **Approved**, no change would occur.
678165	Minor	GUI	On the **INCIDENTS > Overview** page, drilling down to the Incident table view from a Host under "Top Impacted Hosts" where the Incident Source, Target or Reporting IP does not include the Hostname sometimes results in no incident being shown.
578936	Minor	GUI	Reports containing a Donut Chart and Bar Chart for COUNT (DISTINCT destIpAddr) displayed a blank Donut chart and an inaccurate Bar Chart when a preview/export PDF report was generated.
727489	Minor	Linux Agent	The file owner and group parameters were empty in the file metadata for Ubuntu20. **Note**: Navigate to **CMDB > Devices**, select the ubuntu linux 20 device, select the **File** tab in the lower table, and select the file to view the file metadata.
736266	Minor	Monitoring	From **CMDB > Devices**, with the **Monitor** tab selected in the lower table, the monitor status for job "Fortinet WTP Metrics" was missing even if events were coming.
738900	Minor	Parser	Event forwarding does not work when the sender IP belongs to a CMDB Device Group in the forwarding rule.
740775	Minor	Performance	Important process matching with empty parameter was not cor-

Bug ID	Severity	Module	Description
		Monitoring	rect, which could cause unimportant processes to become important for monitoring.
717167	Minor	Performance Monitoring	H3C Comware switches sent incomplete configuration, collected via SSH.
736907	Minor	Query	`<User defined IP event attribute>` IN `<CMDB group>` Query did not work.
730442	Minor	Query	Elasticsearch - Failed to query with Hash Code IN custom hash group while the items in this group were imported from CSV.
729467	Minor	Query	Elasticsearch - Query failed with Source IP IN custom parent Anonymity Network Group while a sub group was moved out and moved back.
729181	Minor	Query	Elasticsearch - Deactivated watch list item could still be queried under **ANALYTICS**.
729159	Minor	Query	Elasticsearch - Queries involving Custom Biz Service did not work.
728239	Minor	Query	Elasticsearch - DeviceToCMDB query did not work.
722560	Minor	Query	Incorrect results were returned by Display Field division when the numerator was small and the divisor was a whole number.
722558	Minor	Query	Display Field Expressions using COUNT DISTINCT were not evaluated correctly
720174	Minor	Query	Named value query did not return result for custom device group with deleted sub group for Elasticsearch queries.
702515	Minor	Query	Regex in Search and Rule Filter needed to be case-sensitive to allow more flexibility.
738118	Minor	System	After upgrade to 6.3.0, theget-fsm-health.py script had no information for the Details section.
733909	Minor	System	The upgrade reapplied network configuration because FortiSIEM read the DNS server configuration from the wrong location. This could cause the upgrade to fail.
696997	Minor	System	SNMP service with default community name needed to be turned off during installation.
727872	Minor	Windows Agent	No event from Windows agent if both the Supervisor and Collector went down for more than 10 minutes and then came up.
723147	Minor	Windows Agent	Windows Event would use high memory to monitor DNS Analytical logs.
570476	Minor	Windows	Windows Agent registration failed if a password contained the

Bug ID	Severity	Module	Description
		Agent	ampersand (&) character.
726572	Minor	Windows Agent, Linux Agent	FIM File push did not work if there was a space in the file or directory name.
735848	Enhancement	API	Incident Update REST API needs to update incident status.
735820	Enhancement	API	Incident API should provide Event Attribute Name, not just the ID.
723011	Enhancement	API	The ability to delete Watch list API groups should be added, since they can be created at system level.
737205	Enhancement	App Server	Malware Updates should clean up /data/cache/ folders in addition to the other Malware directories.
731057	Enhancement	App Server	When Elasticsearch is used as storage, the Event Name field is not included in the CSV export. The Event Name field should be included in the CSV export when using Elasticsearch as storage.
517113	Enhancement	App Server	REST API queries run from the outside should not generate separate user logins in GUI.
738241	Enhancement	Data	FortiAV2 paired with FortiClient v 6.2.8 events are being recognized as unknown event type. These events should be recognized as coming from FortiClient.
735211	Enhancement	Data	Process Command Line attribute is not been parsed for some Win-Security-4688 events. Process Command Line attribute should be parsed for win4688 events.
734336	Enhancement	Data	FortiGate parser should map Xauthuser attribute to the user field if the value exists.
733110	Enhancement	Data	Generic_Unix_User_Password_Change event should be a member of group "Password Change".
730702	Enhancement	Data	REvil Rules and Reports should be added to FortiSIEM.
730657	Enhancement	Data	Unknown Linux agent events were getting stuck in collector. Parser for New Relic Linux added.
730465	Enhancement	Data	Some events for Cisco Firepower Threat Defense were not parsed.
730319	Enhancement	Data	The rule "Executable file posting from external source" made no reference to external source in the rule definition.
730301	Enhancement	Data	Cisco NX OS parser was not parsing the User field.
729278	Enhancement	Data	Some McAfee EPO syslog events were not parsed.
726784	Enhancement	Data	Sysmon Create Process Event CommandLine Parsing was incor-

Bug ID	Severity	Module	Description
			rect.
723892	Enhancement	Data	Improved the output legibility of Trend Micro Deep Discovery Inspector Parser and added more event types.
694867	Enhancement	Data	FortiClientParser did not handle EMS messages forwarded through FortiAnalyzer.
686294	Enhancement	Data	PaloAltoParser needed to parse other attribute for PaloAlto Config Syslogs EventType.
674101	Enhancement	Data	Improved the output legibility of Sophos Central Parser.
670223	Enhancement	Data	Added AWS CloudWatch logs for parsing beyond VPC flow log.
660630	Enhancement	Data	FortiGate Parser created incorrect Event Type and Names for a few LogIDs.
659038	Enhancement	Data	Unix parser did not correctly categorize Installed Software.
658139	Enhancement	Data	IIS Parser needed to support logs received via Event Tracing for Windows.
649287	Enhancement	Data	CheckpointCEF Parser did not extract Action (act) field.
632880	Enhancement	Data	ApacheViaSnareParser did not parse the Username field.
624076	Enhancement	Data	Win-Security-5136 needed to parse further details.
738158	Enhancement	Data	Added more event types for Google App Suite.
720699	Enhancement	GUI	Increased the limit of PAYG Report email recipients from 3 to 5.
726733	Enhancement	Linux Agent	User File Monitoring did not pickup new content when written to the same line.

Rule and Report Modifications since 6.3.0

The following rules were added:

- GCP: Firewall Rule Created
- GCP: Firewall Rule Deleted
- GCP: Firewall Rule Patched
- GCP: IAM Custom Role Created
- GCP: IAM Custom Role Deleted
- GCP: IAM Member assigned role of type admin or owner
- GCP: Logging Sink Deleted
- GCP: Logging Sink Updated

- GCP: Pub/Sub Subscription Created
- GCP: Pub/Sub Subscription Deleted
- GCP: Pub/Sub Topic Created
- GCP: Pub/Sub Topic Deleted
- GCP: Service Account Access Key Created
- GCP: Service Account Access Key Deleted
- GCP: Service Account Created
- GCP: Service Account Deleted
- GCP: Service Account Disabled
- GCP: Storage Bucket IAM Permissions Modified
- GCP: Storage Bucket Updated
- GCP: Storage or Logging Bucket Deleted
- GCP: VPC Network Deleted
- GCP: VPC Route Added
- GCP: VPC Route Deleted
- Google Workspace: 2FA Enforcement Disabled for Organization
- Google Workspace: 2FA Verification Disabled for Organization
- Google Workspace: API Access Permitted for OAUTH Client
- Google Workspace: Application Added to Domain
- Google Workspace: Domain added to Trusted Domains List
- Google Workspace: Password Management Policy Changed
- Google Workspace: Role Assigned to User
- Google Workspace: Role Created by User
- Google Workspace: Role Deleted by User
- Google Workspace: Role Modified by User
- Kaseya REvil Ransomware File Activity Detected on Host
- Kaseya REvil Ransomware File Activity Detected on Network
- Kaseya REvil Suspicious File Hash Found on Host
- Kaseya REvil Suspicious File Hash Found on Network
- Microsoft ATA Center: Security Alert Triggered
- Otorio RAM2 Alert has Triggered
- Otorio RAM2 Vulnerability Discovered

- Palo Alto Config Change Failed
- Palo Alto Config Change Succeeded
- Palo Alto Config Change Unauthorized
- Print Nightmare Activity Detected on Host
- Print Nightmare Activity Detected on Network
- UserGate UTM IDPS Alert Detected

The following reports were added:

- FortiProxy Admin Authentication Events
- FortiProxy App Control App Group Name Summary
- FortiProxy App Control App Name Summary
- FortiProxy App Control Detailed
- FortiProxy UTM Event Summary
- FortiProxy Web Filter Detailed
- FortiProxy Web Filter Events by Web Category, User, and Count
- FortiProxy Web Filter User Hit Count
- FortiProxy WebFilter Blocked and Passthrough Event Count
- FortiProxy WebFilter Blocked Event Count
- FortiProxy Webfilter Group by Action,Category, and Count
- FortiProxy WebFilter Passthrough Event Count
- GCP: Firewall Rule Created, Deleted, or Changed
- GCP: IAM Custom Roles Created or Deleted
- GCP: IAM Policy Change Audit Report
- GCP: Logging Sinks Created, Updated, or Deleted
- GCP: Pub/Sub Subscriptions Created or Deleted
- GCP: Pub/Sub Topic Created or Deleted
- GCP: Service Account Access Keys Created or Deleted
- GCP: Service Accounts Created,Deleted, or Disabled
- GCP: Storage Bucket IAM Permissions Modified
- GCP: Storage Buckets Updated
- GCP: Storage or Logging Bucket Deleted
- GCP: Top Admin Activity Events by Principal
- GCP: Top Admin Activity Events by Source IP

- GCP: Top Data Access Events by Principal
- GCP: Top Data Access Events by Source IP
- GCP: Top Event Types by Count
- GCP: Top Traffic by Country
- GCP: VPC Network Created or Deleted
- GCP: VPC Routes Created or Deleted
- Google Workspace: Password Management Policy Changed Audit Report
- Google Workspace: Top Event Types by Count
- Google Workspace: Top Events by Source Country
- Google Workspace: Top Events by Source IP
- Google Workspace: Top Events by User
- Kaseya REvil Ransomware File Activity Detected on Host
- Kaseya REvil Ransomware File Activity Detected on Network
- Kaseya REvil Suspicious File Hash Found on Host
- Kaseya REvil Suspicious File Hash Found on Network
- Microsoft ATA (Advanced Threat Analytics) Center - Change Audit Events
- Microsoft ATA (Advanced Threat Analytics) Center - Security Alerts
- Otorio RAM2 Alerts
- Otorio RAM2 Vulnerabilities Discovered
- Palo Alto Config Change Succeeded
- Print Nightmare Vulnerability Activity Seen on Host
- Print Nightmare Vulnerability Activity Seen on Network
- UserGate UTM - IDPS Events
- UserGate UTM - Web Access Logs

The following reports were renamed:

- FortiSIEM Rule Activated/Deactived -> FortiSIEM Rule Activated/Deactivated

Known Issues

Remediation Steps for CVE-2021-44228

Three FortiSIEM modules (SVNLite, phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.14, 2.13 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228).

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor and Worker nodes only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating SVNLite module:
    a. Run the script `fix-svnlite-log4j2.sh` (here). It will restart SVNlite module with `Dlog4j2.formatMsgNoLookups=true` option and print the success/failed status.
3. Mitigating 3rd party ThreatConnect SDK module:
    a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
        i. log4j-core-2.8.2.jar
        ii. log4j-api-2.8.2.jar
        iii. log4j-slf4j-impl-2.6.1.jar
4. Mitigating phFortiInsightAI module:
    a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
        i. log4j-core-2.13.0.jar
        ii. log4j-api-2.13.0.jar
5. Restart all Java Processes by running: `“killall -9 java”`

On Worker Node

1. Logon via SSH as root.
2. Mitigating phFortiInsightAI module:
    a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
        i. log4j-core-2.13.0.jar
        ii. log4j-api-2.13.0.jar
3. Restart all Java Processes by running: `“killall -9 java”`

Slow Event Database Operations Using Azure Managed NFS File Share Service

If you are running a FortiSIEM 6.3.0 or 6.3.1 Cluster in Microsoft Azure Cloud using **Azure Managed NFS File Share Service**, then FortiSIEM will not work correctly. Symptoms are file build up in the `/data` directory and slow GUI queries. A bug was introduced in the Linux kernel (affecting Redhat CentOS 8.4 and FortiSIEM 6.3.0) that slows NFS operations. For details, see the section titled "*ls hangs for large directory enumeration on some kernels*" in this URL document: https://docs.microsoft.com/en-us/azure/storage/files/storage-troubleshooting-files-nfs

Note: If you deploy your own NFS V3 or V4, then FortiSIEM 6.3.0 or 6.3.1 is not impacted.

Redhat has not yet published a patch for this issue. The current workaround is to manually downgrade the Linux kernel from 8.4 to 8.3.

Download and install the Linux 8.3 kernel by running all the commands in Step 1 on **each** Supervisor and **all** your Worker nodes.

1. On your system, login as user root, and run the following commands.
   Note: The order of the commands is important. If your system is offline without internet access, you can download the RPM to a flash drive or file share to upload to the Supervisor and Workers.
   a. `cd /tmp`
   b. `mkdir downgrade`
   c. `cd downgrade`
   d. `wget https://os-pkgs-cdn.fortisiem.fortinet.com/centos83/baseos/Packages/kernel-core-4.18.0-240.10.1.el8_3.x86_64.rpm`
   e. `yum localinstall kernel-core-4.18.0-240.10.1.el8_3.x86_64.rpm`
      Click 'y' to confirm when prompted.
   f. `grub2-mkconfig -o /boot/grub2/grub.cfg`
   g. `awk -F\' '$1=="menuentry" {print $2}' /boot/grub2/grub.cfg`
      Note: entries are ordered 0,1,2,3,4 from top to bottom.
      If the kernel `4.18.0-240.10.1.el8_3.x86_64` is third in the list, use the command below to set it as the default.
   h. `grub2-set-default 2`
   i. Reboot the system with the following command:
      `reboot`
2. Log back in as user root and check the kernel version that is running with the following command:
   `uname -r`

   In the `uname -r` output, notate the new kernel. It should be:
   `4.18.0-240.10.1.el8_3.x86_64`

After the Linux kernel downgrade is done for the Supervisor and Workers, take the following steps:

1. Login to the Supervisor FortiSIEM GUI.
2. Go to the **ANALYTICS** tab.
3. Run a query for 10-30 minutes and confirm that the speed of the query execution is relatively fast.

Adding a Network Segment to a Fresh Installation of 6.3.1

A newly discovered device cannot be added into the network segment of a freshly installed 6.3.1 FortiSIEM.

Take the following steps before discovering devices.

1. Navigate to **CMDB > Devices > Network Segment**.
2. Click **New** to create a new device in the network segment group.
3. In the **Name** field, enter a name for the device.
4. In the **Access IP** field, enter the IP address of the device.

5. From the **Importance** drop-down list, select a priority.
6. Click the **Interfaces** tab.
7. Click **New** to configure the interface.
8. In the **Name** field, enter a name for the interface.
9. In the **IP address** field, enter the interface IP address.
10. In the **Mask/Prefix** field, enter the interface network mask.
11. Click **Save** to save the interface information.
12. Click **Save** to save the new device information.

After these steps are completed, FortiSIEM is ready to discover devices, and network segments are created automatically.

What's New in 6.3.0

This document describes the additions for the FortiSIEM 6.3.0 release.

- New Features
- Key Enhancements
- New Device Support
- Device Support Extensions
- Bug Fixes and Minor Enhancements
- Known Issues
- Rule and Report Modifications since 6.2.1

New Features

- Customizable GUI Login Banner
- UTC and ISO8601 Timestamp Formatted Dates
- Ability to Tag Incidents and Search Incidents by Tag
- Report Export in RTF Format
- Trend Chart for Hourly/Daily/Weekly Aggregates
- Email Encryption via S/MIME
- Load Balancing Inserts across Multiple Elasticsearch Coordinator Nodes
- Watchlist Management API
- JSON Incident API
- FortiSIEM Collector as Management Extension Application (MEA) on FortiAnalyzer

Customizable GUI Login Banner

FortiSIEM administrators can now define a login banner page that GUI users will view, after entering their credentials. This page displays the last successful login time, changes to the user’s account since their last successful login, along with an administrator defined message. This message is typically used to warn against unauthorized system access. A default message is provided, but users with full admin privileges can change the message, create a new message, or completely disable this banner. This system setting applies for all users.

For details on how to set up and customize a login banner, located at **ADMIN > Settings > System > UI**, see Administrator UI Settings.

Notes:

- This is a system wide screen for all users.
- Some simple BBCode tags are allowed in this message input - “b” - bold, “i” - italic, “u” - underline, and “url”.
- HTML tags are not allowed.
- Nested tags are not allowed.

UTC and ISO8601 Formatted Dates

Earlier releases displayed dates (e.g. in the **INCIDENTS** page) in local time format. In this release, two other time format options are added – UTC and ISO 8601. This is a per-user setting and the chosen time format is honored in the GUI for that user as well as for report exports, and scheduled reports done by that user and Incident email notification.

For details on how to set up date display format, located at **User Profile > UI Settings**, see User Profile UI Settings.

Ability to Tags Incidents and Search Incidents by Tag

This release allows you to define Tags and then associate one or more Tags to Rules. Incidents triggered by that rule will have the associated Tags attribute as an Incident attribute. You can display Tags from the **INCIDENTS** page and search/filter Incidents by Tags. For MSSP deployments, Tags are globally defined for all Organizations.

For details on how to define tags, see Tags.

For details on how to set tags in rules, see Creating a Rule: Step 3: Define Actions.

For details on how to display tags in **INCIDENTS**, see Acting on Incidents on how to add the **Tags** column to the **INCIDENTS** page.

For details on how to search Incidents by tags, see Searching Incidents. From the **Actions** drop-down list, click **Search**. Use the **Incident Tag** filter in the same panel to locate tags.

Report Export in RTF Format

In earlier releases, reports could be exported in PDF and CSV formats. This release adds Rich Text Format (RTF) format that can be viewed using Microsoft Word.

For setting RTF format for adhoc reports, see Email Results, Exporting Report Results, and Exporting Results.

For setting RTF format for scheduled reports, see Scheduling a Report and Scheduling CMDB Reports.

For more information on creating a report template, which can be sent in RTF format, see Designing a Report Template.

Trend Chart for Hourly/Daily/weekly Aggregates

In earlier releases, the granularity of time axis in trend charts was chosen automatically by the system. Therefore, user cannot have hourly, daily and weekly values plotted in Report Trend Charts. This release allows users this option. Because daily, weekly queries can take a long time to run, this works best in pre-computed queries and in dashboards where results are computed inline mode.

In **ANALYTICS**, you can choose the trend option as part of Filter conditions. See Specifying a Trend Interval.

In **DASHBOARD**, you can select **Line chart** as the display type, and then choose a trend option as part of a Widget Dashboard. See Modifying Widget Information Display.

Trend Attributes can be added to scheduled reports and report bundles.

Email Encryption via S/MIME

This release allows you to send encrypted emails from FortiSIEM using S/MIME. Examples of emails send from FortiSIEM includes Incident notification emails, Scheduled Report emails, Adhoc Query Result email, etc...

To first set up S/MIME, see Email Settings.

After the S/MIME configuration, add the S/MIME certificate for a new user or to an existing one at **CMDB > Users**.

Load Balancing Inserts across Multiple Elasticsearch Coordinator Nodes

This release enables you to add multiple Elasticsearch Coordinator nodes in GUI. Then phDataManager process on each Worker will load balance event inserts across multiple Elasticsearch Coordinator nodes. This design allows faster parallel inserts and also protects against Coordinator node failures.

The Coordinator nodes can be configured in the **URL** field for Native Elasticsearch configuration.

Watchlist Management API

This release allows you to view, add, edit Watchlist folders and entries (**RESOURCES > Watchlist**). See Watchlist Integration in the API Integration Guide.

JSON Incident API

This release allows you to integrate incidents from FortiSIEM with a JSON REST API. This is used for the ServiceNow SecOps integration. See JSON API Incident Integration in the API Integration Guide.

FortiSIEM Collector as Management Extension Application (MEA) on FortiAnalyzer

You can now run a FortiSIEM Collector as a management extension application (MEA) image on FortiAnalyzer 7.0.1 or higher. This alleviates the need for a separate FortiSIEM Collector node (Virtual machine or appliance), when you already have a FortiAnalyzer deployed, and it has sufficiently spare CPU, Memory and Disk available to run a FortiSIEM Collector.

A FortiSIEM MEA Collector functionally works the same way as a regular virtual machine based FortiSIEM Collector or a hardware appliance 500F, but the set up and upgrade processes are slightly different.

For general setup, troubleshooting, event collection, discovery and performance monitoring using a FortiSIEM MEA Collector, see the FortiSIEM MEA Administration Guide in FortiAnalyzer 7.0 docs. The FortiSIEM MEA Administration Guide also covers upgrade issues and general differences between a FortiSIEM MEA Collector and a virtual machine/hardware appliance Collector.

Note: To collect FortiSIEM Windows or Linux Agent logs via FortiSIEM MEA Collector, you need to run Windows Agent 4.1.2 or higher and Linux Agent 6.3.0 or higher.

Key Enhancements

Infrastructure Upgrade

This release upgrades the underlying CentOS version to 8.4.

Elasticsearch 7.12.1 Support

This release extends native Elasticsearch event database support to 7.12.1.

MITRE ATT&CK Framework Update to V0.9

This release imports the MITRE ATT&CK Techniques and Tactics as found in V9 released on April 29, 2021.

Authentication for Kafka based Event Forwarding

FortiSIEM allows events to be forwarded via Kafka. This release adds the ability for FortiSIEM to authenticate to the Kafka receiver.

To set up Kafka authentication, see step 9 under Kafka Settings.

Report Design Template Enhancements

This release covers the following Report Design enhancements

- A Rich Text editor so that user does not have to type in raw HTML text in Text Area in Report Design.
- Allow user to insert a Page Break
- Make the Cover page and Table of Contents optional

For details see Designing a Report Template.

Selective Role based Raw Message Obfuscation

FortiSIEM user roles allows per-user obfuscation of certain event attributes like Source IP, Host IP, User etc. In earlier releases, if one event attribute was obfuscated, then the entire raw message was not shown to that user. This restriction is removed in this release. As an example, this means that if a user role has obfuscated User name, then that user can see the entire raw message except the specific user name in the message.

For configuration information, see Adding a New Role.

Shared Dashboard Ownership Transfer

FortiSIEM allows dashboards to be shared between the creator (owner) and several other users. However, in earlier releases, when the shared dashboard owner was not available, no one else could modify the shared dashboard. This release allows the shared dashboard owner to transfer ownership to another user with exactly the same role. Then that person becomes the new owner and can edit the dashboard.

For details on how to change ownership, see Dashboard Ownership.

Custom Elasticsearch Mapping Template

FortiSIEM uses an Event Attribute Mapping Template file to map each of the 3,000+ FortiSIEM Event Attributes to Elasticsearch data types. This explicit mapping is done to conserve Elasticsearch event storage.

Our research (using the Elasticsearch Rally Tool) has shown that Elasticsearch performance can be improved by choosing a smaller Event Attribute Template file relevant to events seen in the customer's environment. This release allows customers to use the right Event Attribute Template file for their environment and improve Elasticsearch performance.

A tool is provided that customers can use to create an Event Attribute Template file based on last N (configurable) days of data in Elasticsearch. Details can be found in Administrator Tools.

The user can import this custom Event Attribute Template file from the Supervisor GUI and click **Test** and **Save** to deploy to Elasticsearch. Details can be found in Configuring a Native, AWS, or Cloud Elasticsearch database.

Note: If a new log appears and has new event attributes not present in the Event Attribute Template file, then Elasticsearch will auto-detect the type. If you wish to change the type, you will need to run the tool again and upload the new Event Attribute Custom Template. The custom Event Attribute template will take effect for the new index.

This release has been tested in native Elasticsearch 7.8, 7.12.1, AWS Elasticsearch 7.8, and Elastic Cloud 6.8.

Note: AWS Elasticsearch is now officially called AWS OpenSearch.

Elasticsearch to EventDB Archive Performance Improvement

For high EPS situations, FortiSIEM recommends the Real time Archive option, because reading events from Elasticsearch and copying to EventDB on NFS is an expensive operation that can slow down real time event ingestion. However, if you require the non-real time archiving option, this release optimizes the code to reduce pressure on Elasticsearch and archive faster. No user configuration is required.

Optimize PostgreSQL Incident Query

Incidents can span multiple partitions and SQL queries to multiple partitions, which can be expensive. This release optimizes such queries by only going over the minimum necessary partitions. Users will see less disk IOPS for CMDB partition and faster GUI response times.

New Device Support

- Microsoft Windows Print Service Log
- AWS Elasticsearch Load Balancer Log
- CyberX OT/IoT Security via Log
- Digital Defense Vulnerability Scanner via API
- FortiAI via Log
- FortiCASB integration via API
- HP ILO via SNMP Trap
- Palo Alto Cortex XDR via Log
- Palo Alto WildFire via Log through Palo Alto Firewall

Device Support Extensions

- CloudTrail Logs via AWS Kinesis
- CyberArk Vault integration via REST API
- FortiAnalyzer System Event Logs via Syslog
- FortiEDR integration via API
- FortiGate, FortiAP and FortiSwitch via FortiGate API
- GCC High Tenant for Azure Audit
- VPC Flow Logs via AWS Kinesis

Bug Fixes and Minor Enhancements

Bug ID	Severity	Module	Description
719210	Major	App Server	Choosing Malware IOC (IP/Domain/URL/Hash) when there are many Malware IOC groups, would result in a sluggish GUI. A full download is recommended for faster FortiSIEM processing. Do not choose incremental download when the website does not provide incremental download.
718253	Major	App Server	Any customer defined rule cannot be approved for deployment in the **TASKS > Approval** page
650020	Major	GUI	If a user navigated to **RESOURCES > Reports > Baseline**, selected a Reporting EPS Profile and clicked Run, the visualization would not appear, and showed a "stuck" loading indicator. A workaround was to navigate to ANALYTICS, go to the folder option, navigate to Reports > Baseline, select a Reporting EPS Profile and click Run.

Bug ID	Severity	Module	Description
602294	Major	PSIRT	CVE-2004-1653 SSH port forwarding exposes unprotected internal services.
715377	Minor	App Server	If a primary contact admin user was saved with an incorrect organization, the **ADMIN > License > General** and **Usage** pages would not display any data.
711680	Minor	App Server	On a 6.2.0 upgraded FortiSIEM, if an ANALYTICS query result spanned many pages (over 199), then later pages might not show any results.
705642	Minor	App Server	If a SAML response did not carry the signature and X509 Certificates attributes, the AppServer would throw a NullPointerException.
685195	Minor	App Server	Occasionally, after a few weeks or months, the STM job would automatically change from HTTP type to TCP.
719795	Minor	Data	The Source IP was incorrectly set for Windows Security Event ID 4624 event.
719331	Minor	Data	The FortiGateParser set Event Action as 0(permit) even when Firewall action=block in event logs; it should be 1. **Note**: The keyword "blocked" was handled correctly.
717349	Minor	Data	The Zscaler parser was not correctly handling events with quotes in the URL.
715951	Minor	Data	The Checkpoint parser created spurious CMDB devices due to incorrect parsing of origin field.
713156	Minor	Data	Office365 Authentication events incorrectly parsed "Authentication success" when "UserKey" is "Not Available" and "Actor" is "Unknown".
712384	Minor	Data	Windows Security Event 4728 had the incorrect target User field.
712153	Minor	Data	The FortiClient EMS parser sometimes failed when there was no clientfeature field.
709663	Minor	Data	The Nginx parser would not work when a log contained a negative GMT time value.
709182	Minor	Data	Occasionally, the Windows Log parser would not parse the correct Destination Host Name.
708681	Minor	Data	Maldives is incorrectly in **RESOURCES > Country Groups > Europe** instead of **RESOURCES > Country Groups > Asia**.
708638	Minor	Data	The Cisco ASA parser and Cisco FWSM parser had incorrect mapping of the Destination and Source IP/Ports.

Bug ID	Severity	Module	Description
706898	Minor	Data	Windows Security log parsing enhanced to include Kerberos Cipher name.
697112	Minor	Data	The Palo Alto Firewall parser showed the "flowEndReason" attribute value as 0.
694642	Minor	Data	Uruguay was incorrectly included in the Europe Country Group instead of the South America Country Group.
694259	Minor	Data	The FortiAuthenticator logs forwarded through FortiAnalyzer provided the incorrect Reporting Device IP.
692909	Minor	Data	For WatchGuard Firebox firewall, HTTPS certificate attributes were not parsed.
645187	Minor	Data	Country name mismatches caused rules to trigger.
715304	Minor	Data	The Palo Alto Firewall log parser did not work for global protect system logs.
685952	Minor	Data	The Palo Alto parser enhanced to handle additional log types, including multiple WildFire events.
716961	Minor	Data	The FortiAuthenticator Failed Login was parsed as Successful Login.
724187	Minor	Data	SQL Injection Attack detected by NIPS rule logic corrected to match rule description.
723602	Minor	Data	Palo Alto event type PAN-IDP-31914 categorization corrected to match trigger behavior. Event type PAN-IDP-55873 added.
718372	Minor	GUI	When creating a new report under Org, a "unknown Error" warning would pop up after saving.
717183	Minor	GUI	With a large number of CMDB users defined in FortiSIEM, in the CASES tab, the New and Edit operations would sometimes timeout.
712019	Minor	GUI	The auto-load feature would re-load at 4 am every day, even when an active query was running.
698621	Minor	GUI	In Report Schedule, multiple email addresses could not be added.
689328	Minor	GUI	In the Interface Usage Dashboard, user changes to the Application Usage chart were not saved.
681160	Minor	GUI	From the CMDB page, installed software could not be detected when discovered.
677375	Minor	GUI	When saving or copying into a parser window, the ">" and "< "characters were getting encoded and translated.

Bug ID	Severity	Module	Description
668386	Minor	GUI	In MSSP mode, if the user was in CMDB, the device group could not be changed.
688542	Minor	Log Collection	Azure Audit logs only pulled from one subscription, even when multiple subscriptions were configured.
719190	Minor	Parser	The Cisco ASA built/teardown parsing was sometimes sluggish when matching connection ids.
707125	Minor	Performance Monitoring	The VMware cluster level CPU and memory utilization calculations were not accurate.
714176	Minor	Performance Monitoring	In **CMDB > Device > Monitor**, the Last Successful attribute was not reset properly, causing flapping between Normal and Warning.
700690	Minor	Performance Monitoring	HTTPS based STM did not work correctly when different IPs in different STMs were mapped to the same host name.
694596	Minor	Performance Monitoring	FortiSIEM could not monitor a metric via SNMP when there were more than two alternative OIDS for that metric and another method like SSH was simultaneously used to monitor other metrics.
712602	Minor	Query	Query failed if there were parentheses in the nested query with attributes like "Destination TCP/UDP Port".
684647	Minor	Query	In ANALYTICS search, a filter on TCP flag would make the query work incorrectly.
682137	Minor	System	The /etc/hosts file needed to be preserved across upgrades.
690781	Enhancement	App Server	When an incident is cleared in FortiSIEM, it is now cleared on ConnectWise.
712012	Enhancement	Data	Geo-IP database updated to handle more IPs.
705478	Enhancement	Data	FortiSandbox parser now extracts virusid and attack name in a better way to parse malware name attribute.
705471	Enhancement	Data	FortiMail parser now extracts virus attribute.
705468	Enhancement	Data	FortiClient parser now maps threat to malware name attribute.
702603	Enhancement	Data	Extend Windows Security log parser now supports Sysmon v13.
692796	Enhancement	Data	UnixParser extended to parse SFTP Open file, SFTP Close file, and internal-sftp logs.
689608	Enhancement	Data	Meraki Firewall parser enhanced to include Flow Start and Flow End events.

Bug ID	Severity	Module	Description
684254	Enhancement	Data	Extreme switch logs parser enhanced.
682424	Enhancement	Data	Parsing improved for Windows Event ID 5145.
680432	Enhancement	Data	Cisco Callmanager and Cisco IMP servers parsers enhanced to handle more event types.
668492	Enhancement	Data	Windows log parser for French Language Windows enhanced. Note: Enhancement primarily for security log 4728.
725618	Enhancement	Data	Parsing enhanced to handle Cisco Nexus AUTHPRIV syslog messages.
704115	Enhancement	Data	The Palo Alto parser extended to parse global protect system logs.
684897	Enhancement	Data	The rule "Traffic to FortiGuard Malware IP List" is now able to trigger on valid non-firewall logs.
696237	Enhancement	GUI	Port number under External Authentication can now be changed.
705100	Enhancement	Log Collection	Windows BitDefender REST API now allows different regions to be selected. Note: Originally, it defaulted hostname to the US.
703881	Enhancement	Rule Engine	PH_REPORT_PACK_FAILED log (that indicates event dropped during packing from Worker to Supervisor) now includes groupby and aggregate attributes.
712034	Enhancement	System	pHEventExport and TestESSplitter backend tools updated to run in FortiSIEM 6.x.

Known Issues

Remediation Steps for CVE-2021-44228

Three FortiSIEM modules (SVNLite, phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.14, 2.13 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228).

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor and Worker nodes only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating SVNLite module:
   a. Run the script `fix-svnlite-log4j2.sh` (here). It will restart SVNlite module with `Dlog4j2.formatMsgNoLookups=true` option and print the success/failed status.
3. Mitigating 3rd party ThreatConnect SDK module:

   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
4. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
5. Restart all Java Processes by running: `“killall -9 java”`

On Worker Node

1. Logon via SSH as root.
2. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
3. Restart all Java Processes by running: `“killall -9 java”`

Slow Event Database Operations Using Azure Managed NFS File Share Service

If you are running a FortiSIEM 6.3.0 Cluster in Microsoft Azure Cloud using **Azure Managed NFS File Share Service**, then FortiSIEM will not work correctly. Symptoms are file build up in the `/data` directory and slow GUI queries. A bug was introduced in the Linux kernel (affecting Redhat CentOS 8.4 and FortiSIEM 6.3.0) that slows NFS operations. For details, see the section titled "*ls hangs for large directory enumeration on some kernels*" in this URL document: https://docs.microsoft.com/en-us/azure/storage/files/storage-troubleshooting-files-nfs

Note: If you deploy your own NFS V3 or V4, then FortiSIEM 6.3.0 is not impacted.

Redhat has not yet published a patch for this issue. The current workaround is to manually downgrade the Linux kernel from 8.4 to 8.3.

Download and install the Linux 8.3 kernel by running all the commands in Step 1 on **each** Supervisor and **all** your Worker nodes.

1. On your system, login as user root, and run the following commands.
   Note: The order of the commands is important. If your system is offline without internet access, you can download the RPM to a flash drive or file share to upload to the Supervisor and Workers.
   a. `cd /tmp`
   b. `mkdir downgrade`
   c. `cd downgrade`

d. `wget https://os-pkgs-cdn.fortisiem.fortinet.com/centos83/baseos/Packages/kernel-core-4.18.0-240.10.1.el8_3.x86_64.rpm`

e. `yum localinstall kernel-core-4.18.0-240.10.1.el8_3.x86_64.rpm`
Click 'y' to confirm when prompted.

f. `grub2-mkconfig -o /boot/grub2/grub.cfg`

g. `awk -F\' '$1=="menuentry" {print $2}' /boot/grub2/grub.cfg`
Note: entries are ordered 0,1,2,3,4 from top to bottom.
If the kernel `4.18.0-240.10.1.el8_3.x86_64` is third in the list, use the command below to set it as the default.

h. `grub2-set-default 2`

i. Reboot the system with the following command:
`reboot`

2. Log back in as user root and check the kernel version that is running with the following command:
`uname -r`

   In the `uname -r` output, notate the new kernel. It should be:
`4.18.0-240.10.1.el8_3.x86_64`

After the Linux kernel downgrade is done for the Supervisor and Workers,take the following steps:

1. Login to the Supervisor FortiSIEM GUI.
2. Go to the **ANALYTICS** tab.
3. Run a query for 10-30 minutes and confirm that the speed of the query execution is relatively fast.

Need to Re-Configure Open Tunnel After Upgrade/Install of 6.3.0

After upgrading or doing a fresh install of 6.3.0, the feature - "Connect to" a CMDB device via 'Open Tunnel' will no longer work without a configuration change. When users connect via a tunnel, it will appear that the tunnel is opened. However, the displayed Supervisor's port on which the tunneled connection is running is actually not open so users will not be able to connect either via plugin or directly.

To re-enable this feature, take the following steps:

1. Edit `sshd_config.tunneluser` on the Supervisor by changing the entry `AllowTcpForwarding` to `yes`.
`AllowTcpForwarding yes`
2. Reload the tunnel sshd configuration using the following command:
`kill -HUP $(pgrep -f sshd_config.tunneluser)`
3. If you have tunnels you had opened after the upgrade, but prior to making the above change, you will need to click on the **Close All** button from **ADMIN > Health > Collector Health > Tunnels** page.

Note: This fix was done to address bug 602294: CVE-2004-1653 SSH port forwarding exposes unprotected internal services.

Need to set Account Environment in Azure Cloud Support Access Credentials after Upgrade

Prior to the 6.3.0 FortiSIEM release, the Azure CLI agent only supported Global Azure (AzureCloud). It did not support Azure Government Cloud, Azure China Cloud, or Azure German Cloud. In 6.3.0 and later releases, the 4 types of Azure Clouds listed here are supported by the Azure CLI agent.

When you need to upgrade the collector to 6.3.0 for Azure CLI jobs, make sure the Supervisor is also 6.3.0, and enter the **Account Env** as part of its Access Credentials.

Account Environment	Azure Portal URL
AzureCloud	https://portal.azure.com
AzureChinaCloud	https://portal.azure.cn
AzureUSGovernmentCloud	https://portal.azure.us
AzureGermanCloud	https://portal.microsoftazure.de/

Cut and Paste Issue into Report Designer Text Editor

If you cut and paste text from an external document into the Report Designer Text Editor, then you need to select all copied text, click "Clear Format" and then add your own formatting within the Editor. Otherwise, Export will fail.

Rule and Report Modifications since 6.2.1

The following rules were added:

- ES Coordinator Node Staying Down
- ES Coordinator Node Down
- Cortex XDR Alert Detected
- Cortex XDR Alert Prevented
- F5 BIG-IP TMM Attack - FortiGate IPS Exploit Permitted
- FortiAI: Attack Chain Blocked
- FortiAI: Attack Chain Permitted
- CyberX Malware Detected
- Windows Process Tampering Detected
- SUNBURST Suspicious File Hash match by Source and Destination
- DEARCRY Infected File Detected on Network
- DEARCRY Infected File Detected on Host
- DARKSIDE Domain Traffic Detected
- DARKSIDE Ransomware File Activity Detected on Network
- DARKSIDE Ransomware File Activity Detected on Host

- DARKSIDE Ransomware Outbound Network Traffic Detected
- DARKSIDE Ransomware Inbound Network Traffic Detected
- DARKSIDE Suspicious File Hash Found on Network
- DARKSIDE Suspicious File Hash Found on Host

The following rules were deleted:

- Excessive Malware Domain Name Queries
- DNS Traffic to Malware Domains

The following rules were renamed:

- Windows: Unidentified Attacker November 2018 Activity 1 -> Windows: Unidentified Attacker November 2018 Activity 1
- SUNBURST Suspicious File MD5 match -> SUNBURST Suspicious File Hash Match

The following reports were added:

- AWS ELB - Top HTTP Methods by Count
- AWS ELB - Top HTTP Status Codes by Count
- AWS ELB - Top Requests by Source Country
- AWS ELB - Top Source IPs by Count
- AWS ELB - Top Request URLs by Count
- F5 BIG-IP TMM Attack - FortiGate IPS Exploit Permitted
- FortiAI: Attack-Chain Blocked
- FortiAI: Attack-Chain Permitted
- FortiAI: Dashboard Attack-Chain Blocked
- FortiAI: Dashboard Attack-Chain Permitted
- FortiAI: Dashboard Incidents
- FortiAI: Top Attacker IPs by Count
- FortiAI: Top Malware Family by Count
- FortiAI: Top Victim IPs by Count
- Cases Created - Daily
- DARKSIDE Domain Traffic Detected
- DARKSIDE Ransomware File Activity Detected on Network
- DARKSIDE Ransomware File Activity Detected on Host
- DARKSIDE Ransomware Traffic Detected

- DARKSIDE Suspicious File Hash Found
- DEARCRY Infected File Detected on Network
- DEARCRY Infected File Detected on Host
- CyberX Security Alerts
- ZOS: SMF 14/15/17 Dataset Open/Update/Delete Activity
- ZOS: SMF 18 Dataset Rename Activity
- ZOS: SMF 30 JES Job/STC start/end Activity
- ZOS: SMF 32 JES TSO Termination Activity
- ZOS: SMF 42 SMS Add/Delete/Rename/Reuse Activity
- ZOS: SMF 62 VSAM Open Dataset Activity
- ZOS: SMF 80 Security Violations
- ZOS: SMF 81 Initialization and SETROPTS events
- ZOS: SMF 83 Security Changes
- ZOS: SMF 90:37 APF List Changes
- ZOS: SMF 119: TSO Logon
- ZOS: SMF 119: TN3270 Logon
- ZOS: SMF 119: FTP Completion
- ZOS: SMF 119: TCP Connection Termination

The following reports were deleted:

- Incident Trend By Severity - Monthly
- SANS CC5: DNS Traffic To Malware Domains

The following reports were renamed:

- Incident Resolution Time Trend By Severity - Monthly "Mean Time to Resolution" -> Incidents By Location and Category
- Monthly Assigned Incident User Trend -> Cases Created - Weekly
- Incidents By Location and Category -> Cases Closed - Weekly
- Cases Created - Daily -> Cases Closed By User - Weekly
- Cases Created - Monthly -> Incident Trend By Severity - Monthly
- Cases Created - Weekly -> Incident Resolution Time Trend By Severity - Monthly "Mean Time to Resolution"
- Cases Closed - Weekly -> Monthly Assigned Incident User Trend
- Cases Closed By User - Weekly -> Cases Created - Monthly
- SUNBURST Suspicious File MD5 match -> SUNBURST Suspicious File Hash match

What's New in 6.2.1

This document describes the additions for the FortiSIEM 6.2.1 release.

- New Features
- Bug Fixes and Minor Enhancements
- Windows Agent 4.1.1 Bug Fixes
- Known Issues

New Features

- Reputation Check from FortiGuard

Reputation Check from FortiGuard

FortiGuard IOC provides reputation checks for different Malware like IP, Domain, URL, and Hash. This release adds FortiGuard IOC to the supported list of reputation lookup engines. This can be invoked in of two ways.

- When an incident triggers, users can manually do a lookup via FortiGuard IOC, VirusTotal, or RiskIQ. Any external website can also be looked up, but the results of FortiGuard IOC, VirusTotal or RiskIQ are parsed and the user is provided with a simplified Verdict (Safe, Unsure, or Malicious based on thresholds).
- Users can automate this reputation check by including this in their Incident Notification Policies. When included, the reputation check will automatically be done when an incident triggers. Incident comments are updated with the results.

Every licensed FortiSIEM can do FortiGuard IOC lookup. No special configuration is required.

For setting up manual external lookup, see FortiGuard IOC Integration.

For automating via notification policy, see Adding Incident Notification Settings.

For information on doing lookup, see Lookups Via External Websites.

Bug Fixes and Minor Enhancements

The current release includes the following bug fixes and enhancements:

Bug ID	Severity	Module	Description
710084	Major	App Server	After a period of time, all Windows Agents may become disconnected (error PH_AUDIT_AGENT_DISABLED logs). This happens very rarely.
710715	Major	Elasticsearch	If an empty action was sent to Supervisor on port 7919, the Java Query Server would stop working.
710109	Major	Report Engine	For some baseline reports, COUNT DISTINCT calculations res-

Bug ID	Severity	Module	Description
			ulted in very large partial inline report results to be transferred from phReportWorker to the phReportMaster process. This sometimes resulted in ACE_SSL errors and caused baseline reports to contan incomplete data, as that shown here. o 2021-03-26T01:05:11.482049-04:00 w2 phReportWorker[7507]: ACE_SSL (7507|8200) error code: 336462231 - error:140E0197:SSL routines:SSL_shutdown:shutdown while in init **Note**: This fix works for new installs of 6.2.1, but upgrades to 6.2.1 are still hindered. The upgrade process will be fixed in 6.3.0+ releases. See Known Issue after 6.2.1 Upgrade for workaround.
712172	Minor	Data Manager	Occasionally, the phDataPurger process would terminate because of initialization issues, resulting in Event DB or Elasticsearch storing events disk space management errors.
711564	Minor	Elasticsearch	The phDataManager process may erroneously introduce a new event field called "UnknownIPVersion" when it encounters an empty IP address field. This can occur for DNS lookup failures in Windows Event Forwarding when the parser cannot resolve the original windows server host name (see bug ID 711542). This can cause Elasticsearch insert failures.
707185	Minor	GUI	The SD-WAN Interface Dashboard failed to load.
711542	Minor	Parser	When the reporting IP is empty and the source IP is 127.0.0.1, the phParser may set the source IP to be empty, resulting in an invalid database insertion entry. This can be identified in Windows Event Forwarding cases when the phParser cannot resolve the original windows server host name to its IP.
707524	Minor	System	Upgrade failed if the DNS Server could not reverse lookup its own name/IP.
710541	Minor	System	Upgrade failed if a FortiSIEM node could not ping the CentOS repository os-pkgs-cdn.fortisiem.fortinet.com.
713893	Enhancement	System	During an upgrade, the previous upgrade related ansible log file would be overwritten. **Note**: Fixed by retaining the latest 5 upgrade log files.

Windows Agent 4.1.1 Bug Fixes

This release fixes the following Windows Agent issues:

- Bug ID 702090: The Windows Agent does not generate events when a monitoring template is chosen with a large set of comma separated event IDs. The current code does not allow more than 50 event IDs or 250 characters, including the comma separator. The root cause of this is that the Windows Event pulling API itself has a limitation on the number of characters. With the current fix, the user is allowed the maximum possible allowed by the API; specifically the user can choose a list of event IDs as long as the number of characters including the comma does not exceed 1,200. The FortiSIEM GUI will enforce this restriction. If you need more than this limit, you can always create multiple monitoring templates.

- Bug ID 710074: When Windows Event Forwarding is configured, the FortiSIEM Agent running on the forwarded server may sometimes fail to get the message in Security Events. Since the message contains key information, the event collected may not contain any meaningful information. A new API is now used to collect the events from the Windows Forwarded Events folder.

Known Issues

Remediation Steps for CVE-2021-44228

Three FortiSIEM modules (SVNLite, phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.14, 2.13 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228).

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor and Worker nodes only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating SVNLite module:
   a. Run the script `fix-svnlite-log4j2.sh` (here). It will restart SVNlite module with `Dlog4j2.formatMsgNoLookups=true` option and print the success/failed status.
3. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
4. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
5. Restart all Java Processes by running: `“killall -9 java”`

On Worker Node

1. Logon via SSH as root.
2. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
3. Restart all Java Processes by running: `“killall -9 java”`

Issue After 6.2.1 Upgrade

As part of a fix for excessive SSL communication errors between phReportWorker and phReportMaster (Bug 710109) in 6.2.1, the value for `count_distinct_precision` in the `/opt/phoenix/config/phoenix_config.txt` file is reduced from 14 to 9 for the Supervisor and Worker nodes. While 6.2.1 fresh install sets the value correctly, 6.2.1 upgrade may keep the old value (14) and fail to set the new value (9). Because of this, you can still have excessive SSL communication errors between phReportWorker and phReportMaster and it may appear that bug 710109 is not fixed.

To fix this issue, follow the instructions in Modification on the Supervisor and Modification on each Worker for your Supervisor and Workers.

Modification on the Supervisor

1. SSH into the super as root and edit the `/opt/phoenix/config/phoenix_config.txt` file.

   ```
   ssh root@<supervisor FQDN/IP>

   su admin

   vi /opt/phoenix/config/phoenix_config.txt
   ```

2. Find "count_distinct_precision=".
3. Modify the value to that shown here.

   ```
   count_distinct_precision=9 # in range 4-18
   ```

4. Save the configuration.
5. Stop phRerportMaster/Worker by running the following commands.

   ```
   phtools --stop phReportWorker

   phtools --stop phReportMaster
   ```

6. Start phReportMaster/Worker by running the following commands.

   ```
   phtools --start phReportMaster

   phtools --start phReportWorker
   ```

7. Monitor Stability by running the following command.

   ```
   phstatus
   ```

Modification on each Worker

1. SSH into each Worker as root and edit the `/opt/phoenix/config/phoenix_config.txt` file by running the following commands.

   ```
   ssh root@<Worker FQDN/IP>
   su admin
   vi /opt/phoenix/config/phoenix_config.txt
   ```

2. Find "count_distinct_precision=".
3. Modify the value to that shown here.

   ```
   count_distinct_precision=9 # in range 4-18
   ```

4. Save the configuration.
5. Stop phReportWorker by running the following command.

   ```
   phtools --stop phReportWorker
   ```

6. Start phReportWorker by running the following command.

   ```
   phtools --start phReportWorker
   ```

7. Monitor Stability by running the following command.

   ```
   phstatus
   ```

What's New in 6.2.0

This document describes the additions for the FortiSIEM 6.2.0 release.

- New Features
- Key Enhancements
- Upgrade Overview
- New Data Work
- New Device Support
- Device Support Enhancement
- Bug Fixes and Minor Enhancements
- Known Issues
- Public Domain Built-in Rules

New Features

- MITRE ATT&CK Framework Support
- Pre-computed Queries

- Incident Remediation Workflow
- External Authentication via SAML
- Scale Out UEBA and State Persistence
- Reputation Check from FortiGuard

MITRE ATT&CK Framework Support

The MITRE ATT&CK framework is defined as a comprehensive matrix of *tactics and techniques* used by threat hunters, red teamers, and defenders to better classify attacks and assess an organization's risk. This release adds comprehensive support for the MITRE ATT&CK framework. The currently supported version is 0.8. This release provides the following features:

- Ability to associate a MITRE technique to a FortiSIEM (built in or custom) rule
- Over 950 built in rules to detect a wide variety of MITRE techniques
- Ability to assign techniques and tactics to Rules and search incidents by techniques and tactics
- ATT&CK *Rule Coverage* Dashboard that displays rules associated with a tactic or technique
- ATT&CK *Incident Coverage* Dashboard that displays incidents associated with a tactic or technique
- Enhanced ATT&CK *Incident Explorer* Dashboard that provides a host centric view of hosts triggering various techniques and tactics.

For information on defining a technique to a rule, see Technique in Step 3: Define Actions in Creating a Rule.

For information on searching incidents by technique or tactic, see Searching for MITRE ATT&CK Incidents.

For Rule Coverage Dashboard information, see Rule Coverage View.

For Incident Coverage Dashboard information, see Incident Coverage View.

Note: Attack View in 6.1.x, is now the MITRE ATT&CK Incident Explorer View in 6.2.x.

Pre-computed Queries

Aggregated searches with large time windows can be expensive, specially in a high EPS environment. This release enables you to set up pre-computation schedules. FortiSIEM will pre-compute search results at user specified intervals, enabling users to run faster searches against pre-computed results. Both adhoc GUI queries and background scheduled queries can use pre-computed results.

This feature was introduced for FortiSIEM EventDB in Release 5.3.3 and has been ported over to this release. In addition, pre-computation using Elasticsearch is also supported in this release using Elasticsearch Rollup functionality. For details, see here.

There are two limitations for Elasticsearch based pre-computation:

1. Pre-computation is available only from the time the schedule is defined. Unlike FortiSIEM EventDB, the system does not pre-compute historical results. This limitation is a result of the Elasticsearch APIs.
2. Because Elasticsearch does roll up in a different index, pre-computation based search results may differ significantly from regular search results if the number of events matching the filter condition for the specified pre-computation interval exceeds 100K. Fortinet recommends users to first run the pre-computation query over the interval and make sure that the number of results is less than 100K.

For details on setting up pre-computed searches, see Setting Up Pre-computation.

Incident Remediation Workflow

Currently, any FortiSIEM user with Write permission to the Incident page can remediate an incident by running remediation scripts. In this release, a role permission is introduced to provide finer control over a user who can remediate an incident immediately and a user who requires approval to remediate an incident. The general workflow follows:

- Full Admin users set up Incident remediation roles and users
  - Role and users who can remediate an incident, and role and users who must get approval to remediate an incident
  - Role and users who can approve incident remediation approval requests.
- A user that cannot remediate an incident can request permission to remediate.
- Once an approver approves the request, the user can then remediate the incident.

For details on setting up remediation roles, see steps 6 and 7 in Adding a New Role.

For details on remediating incidents using workflow, see Creating a Remediation action.

For details on approver handling requests, see Approving a de-anonymization request.

An example setup workflow is provided here.

External Authentication via SAML

Currently, FortiSIEM users can be authenticated as (a) local authentication, (b) external authentication via Active Directory or LDAP, and (c) Single Sign On via OKTA. This release generalizes OKTA based authenication to external authentication via Security Association Markup Language (SAML).

A user must first create an External Authentication entry via SAML in FortiSIEM. If the SAML Identity Provide provides Role information, the user has to map the SAML Role to the FortiSIEM Role. Otherwise, the user has to manually define the FortiSIEM Role for SAML users. A role is required for a user to be able to log in to FortiSIEM.

For details, see Configuring FortiSIEM for SAML Overview.

Scale Out UEBA and State Persistence

This release adds two enhancements.

- Scale out design - The AI module now runs on Super and Worker nodes. All Agent activity is routed to one node in a sticky manner. If a Worker is down, Agent events are routed to another Worker. If a Worker is added, then new Agents are routed to that Worker.
- Persistence – AI models are now persisted across AI module restarts.

For information on setting up UEBA, see here.

Reputation Check from FortiGuard

FortiGuard IOC provides reputation checks for different Malware like IP, Domain, URL, and Hash. This release adds FortiGuard IOC to the supported list of reputation lookup engines. This can be invoked in of two ways.

- When an incident triggers, users can manually do a lookup via FortiGuard IOC, VirusTotal, or RiskIQ. Any external website can also be looked up, but the results of FortiGuard IOC, VirusTotal or RiskIQ are parsed and the user is provided with a simplified Verdict (Safe, Unsure, or Malicious based on thresholds).
- Users can automate this reputation check by including this in their Incident Notification Policies. When included, the reputation check will automatically be done when an incident triggers. Incident comments are updated with the results.

Every licensed FortiSIEM can do FortiGuard IOC lookup. No special configuration is required.

For setting up manual external lookup, see FortiGuard IOC Integration.

For automating via notification policy, see Adding Incident Notification Settings.

For information on doing lookup, see Lookups Via External Websites.

Key Enhancements

- Elasticsearch Enhancements
- Real Time Archive for Elasticsearch
- SVN-lite for Storing Monitored Files
- Windows Agent 4.1 Enhancements
- Event Forwarding from Super/Worker
- Super Global Dashboard
- Windows and Linux Agent Health Dashboard
- Ability to Activate or Deactivate Multiple Rules with One Click
- System Upgrade

Elasticsearch Enhancements

This release adds the following enhancements to FortiSIEM Elasticsearch support.

- Support for Elastic Cloud
- Support for Elasticsearch versions 7.8 - See the Elasticsearch table for version support in each deployment.
- Support for Cold Data Node – in this node, indices are frozen and saved to disk, thereby saving heap memory. Data can be moved from Hot to Warm to Cold data nodes, either based on disk space, or time duration using the Elasticsearch index lifecycle management (ILM) feature. This allows more event storage in Cold Data Nodes since the heap memory constraint is eliminated. Regardless of the node type, events can be queried wherever they reside. When a query hits Cold nodes, further queries run a bit slower since the indices have to be loaded to memory. This feature is not available on AWS Elasticsearch Service and Elastic Cloud. General workflow information is available here.
- Age based Retention/Index Lifecycle Management (ILM) – in earlier releases, disk thresholds could be specified to determine when data would move from Hot to Cold node. In this release, the number of days can be specified for each data node type. FortiSIEM will move data from Hot to Warm to Cold based on space thresholds or time duration limit, whichever occurs first. This feature is not available on AWS Elasticsearch Service and Elastic Cloud. Retention configuration details are available here. Default setting information is available here.

- Queries with multi-field term aggregation is now sorted. For example, when the Group By and Display Fields option is used for "Reporting IP" and "Reporting Device" using "COUNT(Matched Events)" in descending (DESC) order, the count appears in descending order.
- Support for Java Transport Client API is removed.
- With Elasticsearch 7.x, the index refresh rate is reduced to 15 seconds. This enables users to search all data, except for the last 15 seconds. Choosing an even lower index refresh rate may lower the event indexing speed.

There are 3 distinct Elasticsearch deployments. This table shows the versions and features supported for each deployment type. Please also see the list of Elasticsearch related known issues in Known Issues and in the Appendix.

Elasticsearch Deployment	Supported Versions	API (Insertion and Search)	Supported Data Node Types	Disk Space based Retention	Age based retention (ILM)
Self-Managed (On-Prem or Hosted)	5.6, 6.4, 6.8, 7.8	REST	Hot, Warm, Cold	Yes	Yes (6.8 and above)
AWS Elasticsearch Service	6.8, 7.8	REST	N/A	Yes	No
Elastic Cloud	6.8	REST	N/A	Yes	No

Real Time Archive for Elasticsearch

For Elasticsearch deployments, users can choose NFS or HDFS as Archive. Currently, when Elasticsearch disk space capacity is close to full, events are read from Elasticsearch and then archived to NFS or HDFS. For high EPS scenarios, this can be a very expensive operation and may impact Elasticsearch cluster performance.

In this release, users can choose to store events to both Elasticsearch and Archive (NFS or HDFS) in parallel, when the event arrives to FortiSIEM. Events are stored in two stores at the same time, but this reduces the need to archive when Elasticsearch disk space is full or Index Life-cycle Management (ILM) policies kick in. At that time, data is simply purged from Elasticsearch, which is an inexpensive operation.

For details on how to set up Real time Archive for Elasticsearch, see Setting Up the Database (NFS) or Setting Up the Database (HDFS).

SVN-lite for Storing Monitored Files

FortiSIEM can detect file changes in network devices and servers. In earlier releases, these files were stored in SVN. Since SVN stores incremental changes, older files could not be deleted, even when the device is deleted.

In this release, a new SVN-lite service is introduced to manage files. From a user perspective, there is no change except that a user is able to delete files from the GUI. Files are also automatically deleted when a device is deleted. When upgrading from earlier releases to 6.2.0, older files are migrated from SVN to SVN-lite format.

For details on where you can delete files, see the table in Viewing Device Information.

A few implementation notes:

- Files are stored in `/svn/repos`. Files are organized by orgId and then deviceId. deviceId is the PostgreSQL Device Id. To conserve disk space, a limited number of file revisions are kept based on the following threholds defined in /opt/phoenix/config/svnlite.properties on the Supervisor node.

  ```
  svnlite.store.dir = /svn/repos
  svnlite.revisions.keep = 100
  svnlite.revisions.purge = 5
  ```

  `svnlite.revisions.keep` defines how many revisions are kept for each file. Older revisions are automatically deleted. `svnlite.revisions.purge` defines how many files are deleted at a time when the upper limit of `svnlite.revisions.keep` is reached.

- During a 6.2.0 upgrade, up to 100 revisions of each file are migrated to SVN-lite.

Windows Agent 4.1 Enhancements

This release adds the following enhancements for Windows Agent.

- Agent will restart automatically after 1 minute if it is killed. See here.
- Service protection – A user cannot Stop/Restart/Pause the agent from Service Manager. See here.
- Users can change the logging level without restarting service by changing the registry key. See here for more information. Registry key instructions follow:
  - Open `HKEY_LOCAL_MACHINE\SOFTWARE\AccelOps\Agent key`
  - To update with trace logging, modify “**LogLevel**” value to “2” from “1”.
  - To update with debug logging, modify “**LogLevel**” value to “1” from “2”.
- The Agent Database is used to store Agent configuration parameters and to store events when connectivity to collectors is lost. The default size for your Agent Database is 1GB. This can be changed by modifying the `MaxDBSizeInMB` entry in your Registry Editor. See here for more information.

Details are documented in Configuring Windows Agent.

Event Forwarding from Super/Worker

FortiSIEM can forward the events it receives to a third party system. Normally, events are forwarded by the node (Worker, Collector, Super) that parsed the event. This release allows you to force events to only be forwarded by Workers (and Super). Users can choose this as part of their Event Forwarding policy, see here.

Super Global Dashboard

This release adds the concept of a Super Global dashboard that is only available for Super Global users in service provider installations. All regular dashboards are now only available as Organization level. Super Global users can define their own dashboards that are only visible for Super Global users.

Windows and Linux Agent Health Dashboard

This release provides a separate health dashboard for FortiSIEM agents. See **ADMIN > Health > Agent Health**. For details, see here.

Note: If you've upgraded your FortiSIEM to 6.2.0 from an older version, the dashboard will show an inaccurate agent version, or no version. You will need to re-install your agents with a new version after upgrading FortiSIEM to 6.2.0 to resolve this issue. If an old version is installed for an agent, the dashboard will still show no version or an inaccurate version for that agent. See Linux and/or Windows Agent guides for installation steps. Upgrading your collectors to 6.2.0 is recommended (please see the FortiSIEM Version Compatibility Matrix for details).

Ability to Activate or Deactivate Multiple Rules with One Click

Users often need to activate or deactivate all rules in one folder, and could only perform this action on individual rules. This release enables users to activate or deactivate multiple rules in one click.

For details, see Activating/Deactivating Multiple Rules.

System Upgrade

This release includes several third party software upgrades - CentOS 8.3, PostgreSQL 13.2, Glassfish 5.0, JDK 1.8.0_272, php 7.4, nodejs 14.15.0, Hibernate 5, and Apache 2.4.37 (patched by Redhat).

Upgrade Overview

For software installations, the upgrade path is pre-5.3.0-> 5.4.0 -> 6.1.1 -> 6.2.0.

Specifically:

- From pre-5.3.0 releases, first upgrade to 5.4.0, then migrate to 6.1.1, and then upgrade to 6.2.0.
- From 5.4.0, migrate to 6.1.1, and then upgrade to 6.2.0.
- If you are running 6.1.0, 6.1.1, or 6.1.2, then upgrade to 6.2.0.

For hardware installations, 6.1.1 is not available, so the migration path is pre-5.3.0 -> 5.4.0 -> 6.1.2 -> 6.2.0.

Specifically:

- From pre-5.3.0 releases, first upgrade to 5.4.0, then migrate to 6.1.2, and then upgrade to 6.2.0.
- From 5.4.0, migrate to 6.1.2, and then upgrade to 6.2.0.
- If you are running 6.1.2, then upgrade to 6.2.0.

These steps are documented in detail in the Upgrade Guide.

Points to consider before upgrade:

1. For your Supervisor and Worker, do not use the upgrade menu item in configFSM.sh to upgrade from 6.1.x to 6.2.0. This is deprecated, so it will not work. Use the new method as instructed in the Upgrade Guide.
2. 6.2.0 upgrade will attempt to migrate existing SVN files (stored in `/svn`) from the old svn format to the new svn-lite format. During this process, it will first export `/svn` to `/opt` and then import them back to `/svn` in the new svn-lite format. If your `/svn` uses a large amount of disk space, and `/opt` does not have enough disk space left, then migration will fail. Fortinet recommends doing the following steps before upgrading:
    - Check /svn usage
    - Check if there is enough disk space left in `/opt` to accommodate `/svn`
    - Expand `/opt` by the size of `/svn`
    - Begin upgrade

    Steps for Expanding /opt Disk

a. Go to the Hypervisor and increase the `/opt` disk by the size of `/svn` disk

b. # ssh into the supervisor as `root`

c. `# lsblk`

```
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
...
sdb           8:16   0  100G  0 disk            << old size
├─sdb1        8:17   0 22.4G  0 part [SWAP]
└─sdb2        8:18   0 68.9G  0 part /opt
      ...
```

d. `# yum -y install cloud-utils-growpart gdisk`

e. `# growpart /dev/sdb 2`

```
CHANGED: partition=2 start=50782208 old: size=144529408 end=195311616
new: size=473505759 end=524287967
```

f. `# lsblk`

Changed the size to 250GB for example:

```
#lsblk
```

```
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
...
sdb           8:16   0  250G  0 disk            <<< NOTE the new size
for the disk in /opt
├─sdb1        8:17   0 22.4G  0 part [SWAP]
└─sdb2        8:18   0 68.9G  0 part /opt
...
```

g. `# xfs_growfs /dev/sdb2`

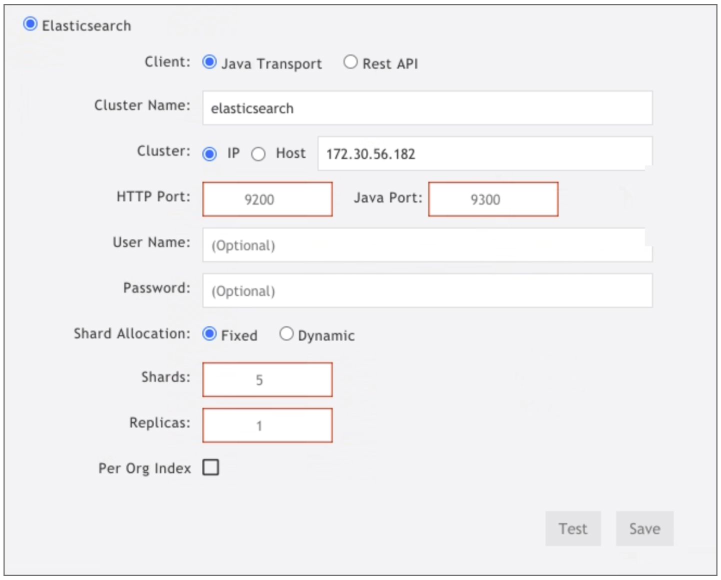
```
meta-data=/dev/sdb2              isize=512    agcount=4, agsize=4516544
blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=1, sparse=1,
rmapbt=0
         =                       reflink=1
data     =                       bsize=4096   blocks=18066176, imax-
pct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0, ftype=1
log      =internal log           bsize=4096   blocks=8821, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
data blocks changed from 18066176 to 59188219
```

h. `# df -h`

```
Filesystem           Size  Used Avail Use% Mounted on
...
/dev/sdb2            226G  6.1G  220G   3% /  << NOTE the new disk size
```

3. If you are using AWS Elasticsearch, then after upgrading to 6.2.0, take the following steps:
   1. Go to **ADMIN > Setup > Storage> Online**.
   2. Select "ES-type" and re-enter the credential.
4. In 6.1.x releases, new 5.x collectors could not register to the Supervisor. This restriction has been removed in 6.2.0 so long as the Supervisor is running in non-FIPS mode. However, 5.x collectors are not recommended since CentOS 6 has been declared End of Life.
5. If you have more than 5 Workers, Fortinet recommends using at least 16 vCPU for the Supervisor and to increase the number of notification threads for RuleMaster. To do this, SSH to the Supervisor and take the following steps.
   1. Modify the `phoenix_config.txt` file, located at `/opt/phoenix/config/` with

      ```
      #notification will open threads to accept connections
      #FSM upgrade preserves customer changes to the parameter value
      #notification_server_thread_num=50
      ```
      Note: The default notification_server_thread_num is 20.
   2. Restart phRuleMaster.
6. Upgrading Elasticsearch Transport Client usage - The Transport Client option has been removed as Elasticsearch no longer supports that client. If you are using Transport Client in pre-6.2.0, you will need to modify the existing URL by adding "http://" or "https://" in front of the **URL** field after upgrading, as displayed in **ADMIN > Setup > Storage > Online >** with **Elasticsearch** selected, as shown here.
   1. Before Upgrade, Elasticsearch appears as:



● Elasticsearch

Client: ● Java Transport ○ Rest API

Cluster Name: elasticsearch

Cluster: ● IP ○ Host 172.30.56.182

HTTP Port: 9200 Java Port: 9300

User Name: (Optional)

Password: (Optional)

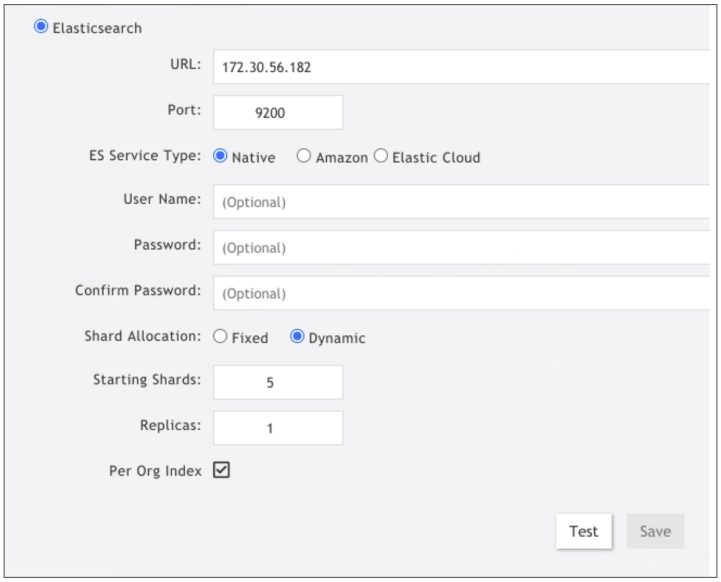
Shard Allocation: ● Fixed ○ Dynamic

Shards: 5

Replicas: 1

Per Org Index □

b. After Upgrade: Elasticsearch appears as:



● Elasticsearch

URL: 172.30.56.182

Port: 9200

ES Service Type: ● Native ○ Amazon ○ Elastic Cloud

User Name: (Optional)

Password: (Optional)

Confirm Password: (Optional)

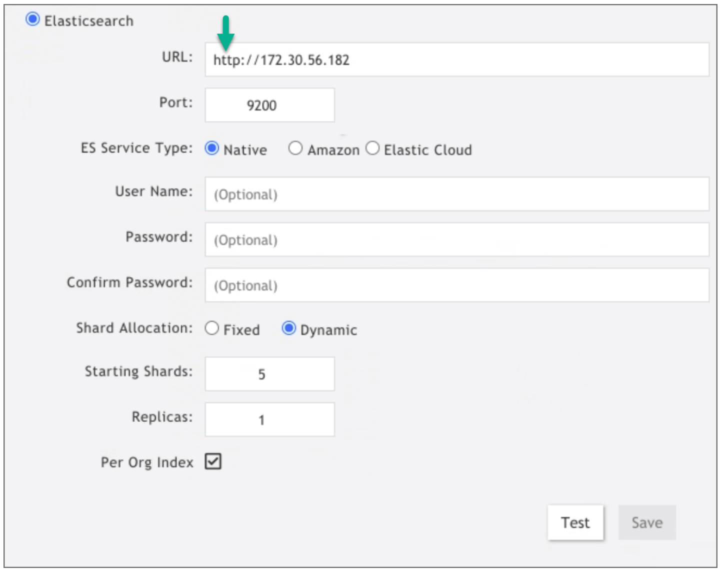
Shard Allocation: ○ Fixed ● Dynamic

Starting Shards: 5

Replicas: 1

Per Org Index ☑

c. In the **URL** field, add "http://" or "https://" to your IP address. Next, select **Test** to confirm functionality, and select **Save** to save the updated settings.



● Elasticsearch

URL: http://172.30.56.182

Port: 9200

ES Service Type: ● Native ○ Amazon ○ Elastic Cloud

User Name: (Optional)

Password: (Optional)

Confirm Password: (Optional)

Shard Allocation: ○ Fixed ● Dynamic

Starting Shards: 5

Replicas: 1

Per Org Index ☑

7. Prior to upgrading, ensure that hot node and warm node counts are both greater than the number of replicas. Failure to do so will result in Test and Save operation failure after an upgrade. This basic requirement check has been added for version 6.2.0 and later.

8. Remember to remove the browser cache after logging on to the 6.2.0 GUI and before doing any operations.

New Data Work

- Added OT/IoT Rules, Reports and Dashboard.
- Added New Compliance Report - Center for Internet Security (CIS) Controls.

- Added 615 new rules and 206 new reports to cover MITRE ATT&CK Tactics and Techniques. Many of the rules are adopted from public domain SIGMA Rules. See here for details.
- Existing rules mapped to MITRE ATT&CK Tactics and Techniques where applicable.
- Added Rules and Reports for Hafnium Exchange Server attack and Solarwinds Sunburst attack.

New Device Support

The following device support has been added.

- Malwarebytes Breach Detection
- Dragos OT Platform
- Oracle CASB
- Claroty
- Corero Smartwall Threat Defense System (TDS)
- Proofpoint

Device Support Enhancements

- CrowdStrike integration using OAuth2 API
- The following parsers have been updated.
  Windows: Security, Sysmon and DNS, FortiGate, FortiEDR, FortiMail, FortiDeceptor, FortiADC, FortiWeb, AWS security Hub, Sourcefire, Office365, F5BigIP, Sentinel One, Tipping Point NMS, AWS Kinesis, CiscoFTDParser, Sophos XG, Bluecoat Proxy SG Device, and Tigera Calico.

Bug Fixes and Minor Enhancements

The current release includes the following bug fixes and enhancements:

Bug ID	Severity	Module	Description
656383	Major	App Server	Malware Hash import from a CSV file fails when the CSV file contains 75,000 or more Malware Hash entries.
684128	Major	App Server	Scheduled bundle reports fail after migration.
655781	Major	App Server	Update Malware Hash via API does not work as expected, producing "duplicate" errors.
624133	Major	App Server	Cisco Meraki log discovery does not add devices to CMDB.
695082	Major	GUI	FortiSIEM does not recognize a UEBA perpetual license, so users with a UEBA perpetual license are unable to add UEBA for their devices.
694897	Major	Inline Report	For Elasticsearch cases with inline report mode set to 2, the

Bug ID	Severity	Module	Description
		Engine	ReportMaster memory may grow quickly.
701383	Major	Java Query Server	The Java Query Server has a file descriptor leak which may cause a loss of connection to the Elasticsearch Coordinating node.
682751	Major	Query Engine	Malware IP, Domain, and URL Group lookup performance slower than expected.
670053	Major	Rule Engine	Security incidents always indicate "System Cleared" after 24 hours, even if `auto_clear_security_incidents=0` is set.
676614	Major	Rule Engine	SSL communication sockets between rule worker and rule master are not always closed properly, leading to rules not triggering.
589656	Major	Rule Engine	Rules with a pattern-based clearing condition do not always clear even if the condition is met. This is because the clear rule's time window is sometimes read incorrectly.
645987	Minor	App Server	Scheduled CSV formatted report finishes, but is never received by a user if the "do not send scheduled email if report is empty" flag is set.
679164	Minor	App Server	Incident subcategory names are incorrectly displayed in PDF export.
668989	Minor	App Server	STIX/Taxii Integration does not work for certain websites.
671564	Minor	App Server	An empty value of Source Interface SNMP Index in Report Result causes App Server to throw `NullPointerException` when parsing it.
683528	Minor	App Server	After Java starts up, rule exceptions with watchlists do not take effect.
685100	Minor	App Server	Logs are unnecessarily pulled from unmanaged devices, and then dropped. This sometimes causes event pulling to lag behind.
658886	Minor	App Server	Identity and Location Tables show data from a different organization when enriched (no collector environment).
678695	Minor	App Server	An error is thrown when a user navigates to **CMDB > Business Services > IT Srvc > Select the Service > Edit > Device/Application > User App**.
658755	Minor	App Server	Rule exceptions do not work for Source User in LDAP group.
682184	Minor	App Server	In rare circumstances, different incidents with identical incident IDs are created.

Bug ID	Severity	Module	Description
661353	Minor	App Server	The rule test function does not work. **Note**: This was due to an issue when updating a rule definition or conditions.
672285	Minor	App Server	After configuring important interfaces, if the device's hostname is changed, the modification for the name change /merge does not trickle down into the important interface table.
671376	Minor	App Server	From incident notification emails, links to a specific FortiSIEM incident in the FortiSIEM GUI do not work.
674077	Minor	App Server	Sophos Central Credential Configuration shows orgs with collectors in drop-down list.
639827	Minor	App Server	The event `PH_DEV_MON_LOG_DEVICE_DELAY_HIGH` is not generated correctly in accordance with the thresholds defined.
670750	Minor	App Server	Data leak issue occurs on rule exceptions in Analytic Search Results against CMDB Rules. When running a query using CMDB Attributes and choosing a target RULE, the user can see the exception condition from the query result from org 1 while running a report at a different org (org 2).
662400	Minor	App Server	Excessive `PH_APPSERVER_INCIDENT_UPDATE_FAILED` errors occur for user names longer than 255 characters.
676038	Minor	App Server	Initial load of Redis had performance issues. This required a check against loading active inline reports with missing query ID to resolve the issue.
648730	Minor	App Server	Remediation pop up populates the "Enforce on" field with incorrect values.
672934	Minor	App Server	Cloning a rule does not copy the Watchlist Entry from the original rule.
611553	Minor	App Server	Accounts that cannot edit rules can see rule definitions in the Incidents page.
609289	Minor	App Server	API query for monitor/critical interfaces does not give correct information.
602340	Minor	App Server	LDAP/AD discovery causes a user to be removed from custom user groups.
639397	Minor	App Server	The GUI shows a negative unused device count in org if device provisioning is changed after an initial provisioning.
597456	Minor	App Server	For orgs without collectors, virtual IP entries do not prevent devices from merging.
608133	Minor	App Server	In CMDB Report Results, the "App Group Name" appears empty, even if an application is defined against a device.

Bug ID	Severity	Module	Description
659853	Minor	App Server	FortiSIEM SNMP TRAP output has a duplicate field (`iso.3.6.1.4.1.35409.101.5.0`).
659028	Minor	App Server	When importing a CSV file with Malware Hash, a "Full" data update does not work as expected.
630329	Minor	App Server	Radius External Authentication fails due to shared secret not getting updated in the database.
645660	Minor	App Server	From the Identity and Location Dashboard, when exporting a PDF report, the filter parameters are ignored while the report is generated.
618475	Minor	App Server	The Incident Group (e.g. Security, Availability, etc.) is missing in the exported rule XML file.
653427	Minor	App Server	Exporting a custom watchlist to CSV format fails. **Note**: Exporting a custom watchlist to PDF works fine.
696873	Minor	App Server	Clean up of expired watch list entries occur at 2:00 am of each day. Clean up must occur hourly.
670247	Minor	Data	Syslog from Meraki AP are miscategorized as Meraki Firewall.
672320	Minor	Data	The Incident Title is incorrect for some rules.
673177	Minor	Data	Many built-in AWS Security Hub Events reports are missing `Group BY` attributes.
661691	Minor	Data	"Excessive End User Mail" and "Excessive End User Mail To Unauthorized Mail Gateways" rules are generating false positive for UDP protocol. Fixed with AddTCP restriction to the two rules.
645659	Minor	Data	The Netflow/Sflow Parser does not parse Link Aggregation Control Protocol (LACP) counter sample.
658760	Minor	Data	The Windows Agent DNS Parser parses incorrectly in a few scenarios.
658990	Minor	Data	PAN OS VPN LOGIN Events are categorized under DEVICE Logon success / failed when they should be classified as VPN Logon success / failure events.
670672	Minor	Data	Tenable integration (vulnerability scanning) needs to parse more attributes, specifically CVSS Score, OS, SCSS3 Base Score, and Vulnerability Priority Rating (VPR).
686051	Minor	Discovery	When attempting to import over 200 users using a CVS file for Okta integration, the operation fails, and no errors appear in the log.

Bug ID	Severity	Module	Description
660690	Minor	GUI	When trying to display interfaces on a dashboard, the dashboard freezes when there are more than 10K interfaces for a device.
671868	Minor	GUI	In an Incident Notification policy, sometimes selected a rule or affected items are not saved.
669876	Minor	GUI	In **ADMIN > Health > Collector Health > Tunnels**, the “Close Tunnel” button is always inaccessible (grayed out).
617943	Minor	GUI	Removing a value from a customize device property does not reset the property to "Undefined".
663653	Minor	GUI	The Parser test fails when a regex pattern and regex tags are on different lines.
645657	Minor	GUI	Unable to sort incidents when multiple categories are selected.
655536	Minor	GUI	Email subject and rawEvents tag does not appear in the email preview pop up.
647709	Minor	GUI	In Incident Search, filter by category "Security" does not capture new Incidents without a refresh.
659851	Minor	GUI	After saving discovery entries, the list reloads and resets to the first discovery page.
604148	Minor	GUI	Integration Policy > Org Mapping , located by navigating to **ADMIN > Settings > External Integration** clicking New and Organization Mapping, does not handle special characters.
624771	Minor	GUI	When editing an Event Organization (**ADMIN > Settings > Event Handling > Event Org Mapping**), two save and two cancel buttons appear.
653753	Minor	GUI	The Identity & Location Dashboard does not refresh with the correct information.
592961	Minor	GUI	The Dashboard single line widget shows a needle below the chart graphic if stretched too long.
637722	Minor	GUI	Importing a watchlist while in Organization fails.
607810	Minor	GUI	Editing an interface forces the user to enter an IP address, even if the interface did not have one originally.
647105	Minor	GUI	In Notification Policy, the seconds and time zone region are not saved.
644186	Minor	GUI	If the user goes to the **INCIDENTS > List by Time** view, selects an incident, navigates to another page, and returns to the Incidents page, the selected incident position is lost.

Bug ID	Severity	Module	Description
626043	Minor	GUI	The user is logged out before the log off expiration time period elapses.
683801	Minor	Java Query Server	Elastic Search Cluster disconnects from FortiSIEM once a week.
661333	Minor	Java Query Server	Analytic search fails to retrieve the Destination and Source TCP/IP Port value from Elastic search index.
659018	Minor	Java Query Server	Elasticsearch insert sometimes fails when a raw message contains non UTF-8 characters.
698147	Minor	Java Query Server (Elasticsearch)	The Java Query Server does not properly close sockets in all cases, which can lead to its inability to communicate with the App Server.
592607	Minor	Parser	EPS Usage per node is higher than the global Used EPS.
676294	Minor	Parser	Office365 GCC High Authentication does not work due to hard coded URLs.
669837	Minor	Parser	Event Type comparison in Drop Rule needs to be case insensitive.
659180	Minor	Parser	Sometimes, excessive collector time skew is generated when the App Server is busy. This occurs when phMonitor on Collector mistakenly caches a timestamp when failing to communicate with the App Server.
670324	Minor	Parser	For Service Provider Install, the Org name in Events is not the same as the Org Association in the Credential page.
648732	Minor	Parser	AD/LDAP user details metadata is not always added to incidents.
662899	Minor	Parser	The Test Parser function with `resolveDNSName` does not work when DNS lookup is enabled.
635113	Minor	Parser	The Windows Parser sometimes adds reporting device metadata from DNS lookup instead of reporting it from another event.
637631	Minor	Query Engine	When you export (CSV format) from a date before a Daylight Saving Time change when Daylight Saving Time has occurred, a difference of one hour is observed.
670060	Minor	Rule Engine	Incident Exceptions do not work when time period exceptions are set for Monday and Friday.
657601	Minor	System	In phoenix_config.txt, the setting `http_client_verify_peer=no` changes to `yes` upon upgrade.

Bug ID	Severity	Module	Description
658491	Minor	System	After an Archive configuration has been set up (NFS/HDFS), **ADMIN > Setup > Storage > Archive**, the user is unable to clear and remove the archive from the GUI.
577821	Minor	System	In Cloud Health, workers and super always incorrectly report 100% CPU utilization.
696873	Minor	Windows Agent	After Windows Agent 4.0.0 installation, an unnecessary system reboot may occur.
607443	Enhancement	App Server	LAST (Event Receive Time) is shown in Epoch Time format for PDF export in Elastic Storage setup.
627546	Enhancement	App Server	The Incident Notification Email link needs to have Super FQDN in addition to IP.
609102	Enhancement	App Server	The PDF Report does not display Incident category name.
649588	Enhancement	App Server	Custom Device Properties cannot be queried via CMDB Report.
580110	Enhancement	App Server	In **CMDB > CMDB Report**, add a scope attribute to display whether a property is either system or user defined.
611929	Enhancement	Data	Enhance the Cisco Meraki Parser to handle Air Marshall events.
670414	Enhancement	Data	The CloudTrail Parser does not parse the User and User Type for `event type = AWS-CloudTrail-SIGNIN-ConsoleLogin-Success`.
661692	Enhancement	Data	Event Type Categorization is inconsistent for ipsec/VPN log off.
669102	Enhancement	Data	The Unix Parser doesn't handle the user attribute when the rhost field is a hostname, and not an IP.
653421	Enhancement	Data	The "Multiple admin Login Failure" rule name should be renamed as there is no indicator of admin role usage.
530467	Enhancement	Data	FortiSIEM does not detect certain event SSH/Audit events using the Unix Parser.
660734	Enhancement	Data	The Aruba Parser does not parse Event Name and causes high CPU usage.
625194	Enhancement	Data	Enhance the Windows OS Parser update to pass terminal services logs.
652184	Enhancement	Data	Support the Unix Parser with a new timestamp format.
649496	Enhancement	Data	Enhance the Windows Parser fix for Alternate UPN domain suffix support.
624070	Enhancement	Data	Parse the Cisco ASA-722051 event ID.

Bug ID	Severity	Module	Description
650998	Enhancement	Discovery	Enhance AD discovery to import Manager field if it is populated in AD.
663218	Enhancement	GUI	User input for the Report Design Cover Page is not clear. This should be improved.
673543	Enhancement	GUI	There is no user input validation in Rule Exception definition. Input validation should be implemented for Rule Exceptions.
515571	Enhancement	GUI	HourOfDay(Event Receive Time) BETWEEN / NOT BETWEEN should be supported.
611518	Enhancement	GUI	For Rule Exception, the user cannot define more than 7 time period schedules. The user should be able to define more than 7 time period schedules.
670230	Enhancement	Parser	The Event Forwarder needs to retry forwarding events if it encounters a network connection.
642389	Enhancement	Parser	Parser: compare function needs to be extended to support >= and <= operators.
586569	Enhancement	System	Monitor Raid Health should be added for 3500F and 2000F HW appliances.

Known Issues

Remediation Steps for CVE-2021-44228

Three FortiSIEM modules (SVNLite, phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.14, 2.13 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228).

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor and Worker nodes only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating SVNLite module:
   a. Run the script `fix-svnlite-log4j2.sh` (here). It will restart SVNlite module with `Dlog4j2.formatMsgNoLookups=true` option and print the success/failed status.
3. Mitigating 3rd party ThreatConnect SDK module:
   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`

      i. log4j-core-2.8.2.jar
      ii. log4j-api-2.8.2.jar
      iii. log4j-slf4j-impl-2.6.1.jar
4. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
5. Restart all Java Processes by running: `“killall -9 java”`

On Worker Node

1. Logon via SSH as root.
2. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-core-2.13.0.jar
      ii. log4j-api-2.13.0.jar
3. Restart all Java Processes by running: `“killall -9 java”`

Elasticsearch

1. With pre-compute queries via Rollup, sorting on AVG() is not supported by Elasticsearch. See here.
2. Elasticsearch pre-compute is done using the Elasticsearch Rollup API, which requires raw events matching the pre-compute search condition be populated into a separate Elasticsearch index. This operation can become very expensive if a large number of events match the pre-compute search filter condition. Fortinet recommends that the user set up a report for pre-compute only if the search filter conditions for the pre-compute interval result in less than 100K entries. This allows the pre-computed result to exactly match the adhoc report for faster operation. Specifically, follow these steps:
   A. Suppose you want to run a report in pre-compute mode, with the operation running pre-computations hourly. This means the report will be run hourly, and when a user runs for a longer interval, the pre-computed results would be combined to generate the final result.
   B. Check for pre-compute eligibility.
      i. Run the report in adhoc mode for 1 hour by removing group by conditions.
      ii. If the number of rows is less than 100K, then the original report is a candidate for pre-computation.

         Note: This is for Elasticsearch only. If the number of results in #Bii is more than 100K, then the pre-computed results and adhoc results will be different since FortiSIEM caps the number of results retrieved via Rollup API to be less than 100K.

3. AWS Managed Elasticsearch 7.x limits search.max_buckets to 10K. In 6.8 there was no such limit. This may cause Elasticsearch to throw an exception and not return results for aggregated queries. Contact AWS

Managed Elasticsearch Support to increase search.max_buckets to a large value (recommended 10M). There is an API to change this value, but this does not work in AWS Managed Elasticsearch. Therefore you must contact AWS Managed Elasticsearch Support before running queries.

   a. For general discussion about search.max_buckets, see here.

   b. For general discussion about this issue, see here.

   c. Elasticsearch does not consistently handle sorting functions when there are NULL values. For example:

      i. AVG(): NULL values are at the bottom.

      ii. MIN(): NULL values are considered to be the largest value possible, so if you choose ASC (respectively DESC) order, NULL values appear at the bottom (respectively top).

      iii. MAX():NULL values are considered to be the smallest value possible, so if you choose ASC (respectively DESC) order, NULL values appear at the top (respectively bottom).

4. Pre-compute queries do not work with the HAVING clause. Currently, the FortiSIEM GUI is preventing this operation. For public discussion about Rollup search and query scripts, see here.

5. The HourOfDay(Event Receive Time) and DayOfWeek(Event Receive Time) calculations are incorrect if Elasticsearch and Supervisor are in different time zones.

6. In Elasticsearch, a non-aggregated query spanning multiple display pages requires 1 open scroll context per shard. This enables the user to visit multiple pages and see the results. Elasticsearch has a (configurable) limit on open scroll contexts. This is defined in `phoenix_config.txt` on the Supervisor node. By default, FortiSIEM limits to 1000 open scroll contexts and each context remains open for 60 seconds, as shown.

   ```
   [BEGIN Elasticsearch]
   ...

   max_open_scroll_context=1000
   scroll_timeout=60000

   ...
   [END Elasticsearch]
   ```

   When the open scroll context limit is reached, Elasticsearch throws an exception and returns partial results. When 80% of the search context limit is reached, FortiSIEM writes a log in `/opt/phoenix/log/javaQueryServer.log`, as shown.

   ```
   com.accelops.elastic.server.task.ChoresTask - [PH_JAVA_QUERYSERVER_WARN]:
   [eventSeverity]=PHL_WARNING,[phEventCategory]=3,[procName]=javaQueryServer,
   [phLogDetail]=node=node236, openContexts=1000, it has 80 percent of available
   search contexts open
   ```

- You can increase `max_open_scroll_context`. However, AWS Elasticsearch does not allow more than 500 open scroll contexts, and will enforce a 500 limit. Be careful in choosing very high `max_open_scroll_context`. It is strongly recommended to use a test instance to experiment with your number prior to production.
- After changing `max_open_scroll_context`, you need to apply Test & Save from the GUI for changes to take effect. This is because `max_open_scroll_context` is a cluster level setting.

- You can change `scroll_timeout`, but after changing this value, you must restart the Java Query Server on the Supervisor for the change to take effect.

  For Elasticsearch discussion forum information on this topic, see here.

7. The maximum number of group by query result is 2,000 by default. You can change the setting in `phoenix_config.txt` on the Supervisor node by taking the following steps.
   a. Change the setting: `aggregation_size=2000`
   b. Restart the JavaQueryServer.

Public Domain Built-in Rules

The following table shows the public domain built-in rules incorporated into FortiSIEM.

Rules that are adopted from the SIGMA rule set are licensed under the Detection Rule License available here.

FortiSIEM Rule	Author	Source Link
AWS CloudTrail Important Changes	vitaliy0x1	https://github.com/SigmaHQ/sigma/blob/master/rules/cloud/aws_cloudtrail_disable_logging.yml
AWS EC2 Userdata Download	faloker	https://github.com/SigmaHQ/sigma/blob/master/rules/cloud/aws_ec2_download_userdata.yml
Linux: Attempt to Disable Crowdstrike Service	Ömer Günal	https://github.com/SigmaHQ/sigma/blob/master/rules/linux/lnx_security_tools_disabling.yml
Linux: Attempt to Disable CarbonBlack Service	Ömer Günal	https://github.com/SigmaHQ/sigma/blob/master/rules/linux/lnx_security_tools_disabling.yml
Windows: Turla Service Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_carbonpaper_turla.yml
Windows: StoneDrill Service Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_stonedrill.yml
Windows: Turla PNG Dropper Service	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_turla_service_png.yml
Windows: smbexec.py Service Installation	Omer Faruk Celik	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_hack_smbexec.yml
Windows: Malicious Service Installations	Florian Roth, Daniil Yugoslavskiy, oscd.community (update)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_service_installs.yml

FortiSIEM Rule	Author	Source Link
Windows: Meterpreter or Cobalt Strike Getsystem Service Installation	Teymur Kheirkhabarov, Ecco	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_meterpreter_or_cobaltstrike_getsystem_service_installation.yml
Windows: PsExec Tool Execution	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_tool_psexec.yml
Windows: Local User Creation	Patrick Bareiss	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_creation.yml
Windows: Local User Creation Via Powershell	@ROxPinTeddy	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_create_local_user.yml
Windows: Local User Creation Via Net.exe	Endgame, JHasenbusch (adapted to sigma for oscd.community)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_net_user_add.yml
Windows: Suspicious ANONYMOUS LOGON Local Account Created	James Pemberton / @4A616D6573	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_local_anon_logon_created.yml
Windows: New or Renamed User Account with $ in Attribute SamAccountName	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_new_or_renamed_user_account_with_dollar_sign.yml
Windows: AD Privileged Users or Groups Reconnaissance	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_account_discovery.yml
Windows: Administrator and Domain Admin Reconnaissance	Florian Roth (rule), Jack Croock (method)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_net_recon_activity.yml
Windows: Access to ADMIN$ Share	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_admin_share_access.yml

FortiSIEM Rule	Author	Source Link
Windows: Login with WMI	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_wmi_login.yml
Windows: Admin User Remote Logon	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_admin_rdp_login.yml
Windows: RDP Login from Localhost	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_localhost_login.yml
Windows: Interactive Logon to Server Systems	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_interactive_logons.yml
Windows: Pass the Hash Activity	Ilias el Matani (rule), The Information Assurance Directorate at the NSA (method)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_pass_the_hash.yml
Windows: Pass the Hash Activity 2	Dave Kennedy, Jeff Warren (method) / David Vassallo (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_pass_the_hash_2.yml
Windows: Successful Overpass the Hash Attempt	Roberto Rodriguez (source), Dominik Schaudel (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_overpass_the_hash.yml
Windows: RottenPotato Like Attack Pattern	@SBousseaden, Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_rottenpotato.yml
Windows: Hacktool Ruler	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_ruler.yml
Windows: Metasploit SMB Authentication	Chakib Gzenayi (@Chak092), Hosni Mribah	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_metasploit_authentication.yml
Windows: Kerberos Manipulation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_kerberos_manipulation.yml
Windows: Suspicious Kerberos RC4 Ticket Encryption	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_rc4_kerberos.yml

FortiSIEM Rule	Author	Source Link
Windows: Persistence and Execution at Scale via GPO Scheduled Task	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_GPO_scheduledtasks.yml
Windows: Powerview Add-DomainObjectAcl DCSync AD Extend Right	Samir Bousseaden; Roberto Rodriguez @Cyb3rWard0g; oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_account_backdoor_dcsync_rights.yml
Windows: AD Object WriteDAC Access	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_object_writedac_access.yml
Windows: Active Directory Replication from Non Machine Account	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_replication_non_machine_account.yml
Windows: AD User Enumeration	Maxime Thiebaut (@0xThiebaut)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_user_enumeration.yml
Windows: Enabled User Right in AD to Control User Objects	@neu5ron	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_active_directory_user_control.yml
Windows: Eventlog Cleared	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_eventlog_cleared.yml
Windows: MSHTA Suspicious Execution 01	Diego Perez (@darkquassar), Markus Neis, Swisscom (Improve Rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_mshta_execution.yml
Windows: Dumpert Process Dumper	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_hack_dumpert.yml
Windows: Blue Mockingbird	Trent Liffick (@tliffick)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_blue_mockingbird.yml
Windows: Windows PowerShell Web Request	James Pemberton / @4A616D6573	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/win_

FortiSIEM Rule	Author	Source Link
		powershell_web_request.yml
Windows: DNS Tunnel Technique from MuddyWater	@caliskanfurkan_	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_apt_muddywater_dnstunnel.yml
Windows: Advanced IP Scanner Detected	@ROxPinTeddy	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_advanced_ip_scanner.yml
Windows: APT29 Detected	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_apt29_thinktanks.yml
Windows: Baby Shark Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_babyshark.yml
Windows: Judgement Panda Credential Access Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_bear_activity_gtr19.yml
Windows: Logon Scripts - User-InitMprLogonScript	Tom Ueltschi (@c_APT_ure)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_logon_scripts_userinitmprlogonscript_proc.yml
Windows: BlueMashroom DLL Load	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_bluemashroom.yml
Windows: Password Change on Directory Service Restore Mode DSRM Account	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_dsrm_password_change.yml
Windows: Account Tampering - Suspicious Failed Logon Reasons	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logon_reasons.yml
Windows: Backup Catalog Deleted	Florian Roth (rule), Tom U. @c_APT_ure (collection)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_backup_delete.yml
Windows: Failed Code Integrity Checks	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_codeintegrity_check_failure.yml
Windows: DHCP Server Loaded the CallOut DLL	Dimitrios Slamaris	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_dhcp_config.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious LDAP-Attributes Used	xknow @xknow_ infosec	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_ldap_dataexchange.yml
Windows: Password Dumper Activity on LSASS		https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_lsass_dump.yml
Windows: Generic Password Dumper Activity on LSASS	Roberto Rodriguez, Teymur Kheirkhabarov, Dimitrios Slamaris, Mark Russinovich, Aleksey Potapov, oscd.community (update)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_lsass_dump_generic.yml
Windows: Suspicious PsExec Execution	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_psexec.yml
Windows: Suspicious Access to Sensitive File Extensions	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_raccess_sensitive_fext.yml
Windows: Secure Deletion with SDelete	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_sdelete.yml
Windows: Unauthorized System Time Modification	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_time_modification.yml
Windows: Windows Defender Exclusion Set	@Barry-Shooshooga	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_defender_bypass.yml
Windows: Windows Pcap Driver Installed	Cian Heasley	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_pcap_drivers.yml
Windows: Weak Encryption Enabled and Kerberoast	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_enable_weak_encryption.yml
Windows: Remote Task Creation via ATSVC Named Pipe	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_atsvc_task.yml
Windows: Chafer	Florian Roth,	https://-

FortiSIEM Rule	Author	Source Link
Activity	Markus Neis	github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_chafer_mar18.yml
Windows: WMIExec VBS Script	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_cloudhopper.yml
Windows: CrackMapExecWin Activity	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_dragonfly.yml
Windows: Elise Backdoor	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_elise.yml
Windows: Emissary Panda Malware SLLauncher Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_emissarypanda_sep19.yml
Windows: Empire Monkey Activity	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_empiremonkey.yml
Windows: Equation Group DLL-U Load	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_equationgroup_dll_u_load.yml
Windows: EvilNum Golden Chickens Deployment via OCX Files	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_evilnum_jul20.yml
Windows: GALLIUM Artefacts Via Hash Match	Tim Burrell	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_gallium.yml
Windows: GALLIUM Artefacts Via Hash and Process Match	Tim Burrell	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_gallium.yml
Windows: Windows Credential Editor Startup	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_hack_wce.yml
Windows: Greenbug Campaign Indicators	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_greenbug_may20.yml
Windows: Hurricane Panda Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_hurricane_panda.yml

FortiSIEM Rule	Author	Source Link
Windows: Judgement Panda Exfiltration Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_judgement_panda_gtr19.yml
Windows: Ke3chang Registry Key Modifications	Markus Neis, Swisscom	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_ke3chang_regadd.yml
Windows: Lazarus Session Highjacker	Trent Liffick (@tliffick), Bartlomiej Czyz (@bczyz1)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_lazarus_session_highjack.yml
Windows: Mustang Panda Dropper Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_mustangpanda.yml
Windows: Defrag Deactivation	Florian Roth, Bartlomiej Czyz (@bczyz1)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_slingshot.yml
Windows: Sofacy Trojan Loader Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_sofacy.yml
Windows: Ps.exe Renamed SysInternals Tool	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_ta17_293a_ps.yml
Windows: TAIDOOR RAT DLL Load	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_taidoor.yml
Windows: TropicTrooper Campaign November 2018	@41thexplorer, Microsoft Defender ATP	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_tropictrooper.yml
Windows: Turla Group Commands May 2020	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_turla_comrat_may20.yml
Windows: Unidentified Attacker November 2018 Activity 1	@41thexplorer, Microsoft Defender ATP	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_unidentified_nov_18.yml
Windows: Unidentified Attacker November 2018 Activity 2	@41thexplorer, Microsoft Defender ATP	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_unidentified_nov_18.yml
Windows: Winnti Malware HK University Campaign	Florian Roth, Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_winnti_mal_hk_jan20.yml

FortiSIEM Rule	Author	Source Link
Windows: Winnti Pipemon Characteristics	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_winnti_pipemon.yml
Windows: Operation Wocao Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_wocao.yml
Windows: ZxShell Malware	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_zxshell.yml
Windows: Active Directory User Backdoors	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_ad_user_backdoors.yml
Windows: Mimikatz DC Sync	Benjamin Delpy, Florian Roth, Scott Dermott	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dcsync.yml
Windows: Windows Event Auditing Disabled	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_disable_event_logging.yml
Windows: DPAPI Domain Backup Key Extraction	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dpapi_domain_backupkey_extraction.yml
Windows: DPAPI Domain Master Key Backup Attempt	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dpapi_domain_masterkey_backup_attempt.yml
Windows: External Disk Drive or USB Storage Device	Keith Wright	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_external_device.yml
Windows: Possible Impacket SecretDump Remote Activity	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_impacket_secretdump.yml
Windows: Obfuscated Powershell IEX invocation	Daniel Bohannon (@Mandiant/@FireEye), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_invoke_obfuscation_obfuscated_iex_services.yml
Windows: First Time Seen Remote Named Pipe	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_lm_namedpipe.yml
Windows: LSASS	Roberto Rodriguez	https://-

FortiSIEM Rule	Author	Source Link
Access from Non-System Account	@Cyb3rWard0g	github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_lsass_access_non_system_account.yml
Windows: Credential Dumping Tools Service Execution	Florian Roth, Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_creddumper.yml
Windows: WCE wceaux dll Access	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_wceaux_dll.yml
Windows: MMC20 Lateral Movement	@2xxeformyshirt (Security Risk Advisors) - rule; Teymur Kheirkhabarov (idea)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mmc20_lateral_movement.yml
Windows: NetNTLM Downgrade Attack	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_net_ntlm_downgrade.yml
Windows: Denied Access To Remote Desktop	Pushkarev Dmitry	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_not_allowed_rdp_access.yml
Windows: Possible DCShadow	Ilyas Ochkov, oscd.-community, Chakib Gzenayi (@Chak092), Hosni Mribah	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_possible_dc_shadow.yml
Windows: Protected Storage Service Access	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_protected_storage_service_access.yml
Windows: Scanner PoC for CVE-2019-0708 RDP RCE Vuln	Florian Roth (rule), Adam Bradbury (idea)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_bluekeep_poc_scanner.yml
Windows: RDP over Reverse SSH Tunnel	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_reverse_tunnel.yml
Windows: Register new Logon Process by Rubeus	Roberto Rodriguez (source), Ilyas Ochkov (rule), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_register_new_logon_process_by_rubeus.yml

FortiSIEM Rule	Author	Source Link
Windows: Remote PowerShell Sessions	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_remote_powershell_session.yml
Windows: Remote Registry Management Using Reg Utility	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_remote_registry_management_using_reg_utility.yml
Windows: SAM Registry Hive Handle Request	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_sam_registry_hive_handle_request.yml
Windows: SCM Database Handle Failure	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_scm_database_handle_failure.yml
Windows: SCM Database Privileged Operation	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_scm_database_privileged_operation.yml
Windows: Addition of Domain Trusts	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_add_domain_trust.yml
Windows: Addition of SID History to Active Directory Object	Thomas Patzke, @atc_project (improvements)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_add_sid_history.yml
Windows: Failed Logon From Public IP	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logon_source.yml
Windows: Failed Logins with Different Accounts from Single Source System	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logons_single_source.yml
Windows: Remote Service Activity via SVCCTL Named Pipe	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_svcctl_remote_service.yml
Windows: SysKey Registry Keys Access	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_syskey_registry_access.yml
Windows: Tap Driver Installation	Daniil Yugoslavskiy, Ian Davis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_tap_driver_installation.yml

FortiSIEM Rule	Author	Source Link
Windows: Transferring Files with Credential Data via Network Shares	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_transferring_files_with_credential_data_via_network_shares.yml
Windows: User Added to Local Administrators	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_added_to_local_administrators.yml
Windows: Failed to Call Privileged Service LsaRegisterLogonProcess	Roberto Rodriguez (source), Ilyas Ochkov (rule), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_couldnt_call_privileged_service_lsaregisterlogonprocess.yml
Windows: Suspicious Driver Loaded By User	xknow (@xknow_infosec), xorxes (@xor_xes)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_driver_loaded.yml
Windows: Suspicious Driver Load from Temp	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/driver_load/sysmon_susp_driver_load.yml
Windows: File Created with System Process Name	Sander Wiebing	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_creation_system_file.yml
Windows: Credential Dump Tools Dropped Files	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_cred_dump_tools_dropped_files.yml
Windows: Detection of SafetyKatz	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_ghostpack_safetykatz.yml
Windows: LSASS Memory Dump File Creation	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_lsass_memory_dump_file_creation.yml
Windows: Microsoft Office Add-In Loading	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_office_persistence.yml
Windows: QuarksPwDump Dump File	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_quarkspw_filedump.yml
Windows: RedMimicry Winnti Playbook Dropped File	Alexander Rausch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_redmimicry_winnti_filedrop.yml
Windows: Suspicious ADSI-Cache Usage By Unknown Tool	xknow @xknow_infosec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_adsi_cache_usage.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious desktop.ini Action	Maxime Thiebaut (@0xThiebaut)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_desktop_ini.yml
Windows: Suspicious PROCEXP152 sys File Created In TMP	xknow (@xknow_infosec), xorxes (@xor_xes)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_procexplorer_driver_created_in_tmp_folder.yml
Windows: Hijack Legit RDP Session to Move Laterally	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_tsclient_filewrite_startup.yml
Windows: Windows Web shell Creation	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_webshell_creation_detect.yml
Windows: WMI Persistence - Script Event Consumer File Write	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_wmi_persistence_script_event_consumer_write.yml
Windows: Suspicious Desktopimgdownldr Target File	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/win_susp_desktopimgdownldr_file.yml
Windows: In-memory PowerShell	Tom Kern, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_in_memory_powershell.yml
Windows: PowerShell load within System Management Automation DLL	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_powershell_execution_moduleload.yml
Windows: Fax Service DLL Search Order Hijack	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_fax_dll.yml
Windows: Possible Process Hollowing Image Loading	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_image_load.yml
Windows: .NET DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_assembly_dll_load.yml
Windows: CLR DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_clr_dll_load.yml
Windows: GAC DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_gac_dll_load.yml

FortiSIEM Rule	Author	Source Link
Windows: Active Directory Parsing DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dsparse_dll_load.yml
Windows: Active Directory Kerberos DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_kerberos_dll_load.yml
Windows: VBA DLL Loaded Via Office Applications	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_winword_vbadll_load.yml
Windows: WMI DLL Loaded Via Office Applications	Michael R. (@nahamike01)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_winword_wmidll_load.yml
Windows: Loading dbghelp dbgcore DLL from Suspicious Processes	Perez Diego (@darkquassar), oscd.community, Ecco	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_suspicious_dbghelp_dbgcore_load.yml
Windows: Svchost DLL Search Order Hijack	SBousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_svchost_dll_search_order_hijack.yml
Windows: Unsigned Image Loaded Into LSASS Process	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_unsigned_image_loaded_into_lsass.yml
Windows: Suspicious WMI Modules Loaded	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_wmi_module_load.yml
Windows: WMI Persistence - Command Line Event Consumer	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_wmi_persistence_commandline_event_consumer.yml
Windows: Registry Entries Found For Azorult Malware	Trent Liffick	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/mal_azorult_reg.yml
Windows: Registry Entries Found For FlowCloud Malware	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_

FortiSIEM Rule	Author	Source Link
		mal_flowcloud.yml
Windows: Octopus Scanner Malware Detected	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_octopus_scanner.yml
Windows: Registry Entries For Ursnif Malware	megan201296	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_ursnif.yml
Windows: Dllhost.exe Internet Connection	bartblaze	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_dllhost_net_connections.yml
Windows: Suspicious Typical Malware Back Connect Ports	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_malware_backconnect_ports.yml
Windows: Notepad Making Network Connection	EagleEye Team	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_notepad_network_connection.yml
Windows: PowerShell Network Connections	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_powershell_network_connection.yml
Windows: RDP Over Reverse SSH Tunnel	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_rdp_reverse_tunnel.yml
Windows: Regsvr32 Network Activity	Dmitriy Lifanov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_regsvr32_network_activity.yml
Windows: Remote PowerShell Session	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_remote_powershell_session_network.yml
Windows: Rundll32 Internet Connection	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_rundll32_net_connections.yml
Windows: Network Connections From Executables in Suspicious Program Locations	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_susp_prog_location_network_connection.yml

FortiSIEM Rule	Author	Source Link
Windows: Outbound RDP Connections From Suspicious Executables	Markus Neis - Swisscom	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_susp_rdp.yml
Windows: Outbound Kerberos Connection From Suspicious Executables	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_suspicious_outbound_kerberos_connection.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_suspicious_outbound_kerberos_connection.yml
Windows: Microsoft Binary Github Communication	Michael Haag (idea), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_win_binary_github_com.yml
Windows: Microsoft Binary Suspicious External Communication	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_win_binary_susp_com.yml
Windows: Data Compressed - Powershell	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_data_compressed.yml
Windows: Dnscat Execution	Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_dnscat_execution.yml
Windows: PowerShell Credential Prompt	John Lambert (idea), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_prompt_credentials.yml
Windows: Powershell Profile ps1 Modification	HieuTT35	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_suspicious_profile_create.yml

FortiSIEM Rule	Author	Source Link
Windows: Credentials Dumping Tools Accessing LSASS Memory	Florian Roth, Roberto Rodriguez, Dimitrios Slamaris, Mark Russinovich, Thomas Patzke, Teymur Kheirkhabarov, Sherif Eldeeb, James Dickenson, Aleksey Potapov, oscd.community (update)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_cred_dump_lsass_access.yml
Windows: Suspicious In-Memory Module Execution	Perez Diego (@darkquassar), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_in_memory_assembly_execution.yml
Windows: Suspect Svchost Memory Asccess	Tim Burrell	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_invoke_phantom.yml
Windows: Credential Dumping by LaZagne	Bhabesh Raj	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_lazagne_cred_dump_lsass_access.yml
Windows: LSASS Memory Dump	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_lsass_memdump.yml
Windows: Malware Shellcode in Verclsid Target Process	John Lambert (tech), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_malware_verclsid_shellcode.yml
Windows: Mimikatz through Windows Remote Management	Patryk Prauze - ING Tech	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_mimikatz_trough_winrm.yml
Windows: Turla Group Lateral Movement	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_turla_commands.yml
Windows: Hiding Files with Attrib exe	Sami Ruohonen	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_attrib_hiding_files.yml
Windows: Modification of Boot Configuration	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_bootconf_mod.yml

FortiSIEM Rule	Author	Source Link
Windows: SquiblyTwo	Markus Neis / Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_bypass_squiblytwo.yml
Windows: Change Default File Association	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_change_default_file_association.yml
Windows: Cmdkey Cached Credentials Recon	jmallette	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_cmdkey_recon.yml
Windows: CMSTP UAC Bypass via COM Object Access	Nik Seetharaman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_cmstp_com_object_access.yml
Windows: Cmd exe CommandLine Path Traversal	xknow @xknow_infosec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_commandline_path_traversal.yml
Windows: Unusual Control Panel Items	Kyaw Min Thein, Furkan Caliskan (@caliskanfurkan_)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_control_panel_item.yml
Windows: Copying Sensitive Files with Credential Data	Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_copying_sensitive_files_with_credential_data.yml
Windows: Fireball Archer Malware Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_fireball.yml
Windows: Maze Ransomware	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_maze_ransomware.yml
Windows: Snatch Ransomware	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_snatch_ransomware.yml
Windows: Data Compressed - rar.exe	Timur Zinniatullin, E.M. Anhaus, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_data_compressed_with_rar.yml
Windows: DNS Exfiltration and Tunneling Tools Execution	Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dns_exfiltration_tools_execution.yml
Windows: DNSCat2	Cian Heasley	https://

FortiSIEM Rule	Author	Source Link
Powershell Detection Via Process Creation		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dnscat2_powershell_implementation.yml
Windows: Encoded FromBase64String	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_encoded_frombase64string.yml
Windows: Encoded IEX	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_encoded_iex.yml
Windows: COMPlus-ETWEnabled Command Line Arguments	Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threat Research)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_etw_modification_cmdline.yml
Windows: Disabling ETW Trace	@neu5ron, Florian Roth, Jonhnathan Ribeiro, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_etw_trace_evasion.yml
Windows: Exfiltration and Tunneling Tools Execution	Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exfiltration_and_tunneling_tools_execution.yml
Windows: Exploit for CVE-2015-1641	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2015_1641.yml
Windows: Exploit for CVE-2017-0261	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_0261.yml
Windows: Droppers Exploiting CVE-2017-11882	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_11882.yml
Windows: Exploit for CVE-2017-8759	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_8759.yml
Windows: Exploiting SetupComplete.cmd CVE-2019-1378	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2019_1378.yml
Windows: Exploiting CVE-2019-1388	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2019_1388.yml
Windows: Exploited CVE-2020-10189	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
Zoho ManageEngine		creation/win_exploit_cve_2020_10189.yml
Windows: Suspicious PrinterPorts Creation CVE-2020-1048	EagleEye Team, Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2020_1048.yml
Windows: DNS RCE CVE-2020-1350	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2020_1350.yml
Windows: File/Folder Permissions Modifications Via Command line Utilities	Jakob Weinzettl, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_file_permission_modifications.yml
Windows: Grabbing Sensitive Hives via Reg Utility	Teymur Kheirkhabarov, Endgame, JHasenbusch, Daniil Yugoslavskiy, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_grabbing_sensitive_hives_via_reg.yml
Windows: Bloodhound and Sharphound Hack Tool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_bloodhound.yml
Windows: Koadic Execution	wagga	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_koadic.yml
Windows: Rubeus Hack Tool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_rubeus.yml
Windows: SecurityXploded Tool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_secutyxploded.yml
Windows: HH exe Execution	E.M. Anhaus (originally from Atomic Blue Detections, Dan Beavin), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hh_chm.yml
Windows: CreateMiniDump Hacktool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hktl_createminidump.yml
Windows: HTML Help Shell Spawn	Maxim Pavlunin	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_html_help_spawn.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious HWP Sub Processes	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hwp_exploits.yml
Windows: Impacket Lateralization Detection	Ecco	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_impacket_lateralization.yml
Windows: Indirect Command Execution	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_indirect_cmd.yml
Windows: Suspicious Debugger Registration Cmdline	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_install_reg_debugger_backdoor.yml
Windows: Interactive AT Job	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_interactive_at.yml
Windows: Invoke-Obfuscation Obfuscated IEX Invocation when to create process	Daniel Bohannon (@Mandiant/@FireEye), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_invoke_obfuscation_obfuscated_iex_commandline.yml
Windows: Windows Kernel and 3rd-Party Drivers Exploits Token Stealing	Teymur Kheirkhabarov (source), Daniil Yugoslavskiy (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_kernel_and_3rd_party_drivers_exploits_token_stealing.yml
Windows: MSHTA Spawned by SVCHOST	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_lethalhta.yml
Windows: Local Accounts Discovery	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_local_system_owner_account_discovery.yml
Windows: LSASS Memory Dumping Using procdump	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_lsass_dump.yml
Windows: Adwind	Florian Roth, Tom	https://

FortiSIEM Rule	Author	Source Link
Remote Access Tool JRAT	Ueltschi	github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mal_adwind.yml
Windows: Dridex Process Pattern	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_dridex.yml
Windows: DTRACK Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_dtrack.yml
Windows: Emotet Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_emotet.yml
Windows: Formbook Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_formbook.yml
Windows: QBot Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_qbot.yml
Windows: Ryuk Ransomware	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_ryuk.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_ryuk.yml
Windows: WScript or CScript Dropper	Margaritis Dimitrios (idea), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_script_dropper.yml
Windows: Trickbot Malware Recon Activity	David Burkett, Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_trickbot_recon_activity.yml
Windows: WannaCry Ransomware	Florian Roth (rule), Tom U. @c_APT_ure (collection)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_wannacry.yml
Windows: MavInject Process Injection	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mavinject_proc_inj.yml
Windows: Meterpreter or Cobalt	Teymur Kheirkhabarov,	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
Strike Getsystem Service Start	Ecco	creation/win_meterpreter_or_cobaltstrike_getsystem_service_start.yml
Windows: Mimikatz Command Line	Teymur Kheirkhabarov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mimikatz_command_line.yml
Windows: MMC Spawning Windows Shell	Karneades, Swisscom CSIRT	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mmc_spawn_shell.yml
Windows: Mouse Lock Credential Gathering	Cian Heasley	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mouse_lock.yml
Windows: Mshta JavaScript Execution	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mshta_javascript.yml
Windows: MSHTA Spawning Windows Shell	Michael Haag	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mshta_spawn_shell.yml
Windows: Quick Execution of a Series of Suspicious Commands	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_multiple_suspicious_cli.yml
Windows: Windows Network Enumeration	Endgame, JHasenbusch (ported for oscd.community)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_net_enum.yml
Windows: Netsh RDP Port Opening	Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_allow_port_rdp.yml
Windows: Netsh Port or Application Allowed	Markus Neis, Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_fw_add.yml
Windows: Netsh Program Allowed with Suspcious Location	Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_fw_add_susp_image.yml
Windows: Network Trace with netsh exe	Kutepov Anton, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_packet_capture.yml
Windows: Netsh Port	Florian Roth	https://-

FortiSIEM Rule	Author	Source Link
Forwarding		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_port_fwd.yml
Windows: Netsh RDP Port Forwarding	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_port_fwd_3389.yml
Windows: Harvesting of Wifi Credentials Using netsh exe	Andreas Hunkeler (@Karneades)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_wifi_credential_harvesting.yml
Windows: Network Sniffing	Timur Zinniatullin, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_network_sniffing.yml
Windows: New Service Creation via sc.exe	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_new_service_creation.yml
Windows: Non Interactive PowerShell	Roberto Rodriguez @Cyb3rWard0g (rule), oscd.-community (improvements)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_non_interactive_powershell.yml
Windows: Microsoft Office Product Spawning Windows Shell	Michael Haag, Florian Roth, Markus Neis, Elastic, FPT.EagleEye Team	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_office_shell.yml
Windows: MS Office Product Spawning Exe in User Directory	Jason Lynch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_office_spawn_exe_from_users_directory.yml
Windows: Executable Used by PlugX in Uncommon Location	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_plugx_susp_exe_locations.yml
Windows: Possible Applocker Bypass	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_possible_applocker_bypass.yml
Windows: Detection of Possible Rotten Potato	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_possible_privilege_escalation_using_rotten_potato.yml
Windows: Powershell	Markus Neis	https://-

FortiSIEM Rule	Author	Source Link
AMSI Bypass via NET Reflection		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_amsi_bypass.yml
Windows: Audio Capture via PowerShell	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_audio_capture.yml
Windows: PowerShell Base64 Encoded Shellcode	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_b64_shellcode.yml
Windows: Suspicious Bitsadmin Job via PowerShell	Endgame, JHasenbusch (ported to sigma for oscd.community)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_bitsjob.yml
Windows: Suspicious PowerShell Execution via DLL	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_dll_execution.yml
Windows: PowerShell Downgrade Attack	Harish Segar (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_downgrade_attack.yml
Windows: Download via PowerShell URL	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_download.yml
Windows: FromBase64String Command Line	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_frombase64string.yml
Windows: Suspicious PowerShell Parameter Substring	Florian Roth (rule), Daniel Bohannon (idea), Roberto Rodriguez (Fix)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_suspicious_parameter_variation.yml
Windows: Suspicious XOR Encoded PowerShell Command Line	Sami Ruohonen, Harish Segar (improvement)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_xor_commandline.yml
Windows: Default PowerSploit and Empire Schtasks Persistence	Markus Neis, @Karneades	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powersploit_empire_schtasks.yml
Windows: Windows Important Process	vburov	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
Started From Suspicious Parent Directories		creation/win_proc_wrong_parent.yml
Windows: Bitsadmin Download	Michael Haag	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_process_creation_bitsadmin_download.yml
Windows: Process Dump via Rundll32 and Comsvcs dll	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_process_dump_rundll32_comsvcs.yml
Windows: PsExec Service Start	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_psexesvc_start.yml
Windows: Query Registry	Timur Zinniatullin, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_query_registry.yml
Windows: MSTSC Shadowing	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_rdp_hijack_shadowing.yml
Windows: RedMimicry Winnti Playbook Execute	Alexander Rausch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_redmimicry_winnti_proc.yml
Windows: Remote PowerShell Session for creating process	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_remote_powershell_session_process.yml
Windows: System Time Discovery	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_remote_time_discovery.yml
Windows: Renamed Binary	Matthew Green - @mgreen27, Ecco, James Pemberton / @4A616D6573, oscd.community (improvements), Andreas Hunkeler (@Karneades)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_binary.yml
Windows: Highly Relevant Renamed Binary	Matthew Green - @mgreen27, Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_binary_highly_relevant.yml

FortiSIEM Rule	Author	Source Link
Windows: Renamed jusched exe	Markus Neis, Swisscom	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_jusched.yml
Windows: Execution of Renamed PaExec	Jason Lynch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_paexec.yml
Windows: Renamed PowerShell	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_powershell.yml
Windows: Renamed ProcDump	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_procdump.yml
Windows: Renamed PsExec	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_psexec.yml
Windows: Run PowerShell Script from ADS	Sergey Soldatov, Kaspersky Lab, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_run_powershell_script_from_ads.yml
Windows: Possible Shim Database Persistence via sdbinst exe	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_sdbinst_shim_persistence.yml
Windows: Manual Service Execution	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_service_execution.yml
Windows: Stop Windows Service	Jakob Weinzettl, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_service_stop.yml
Windows: Shadow Copies Access via Symlink	Teymur Kheirkhabarov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_access_symlink.yml
Windows: Shadow Copies Creation Using Operating Systems Utilities	Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_creation.yml
Windows: Shadow Copies Deletion Using Operating Systems Utilities	Florian Roth, Michael Haag, Teymur Kheirkhabarov,	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_deletion.yml

FortiSIEM Rule	Author	Source Link
	Daniil Yugoslavskiy, oscd.community	
Windows: Windows Shell Spawning Suspicious Program	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shell_spawn_susp_program.yml
Windows: SILENTTRINITY Stager Execution	Aleksey Potapov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_silenttrinity_stage_use.yml
Windows: Audio Capture via SoundRecorder	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_soundrec_audio_capture.yml
Windows: Possible SPN Enumeration	Markus Neis, keepwatch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_spn_enum.yml
Windows: Possible Ransomware or Unauthorized MBR Modifications	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_bcdedit.yml
Windows: Application Allowlisting Bypass via Bginfo	Beyu Denis, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_bginfo.yml
Windows: Suspicious Calculator Usage	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_calc.yml
Windows: Possible App Allowlisting Bypass via WinDbg CDB as a Shell code Runner	Beyu Denis, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cdb.yml
Windows: Suspicious Certutil Command	Florian Roth, juju4, keepwatch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_certutil_command.yml
Windows: Certutil Encode	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_certutil_encode.yml
Windows: Suspicious Commandline Escape	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cli_escape.yml

FortiSIEM Rule	Author	Source Link
Windows: Command Line Execution with Suspicious URL and AppData Strings	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cmd_http_appdata.yml
Windows: Suspicious Code Page Switch	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_codepage_switch.yml
Windows: Reconnaissance Activity with Net Command	Florian Roth, Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_commands_recon_activity.yml
Windows: Suspicious Compression Tool Parameters	Florian Roth, Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_compression_params.yml
Windows: Process Dump via Comsvcs DLL	Modexp (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_comsvcs_procdump.yml
Windows: Copy from Admin Share	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_copy_lateral_movement.yml
Windows: Suspicious Copy From or To System32	Florian Roth, Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_copy_system32.yml
Windows: Covenant Launcher Indicators	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_covenant.yml
Windows: CrackMapExec Command Execution	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_crackmapexec_execution.yml
Windows: CrackMapExec PowerShell Obfuscation	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_crackmapexec_powershell_obfuscation.yml
Windows: Suspicious Parent of Csc.exe	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_csc.yml
Windows: Suspicious Csc.exe Source File Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_csc_folder.yml
Windows: Suspicious Curl Usage on Win-	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
dows		creation/win_susp_curl_download.yml
Windows: Suspicious Curl File Upload	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_curl_fileupload.yml
Windows: Curl Start Combination	Sreeman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_curl_start_combo.yml
Windows: ZOHO Dctask64 Process Injection	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dctask64_proc_inject.yml
Windows: Suspicious Desktopimgdownldr Command	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_desktopimgdownldr.yml
Windows: Devtoolslauncher.exe Executing Specified Binary	Beyu Denis, oscd.community (rule), @_felamos (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_devtoolslauncher.yml
Windows: Direct Autorun Keys Modification	Victor Sergeev, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_direct_asep_reg_keys_modification.yml
Windows: Disabled IE Security Features	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_disable_ie_features.yml
Windows: DIT Snapshot Viewer Use	Furkan Caliskan (@caliskanfurkan_)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ditsnap.yml
Windows: Application Allowlisting Bypass via Dnx.exe	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dnx.yml
Windows: Suspicious Double File Extension	Florian Roth (rule), @blu3_team (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_double_extension.yml
Windows: Application Allowlisting Bypass via Dxcap.exe	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dxcap.yml
Windows: Suspicious Eventlog Clear or Configuration Using Wevtutil or Powershell or Wmic	Ecco, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_eventlog_clear.yml

FortiSIEM Rule	Author	Source Link
Windows: Executables Started in Suspicious Folder	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_exec_folder.yml
Windows: Execution in Non-Executable Folder	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_execution_path.yml
Windows: Execution in Webserver Root Folder	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_execution_path_webserver.yml
Windows: Explorer Root Flag Process Tree Break	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_explorer_break_proctree.yml
Windows: Suspicious File Characteristics Due to Missing Fields	Markus Neis, Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_file_characteristics.yml
Windows: Findstr Launching lnk File	Trent Liffick	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_findstr_lnk.yml
Windows: Firewall Disabled via Netsh	Fatih Sirin	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_firewall_disable.yml
Windows: Fsutil Suspicious Invocation	Ecco, E.M. Anhaus, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_fsutil_usage.yml
Windows: Suspicious GUP.exe Usage	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_gup.yml
Windows: IIS Native-Code Module Command Line Installation	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_iss_module_install.yml
Windows: Windows Defender Download Activity	Matthew Matchen	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_mpcmdrun_download.yml
Windows: Suspicious MsiExec Directory	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_msiexec_cwd.yml
Windows: MsiExec Web Install	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
		creation/win_susp_msiexec_web_install.yml
Windows: Malicious Payload Download via Office Binaries	Beyu Denis, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_msoffice.yml
Windows: Net.exe Execution For Discovery	Michael Haag, Mark Woan (improvements), James Pemberton / @4A616D6573 / oscd.community (improvements)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_net_execution.yml
Windows: Suspicious Netsh.DLL Persistence	Victor Sergeev, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_netsh_dll_persistence.yml
Windows: Invocation of Active Directory Diagnostic Tool ntdsutil exe	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ntdsutil.yml
Windows: Application Allowlisting Bypass via DLL Loaded by odbcconf exe	Kirill Kiryanov, Beyu Denis, Daniil Yugoslavskiy, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_odbcconf.yml
Windows: OpenWith.exe Executing Specified Binary	Beyu Denis, oscd.-community (rule), @harr0ey (idea)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_openwith.yml
Windows: Suspicious Execution from Outlook	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_outlook.yml
Windows: Execution in Outlook Temp Folder	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_outlook_temp.yml
Windows: Ping Hex IP	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ping_hex_ip.yml
Windows: Empire PowerShell Launch Parameters	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_empire_launch.yml
Windows: Empire	Ecco	https://-

FortiSIEM Rule	Author	Source Link
PowerShell UAC Bypass		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_empire_uac_bypass.yml
Windows: Suspicious Encoded PowerShell Command Line	Florian Roth, Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_enc_cmd.yml
Windows: PowerShell Encoded Character Syntax	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_encoded_param.yml
Windows: Malicious Base64 Encoded PowerShell Keywords in Command Lines	John Lambert (rule)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_hidden_b64_cmd.yml
Windows: Suspicious PowerShell Invocation Based on Parent Process	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_parent_combo.yml
Windows: Suspicious PowerShell Parent Process	Teymur Kheirkhabarov, Harish Segar (rule)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_parent_process.yml
Windows: Suspicious Use of Procdump	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_procdump.yml
Windows: Programs starting from Suspicious Location	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_prog_location_process_starts.yml
Windows: PowerShell Script Run in AppData	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ps_appdata.yml
Windows: PowerShell DownloadFile	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ps_downloadfile.yml
Windows: Psr.exe Capture Screenshots	Beyu Denis, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_psr_capture_screenshots.yml
Windows: Rar with Password or Compression Level	@ROxPinTeddy	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rar_flags.yml
Windows: Suspicious	juju4	https://-

FortiSIEM Rule	Author	Source Link
RASdial Activity		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rasdial_activity.yml
Windows: Suspicious Reconnaissance Activity via net group or localgroup	Florian Roth, omkar72	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_recon_activity.yml
Windows: Suspicious Regsvr32 Usage	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_regsvr32_anomalies.yml
Windows: Regsvr32 Flags Anomaly	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_regsvr32_flags_anomaly.yml
Windows: Renamed ZOHO Dctask64	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_renamed_dctask64.yml
Windows: Renamed SysInternals Debug View	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_renamed_debugview.yml
Windows: Suspicious Process Start Locations	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_run_locations.yml
Windows: Suspicious Arguments in Rundll32 Usage	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rundll32_activity.yml
Windows: Suspicious DLL Call by Ordinal	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rundll32_by_ordinal.yml
Windows: Scheduled Task Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_schtask_creation.yml
Windows: WSF JSE JS VBA VBE File Execution	Michael Haag	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_script_execution.yml
Windows: Suspicious Service Path Modification	Victor Sergeev, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_service_path_modification.yml
Windows: Squirrel Lolbin	Karneades / Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_squirrel_lolbin.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious Svchost Process	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_svchost.yml
Windows: Suspect Svchost Activity	David Burkett	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_svchost_no_cli.yml
Windows: Sysprep on AppData Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_sysprep_appdata.yml
Windows: Suspicious SYSVOL Domain Group Policy Access	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_sysvol_access.yml
Windows: Taskmgr Created By Local SYSTEM Account	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_taskmgr_localsystem.yml
Windows: Process Launch from Taskmgr	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_taskmgr_parent.yml
Windows: Suspicious tscon.exe Created By Local SYSTEM Account	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_tscon_localsystem.yml
Windows: Suspicious RDP Redirect Using tscon.exe	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_tscon_rdp_redirect.yml
Windows: Suspicious Use of CSharp Interactive Console	Michael R. (@nahamike01)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_use_of_csharp_console.yml
Windows: Suspicious Userinit Child Process	Florian Roth (rule), Samir Bousseaden (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_userinit_child.yml
Windows: Whoami Execution	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_whoami.yml
Windows: Suspicious WMI Execution	Michael Haag, Florian Roth, juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_wmi_execution.yml
Windows: Sysmon Driver Unload	Kirill Kiryanov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
		creation/win_sysmon_driver_unload.yml
Windows: System File Execution Location Anomaly	Florian Roth, Patrick Bareiss	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_system_exe_anomaly.yml
Windows: Tap Installer Execution	Daniil Yugoslavskiy, Ian Davis, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_tap_installer_execution.yml
Windows: Tasks Folder Evasion	Sreeman	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_task_folder_evasion.yml
Windows: Terminal Service Process Spawn	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_termserv_proc_spawn.yml
Windows: Domain Trust Discovery	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community, omkar72	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dsquery_domain_trust_discovery.yml ; https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_trust_discovery.yml
Windows: Bypass UAC via CMSTP	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_cmstp.yml
Windows: Bypass UAC via Fod-helper.exe	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_fodhelper.yml
Windows: Bypass UAC via WSReset exe	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_wsreset.yml
Windows: Possible Privilege Escalation via Weak Service Permissions	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_using_sc_to_change_sevice_image_path_by_non_admin.yml
Windows: Java Running with Remote	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
Debugging		creation/win_vul_java_remote_debugging.yml
Windows: Webshell Detection With Command Line Keywords	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_detection.yml
Windows: Webshell Recon Detection Via CommandLine Processes	Cian Heasley	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_recon_detection.yml
Windows: Shells Spawned by Web Servers	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_spawn.yml
Windows: Run Whoami as SYSTEM	Teymur Kheirkhabarov	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_whoami_as_system.yml
Windows: Windows 10 Scheduled Task SandboxEscaper 0-day	Olaf Hartong	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_win10_sched_task_0day.yml
Windows: WMI Backdoor Exchange Transport Agent	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_backdoor_exchange_transport_agent.yml
Windows: WMI Persistence - Script Event Consumer	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_persistence_script_event_consumer.yml
Windows: WMI Spawning Windows PowerShell	Markus Neis / @Karneades	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_spwns_powershell.yml
Windows: Wmiprvse Spawning Process	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmiprvse_spawning_process.yml
Windows: Microsoft Workflow Compiler	Nik Seetharaman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_workflow_compiler.yml
Windows: Wsreset UAC Bypass	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wsreset_uac_bypass.yml
Windows: XSL Script Processing	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_xsl_script_processing.yml

FortiSIEM Rule	Author	Source Link
Windows: Leviathan Registry Key Activity	Aidan Bracher	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_leviathan.yml
Windows: OceanLotus Registry Activity	megan201296	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_oceanlotus_registry.yml
Windows: Pandemic Registry Key	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_pandemic.yml
Windows: Autorun Keys Modification	Victor Sergeev, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_asep_reg_keys_modification.yml
Windows: Suspicious New Printer Ports in Registry CVE-2020-1048	EagleEye Team, Florian Roth, NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_cve-2020-1048.yml
Windows: DHCP Callout DLL Installation	Dimitrios Slamaris	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_dhcp_calloutdll.yml
Windows: Disable Security Events Logging Adding Reg Key MiniNt	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_disable_security_events_logging_adding_reg_key_minint.yml
Windows: DNS ServerLevelPluginDll Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_dns_serverlevelplugindll.yml
Windows: COMPlus-ETWEnabled Registry Modification	Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threat Research)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_etw_modification.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_etw_disabled.yml
Windows: Windows Credential Editor Install Via Registry	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_hack_wce_reg.yml
Windows: Logon Scripts UserInitMprLogonScript Registry	Tom Ueltschi (@c_APT_ure)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_logon_scripts_userinitmprlogonscript_reg.yml

FortiSIEM Rule	Author	Source Link
Windows: Narrator s Feedback-Hub Persistence	Dmitriy Lifanov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_narrator_feedback_persistance.yml
Windows: New DLL Added to AppCertDlls Registry Key	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_new_dll_added_to_appcertdlls_registry_key.yml
Windows: New DLL Added to AppInitDLLs Registry Key	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_new_dll_added_to_appinit_dlls_registry_key.yml
Windows: Possible Privilege Escalation via Service Permissions Weakness	Teymur Kheirkhabarov	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_possible_privilege_escalation_via_service_registry_permissions_weakness.yml
Windows: RDP Registry Modification	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_rdp_registry_modification.yml
Windows: RDP Sensitive Settings Changed	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_rdp_settings_hijack.yml
Windows: RedMimicry Winnti Playbook Registry Manipulation	Alexander Rausch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_redmimicry_winnti_reg.yml
Windows: Office Security Settings Changed	Trent Liffick (@tliffick)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_reg_office_security.yml
Windows: Windows Registry Persistence COM Key Linking	Kutepov Anton, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_persistence_key_linking.yml
Windows: Windows Registry Persistence COM Search Order Hijacking	Maxime Thiebaut (@0xThiebaut)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_persistence_search_order.yml
Windows: Windows Registry Trust Record Modification	Antonlovesdnb	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_trust_record_modification.yml
Windows: Security Support Provider SSP Added to LSA Configuration	iwillkeepwatch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_ssp_added_lsa_config.yml

FortiSIEM Rule	Author	Source Link
Windows: Sticky Key Like Backdoor Usage	Florian Roth, @tw-jackomo	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_stickykey_like_backdoor.yml
Windows: Suspicious RUN Key from Download	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_download_run_key.yml
Windows: DLL Load via LSASS	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_lsass_dll_load.yml
Windows: Suspicious Camera and Microphone Access	Den Iuzvyk	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_mic_cam_access.yml
Windows: Registry Persistence via Explorer Run Key	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_reg_persist_explorer_run.yml
Windows: New RUN Key Pointing to Suspicious Folder	Florian Roth, Markus Neis, Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_run_key_img_folder.yml
Windows: Suspicious Service Installed	xknow (@xknow_infosec), xorxes (@xor_xes)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_service_installed.yml
Windows: Suspicious Keyboard Layout Load	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_suspicious_keyboard_layout_load.yml
Windows: Usage of Sysinternals Tools	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_sysinternals_eula_accepted.yml
Windows: UAC Bypass via Event Viewer	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_uac_bypass_eventvwr.yml
Windows: UAC Bypass via Sdclt	Omer Yampel	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_uac_bypass_sdclt.yml
Windows: Registry Persistence Mechanisms	Karneades	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_win_reg_persistence.yml
Windows: Azure Browser SSO Abuse	Den Iuzvyk	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_abusing_azure_browser_sso.yml

FortiSIEM Rule	Author	Source Link
Windows: Executable in ADS	Florian Roth, @0xrawsec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_ads_executable.yml
Windows: Alternate PowerShell Hosts Pipe	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_alternate_powershell_hosts_pipe.yml
Windows: Turla Group Named Pipes	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_apt_turla_namedpipes.yml
Windows: CactusTorch Remote Thread Creation	@SBousseaden (detection), Thomas Patzke (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cactustorch.yml
Windows: CMSTP Execution	Nik Seetharaman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_cmstp_execution.yml
Windows: CobaltStrike Process Injection	Olaf Hartong, Florian Roth, Aleksey Potapov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cobaltstrike_process_injection.yml
Windows: CreateRemoteThread API and LoadLibrary	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_createremotethread_loadlibrary.yml
Windows: Cred Dump Tools Via Named Pipes	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cred_dump_tools_named_pipes.yml
Windows: Malicious Named Pipe	Florian Roth	https://github.

FortiSIEM Rule	Author	Source Link
		com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_mal_namedpipes.yml
Windows: Password Dumper Remote Thread in LSASS	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_password_dumper_lsass.yml
Windows: Possible DNS Rebinding	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_possible_dns_rebinding.yml
Windows: Raw Disk Access Using Illegitimate Tools	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_raw_disk_access_using_illegitimate_tools.yml
Windows: PowerShell Rundll32 Remote Thread Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_susp_powershell_rundll32.yml
Windows: Suspicious Remote Thread Created	Perez Diego (@darkquassar), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_suspicious_remote_thread.yml
Windows: WMI Event Subscription	Tom Ueltschi (@c_APT_ure)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_wmi_event_subscription.yml
Windows: Suspicious Scripting in a WMI Consumer	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_wmi_susp_scripting.yml

What's New in 6.1.2

This document describes new and enhanced features, bug fixes and device support for the FortiSIEM 6.1.2 release.

This is a hardware appliance only release supporting the FortiSIEM 3500F, 2000F, and 500F appliances. It has the same code content as the software only release 6.1.1.

- FortiSIEM 3500F Hardware Appliance Support
- FortiSIEM 2000F Hardware Appliance Support
- Migration for FortiSIEM 500F Collector Appliance
- Upgrade Overview
- Known Issues

FortiSIEM 3500F Hardware Appliance Support

FortiSIEM 6.1.2 can be installed fresh on 3500F hardware appliance. You can also migrate from 5.x or earlier releases. For details see Upgrade Overview.

FortiSIEM 2000F Hardware Appliance Support

FortiSIEM 6.1.2 can be installed fresh on 2000F hardware appliance. You can also migrate from 5.x releases and upgrade from 6.1.0 or 6.1.1 release. For details see Upgrade Overview.

Migration for FortiSIEM 500F Collector Appliance

500F Collectors running pre-6.1.0 versions can be migrated to 6.1.2. For details see Upgrade Overview.

Upgrade Overview

The following sections provide an overview of how to upgrade to release 6.1.2:

- Migrate from pre-5.3.0 to 6.1.2
- Migrate from 5.3.x or 5.4.x to 6.1.2
- Upgrade from 6.1.0 or 6.1.1 to 6.1.2
- Upgrade via Proxy
- Post Migration Health Check

FortiSIEM 2000F and 3500F appliances run mostly as an all-in-one Supervisor. However they can also be deployed as a Cluster with external storage. The following instructions cover the general case. If you are not running Workers, then skip the Worker, NFS, and Elasticsearch-related portions.

Migrate from pre-5.3.0 to 6.1.2

To migrate hardware from a pre-5.3.0 to the 6.1.2 release, follow these steps:

- Standalone – Complete steps 1b, and 1c.
- Standalone with Collectors - Complete steps 1b, 1c, 2a, 3, and 5.
- General setup with Workers and Collectors – Complete all steps.

1. Upgrade the Supervisor to 5.4.0:
   a. Delete Workers from Supervisor.
   b. Upgrade Supervisor to 5.4.0: follow the instructions here.

   c. Perform health check: log on to the Supervisor and make sure that it is displaying the correct version and all processes are up.
2. Migrate to 6.1.2 :
   a. Migrate the Supervisor from 5.4.0 to 6.1.2. Migration is platform specific.
      - 3500F
      - 2000F
   b. If you are using Elasticsearch, then go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
   c. Install new 6.1.2 Workers and add them back to the Supervisor.
   d. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
   e. Perform health checks. Old Collectors and Agents should work with 6.1.2 Supervisor and Workers.
3. When you are ready to upgrade Collectors to 6.1.2, then do the following (details are in the documents listed in Step 2a):
   a. Copy the HTTP (hashed) passwords file from the old Collectors to the new Collector.
   b. Re-register with the update option and the same IP.
4. Perform health checks. See Post Migration Health Check.
5. Reinstall the Agents with the latest version when you are ready to upgrade them.
6. Perform health checks: make sure Agent events are being received.

Migrate from 5.3.x or 5.4.x to 6.1.2

To migrate hardware from 5.3.x or 5.4.x to the 6.1.2 release, follow these steps:

- Standalone – Complete step 2a.
- Standalone with Collectors - Complete steps 2a, 3, and 5.
- General setup with Workers and Collectors – Complete all steps.

1. Delete Workers from the Supervisor.
2. Migrate the Supervisor to 6.1.2:
   a. Migration is platform specific.
      - 3500F
      - 2000F
   b. If you are using Elasticsearch, then go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
   c. Install new 6.1.2 Workers and add them back to the Supervisor.
   d. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
   e. Perform health checks. Old Collectors and Agents should work with 6.1.2 Supervisor and Workers.
3. When you are ready to upgrade Collectors to 6.1.2, then do the following (details are in the documents listed in Step 2a):
   a. Copy the HTTP (hashed) passwords file from the old Collectors to the new Collector.
   b. Re-register with the update option and the same IP.
4. Perform health checks. See Post Migration Health Check.
5. Reinstall the Agents with the latest version when you are ready to upgrade them.
6. Perform health checks: make sure Agent events are being received.

Upgrade from 6.1.0 or 6.1.1 to 6.1.2

To migrate hardware from 6.1.0 or 6.1.1 to the 6.1.2 release, follow these steps:

- Standalone – Complete step 2.i (Standalone).
- Standalone with Collectors - Complete steps 2 (EventDB on NFS) or 2 (Elasticsearch), 3, and 5.
- General setup with Workers and Collectors – Complete all steps.

1. Copy the `upgrade.py` script to the Supervisor. For instructions, see above.
2. Upgrade the Supervisor to 6.1.2:
   - Standalone install:
     a. Upgrade Supervisor to 6.1.2
   - EventDB on NFS case:
     a. Stop Workers.
     b. Upgrade the Supervisor to 6.1.2.
   - Elasticsearch case:
     a. Delete Workers.
     b. Upgrade the Supervisor to 6.1.2.
     c. Go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
3. Upgrade Workers to 6.1.2:
   - EventDB on NFS case:
     a. Upgrade 6.1.0 or 6.1.1 Workers to 6.1.2.
   - Elasticsearch case:
     a. Install new 6.1.2 Workers and add them back to the Supervisor.
     b. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
4. Perform health checks: old Collectors should work with 6.1.2 Super and Workers.
5. When you are ready to upgrade Collectors to 6.1.2:
   - Pre-6.1.0 Collectors (details are in Upgrade Guide):
     a. Copy the HTTP (hashed) passwords file from old Collectors to the new Collectors.
     b. Re-register with update option and the same IP.
   - 6.1.0 or 6.1.1 Collectors:
     a. Upgrade from the GUI.
6. Perform health checks. See Post Migration Health Check.
7. Reinstall the Agents when you are ready to upgrade them.
8. Perform health checks: make sure Agent events are being received.

Upgrade via Proxy

During upgrade, Super/Worker and Hardware appliances FSM-2000F and 3500F must be able to communicate with CentOS OS repositories (`os-pkgs-cdn.fortisiem.fortinet.com` and `os-pkgs.fortisiem.fortinet.com`) hosted by Fortinet, to get the latest OS packages. Follow these steps to set up this communication via proxy, before initiating the upgrade.

1. SSH to the node.
2. Edit `/etc/yum.conf` as follows:
   - If your proxy does not require authentication, then add a line like this:
     - `proxy=http://<proxy-ip-or-hostname>:<proxy-port>`
   - If your proxy requires authentication, then add `proxy_username=` and `proxy_password=` entries as well. For example, for squid proxy:
     - `proxy_username=<user>`
     - `proxy_password=<pwd>`

3. Test that you can use the proxy to successfully communicate with the two sites: `os-pkgs-cdn.fortisiem.fortinet.com` and `os-pkgs.fortisiem.fortinet.com`.
4. Begin the upgrade.

Post Migration Health Check

After migration is complete, follow these steps to check the system's health.

1. Check Cloud health and Collector health from the FortiSIEM GUI:
   - Versions display correctly.
   - All processes are up and running.
   - Resource usage is within limits.
2. Check that Redis passwords match on Super and Workers:
   - Super: run the command `phLicenseTool –showRedisPassword`.
   - Worker: run the command `grep -i auth /opt/node-rest-service/ecosystem.config.js`.
3. Check that database passwords match on Super and Workers:
   - Super: run the command `phLicenseTool –showDatabasePassword`.
   - Worker: run the command `grep Auth_PQ_dbpass /etc/httpd/conf/httpd.conf`.
4. Elasticsearch case: check the Elasticsearch health
5. Check that events are received correctly:
   a. Search All Events in last 10 minutes and make sure there is data.
   b. Search for events from Collector and Agents and make sure there is data. Both old and new collectors and agents must work.
   c. Search for events using CMDB Groups (Windows, Linux, Firewalls, etc.) and make sure there is data.
6. Make sure there are no SVN authentication errors in CMDB when you click any device name.
7. Make sure recent Incidents and their triggering events are displayed.

Known Issues

Remediation Steps for CVE-2021-44228

Two FortiSIEM modules (phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.11 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 6.1.x.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.

2. Mitigating 3rd party ThreatConnect SDK module:

   a. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`

      i. log4j-core-2.8.2.jar

    ii. log4j-api-2.8.2.jar
    iii. log4j-slf4j-impl-2.6.1.jar

3. Mitigating phFortiInsightAI module:
   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-api-2.11.1.jar
      ii. log4j-core-2.11.1.jar
4. Restart all Java Processes by running: “`killall -9 java`”

Migration and Fresh Install Limitations

1. Migration limitations: If migrating from 5.3.3 or 5.4.0 to 6.1.2, please be aware that the following features will not be available after migration.
   a. Pre-compute feature
   b. Elastic Cloud support

   If any of these features are critical to your organization, then please wait for a later version where these features are available after migration.
2. Fresh Install limitations
   a. Cannot be installed on Alibaba Cloud.
   b. Linux ISO image is not available.
   c. Does not install on IPV6 networks.
   d. Collector to Supervisor/Worker communication via Proxy is not supported.
   e. Offline install is not supported.
   f. Disaster recovery is not supported as PostGreSQL BDR is not yet available on the CentOS 8.2 release.
   g. Report Server is not supported.
3. STIX/OTX Malware IOC Integration Error: If you see the error below when you log in to Glassfish, it is likely caused by the `jsse.enableSNIExtension` flag that was added to resolve a `httpd` issue in Java JDK 7. In JDK8, there is no need to set this flag.
   Error:

```
#|2020-09-10T12:30:00.535+0200|SEVERE|glassfish3.1.2|-
com.accelops.service.threatfeed.BaseOTXUpdateService|_ThreadID=218;_ThreadName-
e=Thread-2;|org.springframework.web.client.ResourceAccessException: I/O error on
GET request for "https://otx.ali-
envault.com/api/v1/pulses/subscribed?limit=20&modified_since=2020-09-
03T12:30:00%2B02:00&":Unsupported record version Unknown-0.0; nested exception
is javax.net.ssl.SSLException: Unsupported record version Unknown-0.0
```

   To resolve this issue, follow these steps:

   a. Log in to the Supervisor node.
   b. Run the command `su - admin`.
   c. Enter your Glassfish password and run this command `/opt/glassfish/bin/asadmin delete-jvm-options -Djsse.enableSNIExtension=false`
   d. Run the command `Killall -9 java`.

4. Changing Worker IP via configFSM.sh does not work. To change Worker IP, delete the Worker from Supervisor, change the IP using Linux commands and add it back.
5. A newly installed 5.x Collector cannot be registered to a 6.x Supervisor. Old Collectors will continue to work. For new installations, install 6.x Collectors.
6. The following bugs have been discovered.

- Malware Hash import from a CSV file fails when the CSV file contains 75,000 or more Malware Hash entries.
- Scheduled bundle reports fail after migration.
- Update Malware Hash via API does not work as expected, producing "duplicate" errors.
- Cisco Meraki log discovery does not add devices to CMDB.
- FortiSIEM does not recognize a UEBA perpetual license, so users with a UEBA perpetual license are unable to add UEBA for their devices.
- For Elasticsearch cases with inline report mode set to 2, the ReportMaster memory may grow quickly.
- Malware IP, Domain, and URL Group lookup performance slower than expected.
- Security incidents always indicate "System Cleared" after 24 hours, even if `auto_clear_security_incidents=0` is set.
- SSL communication sockets between rule worker and rule master are not always closed properly, leading to rules not triggering.
- Rules with a pattern-based clearing condition do not always clear even if the condition is met. This is because the clear rule’s time window is sometimes read incorrectly.

What's New in 6.1.1

This document describes new and enhanced features, bug fixes and device support for the FortiSIEM 6.1.1 release.

- New Features
- Installation and Usage Notes
- Upgrade Overview
- Known Issues
- Bug Fixes and Enhancements
- New Device Support

New Features

- Install and Upgrade on Microsoft Azure
- Migration for FortiSIEM Running on Elasticsearch

Install and Upgrade on Microsoft Azure

FortiSIEM 6.1.1 can be installed on Azure – see here. See the Upgrade Overview section for upgrading from older versions.

Migration for FortiSIEM Running on Elasticsearch

While FortiSIEM 6.1.0 can be installed fresh on Elasticsearch based deployments, installations running on the 5.3.2 version or earlier could not be migrated to 6.1.1 because of a bug. This release fixes that issue. See the Upgrade Overview section for more details.

Installation and Usage Notes

- Starting with 6.1.1, Windows UEBA Enablement does not require manual restart of `phFortiInsight` module. To enable UEBA, you must complete the following steps:
  a. Install Windows 4.0.0. The procedures are identical to Windows 3.3.0 and can be found in Configuring Windows Agent.
  b. Install a new FortiSIEM license which contains UEBA telemetry.
  c. Create a monitoring template with UEBA enabled for the Agent and click **Apply**. You can create a single template for many hosts. For details on UEBA settings, refer to Define the Windows Agent Monitor Templates. Then in the CMDB tab, the Agent type becomes Windows + UEBA.
  d. The windows Agent will start sending UEBA telemetry to FortiSIEM.
- During install or upgrade, FortiSIEM only needs to communicate to two external sites maintained by Fortinet: os-pkgs-cdn.fortisiem.fortinet.com and os-pkgs.fortisiem.fortinet.com to get the latest updates via HTTPS.
- Starting in 6.1.1, adhoc reports run from GUI and scheduled reports may time out after running for a long time. In a cluster environment with Worker nodes, the user may see partial results (indicated in the PDF), if some workers are able to finish their queries within the timeout. The default timeouts are specified (in seconds) in the `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phQueryMaster]
...
interactive_query_timeout=1800 # 30 mins
...
scheduled_query_timeout=3600 # 60mins
...
[END]
```

  To change the default timeout values, SSH to the Supervisor node, change the values, save the file, and restart the Query Master process.

Upgrade Overview

The following sections provide an overview of migration and upgrade instructions to the 6.1.1 release.

- Migrate from pre-5.3.0 to 6.1.1
- Migrate from 5.3.x or 5.4.x to 6.1.1
- Upgrade from 6.1.0 to 6.1.1
- Upgrade via Proxy
- Post Migration Health Check

Migrate from pre-5.3.0 to 6.1.1

1. Upgrade Supervisor to 5.4.0:
   a. Delete Workers from Supervisor.
   b. Upgrade Supervisor to 5.4.0: follow the instructions here.

   c. Perform health check: log on to the Supervisor and make sure that it is displaying the correct version and all processes are up.
2. Migrate to 6.1.1:
   a. Migrate the Supervisor from 5.4.0 to 6.1.1. Migration is platform-specific.
      - ESX
      - AWS
      - Azure
      - Hyper-V
      - KVM
   b. If you are using Elasticsearch, then go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
   c. Install new 6.1.1 Workers and add them back to the Supervisor.
   d. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
   e. Perform health checks. Old Collectors and Agents should work with 6.1.1 Supervisor and Workers.
3. When you are ready to upgrade Collectors to 6.1.1, then do the following (details are in the documents listed in Step 2a):
   a. Copy the HTTP (hashed) passwords file from the old Collectors to the new Collector.
   b. Re-register with the update option and the same IP.
4. Perform health checks. See Post Migration Health Check.
5. Reinstall the Agents with the latest version when you are ready to upgrade them.
6. Perform health checks: make sure Agent events are being received.

Migrate from 5.3.x or 5.4.x to 6.1.1

1. Delete Workers from the Supervisor.
2. Migrate the Supervisor to 6.1.1:
   a. Migration is platform specific.
      - ESX
      - AWS
      - Azure
      - Hyper-V
      - KVM
   b. If you are using Elasticsearch, then go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
   c. Install new 6.1.1 Workers and add them back to the Supervisor.
   d. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
   e. Perform health checks. Old Collectors and Agents should work with 6.1.1 Supervisor and Workers.
3. When you are ready to upgrade Collectors to 6.1.1, then do the following (details are in the documents listed in Step 2a):
   a. Copy the HTTP (hashed) passwords file from the old Collectors to the new Collector.
   b. Re-register with the update option and the same IP.
4. Perform health checks. See Post Migration Health Check.
5. Reinstall the Agents with the latest version when you are ready to upgrade them.
6. Perform health checks: make sure Agent events are being received.

Upgrade from 6.1.0 to 6.1.1

1. Copy the `upgrade.py` script to the Supervisor. For instructions, see the *Pre-Upgrade* steps in the Upgrade Guide.
2. Upgrade the Supervisor to 6.1.1:
   - EventDB (local or NFS) case:
     a. Stop Workers.
     b. Upgrade the Supervisor to 6.1.1.
   - Elasticsearch case:
     a. Delete Workers.
     b. Upgrade the Supervisor to 6.1.1.
     c. Go to **Admin > Setup > Storage > Elasticsearch** and click **Test and Save**.
3. Upgrade Workers to 6.1.1:
   - EventDB (local or NFS) case:
     a. Upgrade 6.1.0 Workers to 6.1.1.
   - Elasticsearch case:
     a. Install new 6.1.1 Workers and add them back to the Supervisor.
     b. Go to **Admin > Settings > Event Worker** and **Query Worker** and make sure that they are correct.
4. Perform health checks: old Collectors should work with 6.1.1 Super and Workers.
5. When you are ready to upgrade Collectors to 6.1.1:
   - Pre-6.1.0 Collectors (details are in the Upgrade Guide):
     a. Copy the HTTP (hashed) passwords file from old Collectors to the new Collector.
     b. Re-register with update option and the same IP.
   - 6.1.0 Collectors:
     a. Upgrade from the GUI.
6. Perform health checks. See Post Migration Health Check.
7. Reinstall the Agents when you are ready to upgrade them.
8. Perform health checks: make sure Agent events are being received.

Upgrade via Proxy

During upgrade, Super/Worker and Hardware appliances FSM-2000F and 3500F must be able to communicate with CentOS OS repositories (`os-pkgs-cdn.fortisiem.fortinet.com` and `os-pkgs.fortisiem.fortinet.com`) hosted by Fortinet, to get the latest OS packages. Follow these steps to set up this communication via proxy, before initiating the upgrade.

1. SSH to the node.
2. Edit `/etc/yum.conf` as follows:
   - If your proxy does not require authentication, then add a line like this:
     - `proxy=http://<proxy-ip-or-hostname>:<proxy-port>`
   - If your proxy requires authentication, then add `proxy_username=` and `proxy_password=` entries as well. For example, for squid proxy:
     - `proxy_username=<user>`
     - `proxy_password=<pwd>`
3. Test that you can use the proxy to successfully communicate with the two sites: `os-pkgs-cdn.fortisiem.fortinet.com` and `os-pkgs.fortisiem.fortinet.com`.
4. Begin the upgrade.

Post Migration Health Check

1. Check Cloud health and Collector health from the FortiSIEM GUI:
   - Versions display correctly.
   - All processes are up and running.
   - Resource usage is within limits.
2. Check that Redis passwords match on Super and Workers:
   - Super: run the command `phLicenseTool -showRedisPassword`.
   - Worker: run the command `grep -i auth /opt/node-rest-service/ecosystem.config.js`.
3. Check that database passwords match on Super and Workers:
   - Super: run the command `phLicenseTool -showDatabasePassword`.
   - Worker: run the command `grep Auth_PQ_dbpass /etc/httpd/conf/httpd.conf`.
4. Elasticsearch case: check the Elasticsearch health
5. Check that events are received correctly:
   1. Search All Events in last 10 minutes and make sure there is data.
   2. Search for events from Collector and Agents and make sure there is data. Both old and new collectors and agents must work.
   3. Search for events using CMDB Groups (Windows, Linux, Firewalls, etc.) and make sure there is data.
6. Make sure there are no SVN authentication errors in CMDB when you click any device name.
7. Make sure recent Incidents and their triggering events are displayed.

Known Issues

Remediation Steps for CVE-2021-44228

Two FortiSIEM modules (phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.11 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 6.1.x.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
   1. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`
      1. log4j-core-2.8.2.jar
      2. log4j-api-2.8.2.jar
      3. log4j-slf4j-impl-2.6.1.jar
3. Mitigating phFortiInsightAI module:

   a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
      i. log4j-api-2.11.1.jar
      ii. log4j-core-2.11.1.jar
4. Restart all Java Processes by running: “`killall -9 java`”

Migration and Fresh Install Limitations

1. Migration limitations: If migrating from 5.3.3 or 5.4.0 to 6.1.1, please be aware that the following features will not be available after migration.
   a. Pre-compute feature
   b. Elastic Cloud support

   If any of these features are critical to your organization, then please wait for a later version where these features are available after migration.
2. Fresh Install limitations
   a. Cannot be installed on Alibaba Cloud.
   b. Linux ISO image is not available.
   c. Does not install on IPV6 networks.
   d. Collector to Supervisor/Worker communication via Proxy is not supported.
   e. Offline install is not supported.
   f. Disaster recovery is not supported as PostGreSQL BDR is not yet available on the CentOS 8.2 release.
   g. Report Server is not supported.
3. STIX/OTX Malware IOC Integration Error: If you see the error below when you log in to Glassfish, it is likely caused by the `jsse.enableSNIExtension` flag that was added to resolve a `httpd` issue in Java JDK 7. In JDK8, there is no need to set this flag.
   Error:

```
#|2020-09-10T12:30:00.535+0200|SEVERE|glassfish3.1.2|-
com.accelops.service.threatfeed.BaseOTXUpdateService|_ThreadID=218;_ThreadName-
e=Thread-2;|org.springframework.web.client.ResourceAccessException: I/O error on
GET request for "https://otx.ali-
envault.com/api/v1/pulses/subscribed?limit=20&modified_since=2020-09-
03T12:30:00%2B02:00&":Unsupported record version Unknown-0.0; nested exception
is javax.net.ssl.SSLException: Unsupported record version Unknown-0.0
```

   To resolve this issue, follow these steps:

   a. Log in to the Supervisor node.
   b. Run the command `su - admin`.
   c. Enter your Glassfish password and run this command `/opt/glassfish/bin/asadmin delete-jvm-options -Djsse.enableSNIExtension=false`
   d. Run the command `Killall -9 java`.
4. Changing Worker IP via configFSM.sh does not work. To change Worker IP, delete the Worker from Supervisor, change the IP using Linux commands and add it back.
5. A newly installed 5.x Collector cannot be registered to a 6.x Supervisor. Old Collectors will continue to work.

For new installations, install 6.x Collectors.

6. The following bugs have been discovered.

- Malware Hash import from a CSV file fails when the CSV file contains 75,000 or more Malware Hash entries.
- Scheduled bundle reports fail after migration.
- Update Malware Hash via API does not work as expected, producing "duplicate" errors.
- Cisco Meraki log discovery does not add devices to CMDB.
- FortiSIEM does not recognize a UEBA perpetual license, so users with a UEBA perpetual license are unable to add UEBA for their devices.
- For Elasticsearch cases with inline report mode set to 2, the ReportMaster memory may grow quickly.
- Malware IP, Domain, and URL Group lookup performance slower than expected.
- Security incidents always indicate "System Cleared" after 24 hours, even if `auto_clear_security_incidents=0` is set.
- SSL communication sockets between rule worker and rule master are not always closed properly, leading to rules not triggering.
- Rules with a pattern-based clearing condition do not always clear even if the condition is met. This is because the clear rule’s time window is sometimes read incorrectly.

Bug Fixes and Enhancements

The current release includes the following bug fixes and enhancements:

Bug ID	Severity	Module	Description
664708	Major	App Server	All Super Global users can see all Incidents for all Organizations, regardless of their role restrictions.
655557	Major	Query	Real time Query results not shown if there is no overlap between Event workers and Query workers.
665994	Minor	App Server	Selecting a incident category first in search panel will cause aggregation count of other criteria to be blank.
665387	Minor	App Server	Analytics filter operator IN / NOT IN doesn't work for individual CMDB selections.
664245	Minor	App Server	Incident comments filled with debug messages when running CVE Integration.
659678	Minor	App Server	Geo Maps do not show location on Dashboard map widget.
653426	Minor	App Server	Dashboard using Google API does not work for Org if the Org user does not have read permission of Google key (in Admin).

Bug ID	Severity	Module	Description
651528	Minor	App Server	FortiSIEM CMDB to ServiceNow Duplicates.
660734	Minor	Device Support	Aruba Parser parses causes high CPU because of excessive use of regular expression.
659163	Minor	Device Support	Fortigate on AWS logs are not recognized in FortiSIEM because of new devices.
652184	Minor	Device Support	Update Unix Parser with a new time stamp format.
652182	Minor	Device Support	Update F5BigIP Parser Update for Unsupported (New/Custom) Syslog Header.
649906	Minor	Device Support	CentOS CROND events incorrectly parsed as McAfee-WebGw-Run-Cmd because logs are too similar.
647216	Minor	Device Support	Not all attributes for Windows Security Events 4754, 4759, 4749 are parsed.
640196	Minor	Device Support	Not all attributes for Windows Security Event Parsing for Event ID 4625 is incorrect.
634374	Minor	Device Support	Windows Security Event ID 4688 is not parsed fully.
634372	Minor	Device Support	Windows Sysmon Parser needs to be extended.
607339	Minor	Device Support	Sysmon PowerShell Commands not correctly parsed if .exe is called from within Powershell.
594078	Minor	Device Support	Rule "Windows Audit Log Cleared" does not include user as an incident attribute.
592946	Minor	Device Support	Set Windows Event ID, Category, Subcategory and Login failure reason as description in Windows Security logs.
659018	Minor	Elastic Search	Many phDataManager errors may occur in some situations, caused by FortiSIEM sending malformed JSON to Elastocsearch.
662556	Minor	Event Pulling	AWS CloudTrailParser.xml parses event time incorrectly, which can cause event collection delay.

Bug ID	Severity	Module	Description
662540	Minor	Event Pulling	Azure CLI: mLastPollTime is not updated when job failed, causing data collection errors.
662450, 661806, 655562	Minor	Event Pulling	Azure Event Hub event collection errors can cause data collection to stop after running for some time.
660938	Minor	Event Pulling	Guard Duty max count event sometimes does not get picked up.
654551	Minor	Event Pulling	AgentManager can consume memory after running for a while, causing process to stop functioning.
656337	Minor	GUI	Analytics tab - Trend Bar Graph does not show continuity with time and results.
663683, 638773	Minor	Integration	Alienvault STIX OTX Integration may not work for pulling IOCs.
662899	Minor	Parser	Parser function for resolving Hostname to IP address does not work correctly.
659180	Minor	Parser	Collector caches time stamp when rejected from Appserver from Check-in.
659171	Minor	Parser	Two events attributes exist with same name Total Connections.
598471	Minor	Parser	Parse MITRE mapping event attributes in Windows Sysmon events.
516477	Enhancement	App Server	Cannot Discover Multiple Devices through Multiple Collectors through API.
665694	Enhancement	Data	The list of public DNS Servers need to be updated.
530467	Enhancement	Device Support	FortiSIEM not detecting certain event SSH/Audit events using UnixParser.
521230	Enhancement	Device Support	Need to support Barracuda F Series Log.
661711	Enhancement	Event Pulling	Parse out SQS log of when Cloudtrail package is logged.
544522	Enhancement	GUI	Cannot delete many credentials at one time.

New Device Support

- Tigera Calico - K8 log analysis
- Alcide.io Kubernetes and Microservices Audit log
- Stormshield Network Security

What's New in 6.1.0

FortiSIEM 6.1.0 is a foundational release with a new Linux OS. This document describes new and enhanced features for the release.

- Installation Notes
- Known Issues
- New Features
- Key Enhancements
- Bug Fixes and Enhancements
- New Reports
- New Rules

Installation Notes

1. In this release, the underlying OS is upgraded from CentOS 6.10 to CentOS 8.2. Consequently, the migration from older releases to FortiSIEM 6.1.0 is significantly more involved. Details are in the platform-specific Installation and Migration Guides.
   - Migration is supported from FortiSIEM 5.3.0, 5.3.1 and 5.3.2 to 6.1.0. If you are using an older version, first upgrade to FortiSIEM 5.3.2 and then migrate to 6.1.0. Migration from 5.3.3 to 6.1.0 is not supported because 6.1.0 does not have the pre-compute feature in 5.3.3. Customers running 5.3.3 will be able to upgrade to a future 6.2.0. release.
   - In-place migration procedures is provided, so you do not have to move out the data and bring it back.
   - Migration is hypervisor-specific and can be time consuming, so plan accordingly. Migration involves:
     i. Migrating the Supervisor.
     ii. Installing and registering new Workers.
     iii. Older Collectors and Agents will work with the 6.1.0 Super and Worker.
   - When you decide to migrate Collectors to 6.1.0,do the following steps. Details are provided in platform specific install and upgrade guides.
     i. You must install new Collectors and register them in a specific way by using the `--update` option.
     ii. If Agents are registered via this Collector, then you must copy the hashed http password file (`/etc/httpd/accounts/passwds`) from the old Collector to the new Collector. Make sure the permissions are the same.
     iii. Make sure that the new 6.1.0 Collector uses the same IP address as the old Collector.
   - Future upgrades from 6.1.0 to 6.2.0, etc., will work like before via rpm upgrades.
2. Release 6.1.0 requires at least ESX 6.5, and ESX 6.7 Update 2 is recommended. To install on ESX 6.5, see install in ESX 6.5.

3. Hardware requirements are the same, however, if you want to use the UEBA feature, then the Supervisor must be upgraded to 32vCPU and 64GB RAM.
4. During a fresh install and migration process, a separate disk called `OPT` is created for use by FortiSIEM. Unlike earlier releases, FortiSIEM 6.1.0 does not write own logs or dump files in the root partition.
5. If you were running FortiSIEM 5.x and were using custom SSL certificates for Apache created with a 1024-bit RSA key, then you will notice that Apache will be down. This is because FortiSIEM 6.3 requires a 2048-bit RSA key. Follow these steps to obtain a 2048-bit RSA key:
    1. Get your custom SSL certificates with the 2048-bit RSA key or create a new self-signed certificate by running the following command:
       ```
       openssl req -x509 -nodes -days 365 -newkey rsa:2048 -keyout /etc/httpd/conf.d/apache-selfsigned.key -out /etc/httpd/conf.d/apache-selfsigned.crt
       ```
    2. Add the following lines to the `/etc/httpd/conf.d/ssl.conf` file, then save it:
       ```
       SSLCertificateFile /etc/httpd/conf.d/apache-selfsigned.crt

       SSLCertificateKeyFile /etc/httpd/conf.d/apache-selfsigned.key
       ```
    3. Restart Apache with the following command:
       ```
       service httpd restart
       ```

For fresh installations and for migrating from existing FortiSIEM installations, see:

- AWS Installation and Migration Guide
- ESX Installation and Migration Guide
- HyperV Installation and Migration Guide
- KVM Installation and Migration Guide
- FortiSIEM 2000F Hardware Configuration Guide for 6.1
- FortiSIEM 500F Collector Configuration Guide for 6.1

Known Issues

Remediation Steps for CVE-2021-44228

Two FortiSIEM modules (phFortiInsightAI and 3rd party ThreatConnect SDK) use Apache log4j version 2.11 and 2.8 respectively for logging purposes, and hence are vulnerable to the recently discovered Remote Code Execution vulnerability (CVE-2021-44228) in FortiSIEM 6.1.x.

These instructions specify the steps needed to mitigate this vulnerability without upgrading Apache log4j to the latest stable version 2.16 or higher. Actions need to be taken on the Supervisor node only.

On Supervisor Node

1. Logon via SSH as root.
2. Mitigating 3rd party ThreatConnect SDK module:
    1. Delete these log4j jar files under `/opt/glassfish/domains/domain1/applications/phoenix/lib`

        i. log4j-core-2.8.2.jar
        ii. log4j-api-2.8.2.jar
        iii. log4j-slf4j-impl-2.6.1.jar
3. Mitigating phFortiInsightAI module:
    a. Delete these log4j jar files under `/opt/fortiinsight-ai/lib/`
        i. log4j-api-2.11.1.jar
        ii. log4j-core-2.11.1.jar
4. Restart all Java Processes by running: `"killall -9 java"`

Fresh Install and Migration Limitations

1. Fresh install limitations:
    a. Can not be installed on Azure, Alibaba Cloud, 3500F hardware appliance.
    b. Linux ISO image is not available.
    c. Does not install in IPV6 networks.
    d. Collector to Supervisor/Worker communication via Proxy is not supported.
    e. Offline install is not supported.
    f. Disaster recovery is not supported as PostGreSQL BDR is not yet available on the CentOS 8.2 release.
    g. Report Server is not supported.
2. Migration limitations:
    a. Migration for the 500F Collector is not supported. If you have 500F collectors, then you can upgrade the Super and Worker to 6.3 but let the Collectors remain on older releases. A future release will provide 500F Collector migration to 6.3.
    b. Migration to FortiSIEM installations running on Elasticsearch is not supported.
    c. The pre-compute feature in FortiSIEM 5.3.3 is not included in this release. Hence upgrade from 5.3.3 to 6.3.3 is not supported.
3. The built in certificates for the FortiSIEM 6.3 Image were generated during the build and will be the same across all installations. These certificates are used to secure inter-node communications between the Collector, Worker, and Supervisor nodes. You must change them for your installation as follows:
   You must decide whether you will use CA signed certificates or self-signed certificates. If you decide to continue with self-signed certificates, then you must run the following command to re-generate a self-signed certificate for your environment:

   ```
   openssl req -new -newkey rsa:4096 -days 3650 -nodes -x509 -subj
   "/C=<country>/ST=<state>/L=<city>/O=<organization>/CN=<hostname-or-FQDN>" -key-
   out /etc/pki/tls/private/localhost.key -out /etc/pki/tls/certs/localhost.crt
   ```

   For example, for Fortinet, located in Sunnyvale, California, the following command would be used:

   ```
   openssl req -new -newkey rsa:4096 -days 3650 -nodes -x509 -subj "/C=US/S-
   ST=CA/L=SunnyVale/O=Fortinet/CN=localhost" -keyout /etc/p-
   ki/tls/private/localhost.key -out /etc/pki/tls/certs/localhost.crt
   ```

4. STIX/OTX Malware IOC Integration Error: If you see the error below when you log in to Glassfish, it is likely caused by the `jsse.enableSNIExtension` flag that was added to resolve a `httpd` issue in Java JDK 7. In

JDK8, there is no need to set this flag.
Error:

```
#|2020-09-10T12:30:00.535+0200|SEVERE|glassfish3.1.2|-
com.accelops.service.threatfeed.BaseOTXUpdateService|_ThreadID=218;_ThreadName-
e=Thread-2;|org.springframework.web.client.ResourceAccessException: I/O error on
GET request for "https://otx.ali-
envault.com/api/v1/pulses/subscribed?limit=20&modified_since=2020-09-
03T12:30:00%2B02:00&":Unsupported record version Unknown-0.0; nested exception
is javax.net.ssl.SSLException: Unsupported record version Unknown-0.0
```

To resolve this issue, follow these steps:

a. Log in to the Supervisor node.
b. Run the command `su - admin`.
c. Enter your Glassfish password and run this command `/opt/glassfish/bin/asadmin delete-jvm-options -Djsse.enableSNIExtension=false`
d. Run the command `Killall -9 java`.

5. Fresh install may fail because of memory allocation issues, when Supervisor is installed on a VM with 24 GB RAM. This is likely caused by two issues: the swap size is not set correctly when configFSM.sh is run, and the App Server is forced to run on 12 GB virtual RAM via ulimit, even when physical memory is available.
   To resolve this issue, follow these steps:

   a. After deploying a 6.1.0 VM on any platform and booting up, download `swapon-ulimit-fixes.tgz` from here and copy it to the system.
      i. If the system comes up with a DHCP IP, then use that to copy the above file. If not, you will need to manually set up IP address in `/etc/sysconfig/network-scripts/ifcfg-eth0` and restart the network via systemctl restart NetworkManager (or reboot).
      ii. Login as `root`.
      iii. Run the command `sed -i -e 's/totalmem -lt 24000/totalmem -lt 20000/' /root/.bashrc`.
      iv. Logout.
   b. Log back in as `root`.
   c. Run `tar xzf <path-where-file-is-stored>/swapon-ulimit-fixes.tgz -C /`.
   d. Run `configFSM.sh` and it should succeed.

   If you did not do the above deployed system and it fails, then it is hard to manually fix and rerun configuration. Therefore, you will need to delete VM, redo the steps after patching above the yml files.

   If you did not do the above deployed system and it succeeds to the end, then do not worry about the swap issue since the swap will be set correctly after the reboot. Just run the following command `sed -i -e 's/totalmem -lt 24000/totalmem -lt 20000/' /opt/phoenix/bin/.bashrc /root/.bashrc` after logging in as root. Then reboot it again.

6. The following bugs have been discovered.

- Malware Hash import from a CSV file fails when the CSV file contains 75,000 or more Malware Hash entries.
- Scheduled bundle reports fail after migration.
- Update Malware Hash via API does not work as expected, producing "duplicate" errors.
- Cisco Meraki log discovery does not add devices to CMDB.

- FortiSIEM does not recognize a UEBA perpetual license, so users with a UEBA perpetual license are unable to add UEBA for their devices.
- For Elasticsearch cases with inline report mode set to 2, the ReportMaster memory may grow quickly.
- Malware IP, Domain, and URL Group lookup performance slower than expected.
- Security incidents always indicate "System Cleared" after 24 hours, even if `auto_clear_security_incidents=0` is set.
- SSL communication sockets between rule worker and rule master are not always closed properly, leading to rules not triggering.
- Rules with a pattern-based clearing condition do not always clear even if the condition is met. This is because the clear rule’s time window is sometimes read incorrectly.

New Features

- Run on CentOS 8.2
- FIPS Enabled
- Inbuilt Windows UEBA

Run on CentOS 8.2

FortiSIEM 6.1.0 runs on CentOS 8.2. Both the install and migration procedures have been improved. There is now a single image for Collector, Supervisor and Worker nodes.

For fresh installations and for migrating from existing FortiSIEM installations, see:

- AWS Installation and Migration Guide
- ESX Installation and Migration Guide
- HyperV Installation and Migration Guide
- KVM Installation and Migration Guide
- FortiSIEM 2000F Hardware Configuration Guide for 6.1
- FortiSIEM 500F Collector Configuration Guide for 6.1

FIPS Enabled

FortiSIEM can run in FIPS mode. You can choose to install in FIPs mode during a fresh 6.1.0 installation. You can also disable or enable FIPS on an existing 6.1.0 system. The following features are added for FIPS mode, but some are also available for non-FIPS mode.

- For both FIPS and non-FIPS installation modes, you **must** change the default GUI and SSH passwords.
- GUI and SSH user passwords for both FIPS and non-FIPS modes are now required to contain at least 8 characters, and must include 1 letter, 1 numeric character, and 1 special character.
- For both FIPS and non-FIPS modes, you can zeroize the keys to ensure that there are no keys and critical security parameters left in the system. This is done before destroying a FortiSIEM installation. For details, see see Erasing Disk Contents in FIPS Support.
- In FIPS mode, FortiSIEM will use only FIPS-compliant cryptographic algorithms. For a full list of supported cryptographic algorithms, see Cryptographic Algorithms in FIPS Support. Note that this list may change from version to version.

- During startup and reboot, FortiSIEM will run self-tests to ensure that proper FIPS-compliant algorithms are being used. These self-tests can also be run on-demand. Note that Redhat 8.1, being a new OS, has applied for FIPS certification.
- FIPS mode is displayed in GUI for all installations.
- In FIPS mode, FortiSIEM uses CPU Time Jitter Random Number Generator as the Non-deterministic Random Bit generator (NDRBG). This has been proven to provide strong keys (see https://www.chronox.de/jent/doc/CPU-Jitter-NPTRNG.html). This makes the cryptographic algorithms very secure as required by FIPS standards.

For key zeroization, see Erasing Disk Contents.

For cryptographic algorithms, see Cryptographic Algorithms.

FIPS requires a strict set of crypto algorithms. Therefore, when you enable FIPS on FortiSIEM, certain communications between FortiSIEM and external devices may break if the external device is not also FIPS enabled. This is especially true for migrating from FortiSIEM 5.3.x. Suppose you were collecting performance metrics and logs from a legacy network device. Before turning on FIPS, make sure that the device is also FIPS ready.

Inbuilt Windows UEBA

This release adds User Entity Behavior Monitoring for Windows users. The Windows Agent 4.0.0 has embedded a UEBA Kernel Agent that reports these user activity events:

- Logon/logoff
- Machine on/off
- File activity – create, delete, read, write, rename, move, print
- File upload/download
- Drive mount/un-mount

Based on these activities, an AI module running on the Supervisor, detects anomalous FortiSIEM incidents. The UEBA dashboard can be used to investigate these incidents.

You must have a new license to enable the UEBA feature. You can stack a UEBA license on top of a regular FortiSIEM Windows Agent license, or use the UEBA license independently. Therefore, 3 modes are possible:

- Windows logging and performance monitoring only.
- Windows UEBA only. In this mode the agent is not counted towards the CMDB license and UEBA events are not counted towards the licensed EPS
- Windows logging, performance monitoring and UEBA. In this mode, UEBA events are not counted towards licensed EPS.

To enable UEBA, you must complete the following steps:

1. Install Windows 4.0.0. The procedures are identical to Windows 3.3.0 and can be found in Configuring Windows Agent.
2. Install a new FortiSIEM license which contains UEBA telemetry.
3. Restart the `phFortiInsightAI` module by running the following command on the Supervisor node, for example:
   ```
   systemctl restart phFortiInsightAI
   ```

4. Create a monitoring template with UEBA enabled for the Agent and click **Apply**. You can create a single template for many hosts. For details on UEBA settings, refer to Configuring Windows Agents. Then in the CMDB tab, the Agent type becomes **Windows + UEBA**.
5. The windows Agent will start sending UEBA telemetry to FortiSIEM.

You may want to change UEBA Settings for the AI module: see UEBA Settings.

UEBA incidents created by the AI module can be seen on the UEBA dashboard, see UEBA View.

Key Enhancements

- EventDB Query Management
- Run Multiple Searches
- Report Bundle Export Progress

EventDB Query Management

This release adds the following enhancements for Event DB queries:

- New Adaptive Query Workload distribution algorithm
- Active Query visibility – Two dashboards are provided:
  - Query Status – the progress of each Query (Adhoc, Scheduled) at the Query Master and Worker levels.
  - Query Workload at each Worker

The Adaptive Query Workload distribution algorithm has these features:

- Query routing based on Worker workload
- Re-routing for failed Workers
- Reservation for Adhoc and Scheduled Queries

For details on the Query Status dashboard, see Query Status.

For details on the Worker Workload dashboard, see Query Workload.

Run Multiple Searches

You can now run multiple searches from the GUI without opening a new browser tab. Simply click the **+** tab to create a new search tab. If you leave a search tab, the query on that tab continues to run. For more information on this feature, see Run Multiple Searches Simultaneously.

Report Bundle Export Progress

A Report Bundle can take a long time to run if the bundle has multiple, complex reports. In earlier releases, there was no report-by-report progress indicator when you ran a Report Bundle from the GUI. This release provides visibility into the progress of Report Bundle processing and improves the user experience.

Bug Fixes and Enhancements

The current release includes the following bug fixes and enhancements:

ID	Severity	Module	Summary
644410	Minor	App Server	Widget Dashboard Imported in Super Global is not shared in organizations.
644090	Minor	App Server	Custom Event Attribute names do not display in CSV reports.
643967	Minor	App Server	Handle the Null pointer exception in App Server to Query Master communication.
643648	Minor	App Server	Query time interval is not saved properly in Report Bundle scheduled for organizations.
643249	Minor	App Server	An exception occurs during app server start up while loading namedValue to Redis.
640569	Minor	App Server	After upgrade, Shared dashboards created in Super Global are invisible if su to organizations.
637264	Minor	App Server	Failed to save location for device when city/state has a single quote (after it already triggered an incident).
635420	Minor	App Server	Device hostnames containing a single quote cause incident insert errors.
527733	Minor	App Server	LDAP user discovery merge is logging excessive user contact update.
497314	Minor	App Server	LDAP OU discovery is aborted because of long OU name.
647601	Minor	Data	"System License Warning: Max Number of Devices Exceeded License" rule does not trigger.
644155	Minor	Data	Some attributes are not correctly parsed by NetBotzCMCTrap.
641317	Minor	Event Pulling	Logon Events are not pulling from Google App Suite.
649152	Minor	GUI	Home Setting does not show on UI after an upgrade.
648413	Minor	GUI	winexe is enabled in Discovery once you edit a Discovery template.
647769	Minor	GUI	You can select any attribute in a rule exception. It should only allow those attributes in "Incident attribute".
644073	Minor	GUI	New schedule for FortiGuard IOC Service does not show the created schedule after saving.

ID	Severity	Module	Summary
643888	Minor	GUI	Losing the connection to Super during a Dashboard slideshow causes a user log out after 10 minutes.
640894	Minor	GUI	Pull Events tab shows an error from another organization.
638148	Minor	GUI	The GUI displays 0xA0 characters in Raw events as 0x20.
633235	Minor	GUI	GUI Error occurs when saving Access Method configuration for FortiGate Rest API.
632413	Minor	GUI	During GUI login, DOMAIN is not displayed until the Log On button is pressed.
612331	Minor	GUI	Dashboard Slideshow times out after 1 day.
611930	Minor	GUI	Generating two reports that attempt to show average and max value only shows max.
602326	Minor	GUI	CMDB Reports with Report Type generate a PSQLException.
598485	Minor	GUI	Parser Validation cannot handle parsers with an "&" symbol.
639744	Minor	GUI, App Server	Login drop down has to convert to text box in order to protect end client from exposure of other domains.
637664	Minor	H5_Analytics	In Rule Exception, the Value field cannot be edited when values are added from the CMDB.
596560	Minor	Parser	The character "<" in the test event breaks attributes display in Parser testing
629489	Minor	Performance Monitoring	Cisco ASA memory utilization polling fails as vendor has changed SNMP OID.
517105	Minor	Performance Monitoring	Memory utilization on Cisco Nexus 9k is stuck at 100%.
637631	Minor	Query Master	CSV Export from the date before daylight saving change shows a one hour difference.
648971	Minor	System	phDataPurger crashes when archiving from Elasticsearch to NFS if the raw event size is more than 64KB.
643027	Minor	System	FSM collector nodes contain passwords in plain text based on the API cache.

ID	Severity	Module	Summary
632883	Minor	System	Elastic Search Disaster Recovery does not sync the Redis Password correctly.
630634	Minor	System	Elasticsearch snapshot creation fails during disaster recovery.
644882	Enhancement	App Server	Support device names with single quote.
632976	Enhancement	App Server	Malware IP download - does not handle CIDR notation.
644104	Enhancement	Data	Need additional JunOS event types to the data-definition file.
643874	Enhancement	Data	Watchguard Firewall Parser needs an update.
643780	Enhancement	Data	Trend Micro Apex Central Parser for Antivirus doesn't create a correct Event Type.
643015	Enhancement	Data	Sophos Event parser does set the reporting IP or host name.
639125	Enhancement	Data	Windows WMI events in French are not fully parsed.
637703	Enhancement	Data	Citrix Netscaler Parser does not parse certain VPN logs.
632767	Enhancement	Data	Spanish Windows parser needs more translations.
615340	Enhancement	Data	Citrix Netscaler Parser does not parse out Group Names with a space.
612914	Enhancement	Data	Infoblox parser - Parser does not pick up client hostname in the syslog field. Instead, it picks up the IP address.
609725	Enhancement	Data	Windows Custom Log Parser does not parse out two fields for event ID 411: Client IP and Error Message.
603557	Enhancement	Data	Nessus Parser Host Field must also parse the hostname.
599955	Enhancement	Data	Windows Event Parsing - Language translation update.
643287	Enhancement	GUI	Domain part of O365 Endpoints need to be configurable.
641357	Enhancement	GUI	Country Groups must be editable only from the left tree.
640064	Enhancement	GUI	Cannot clear multiple incidents under the Incident Explorer dashboard.
612285	Enhancement	Parser	O365 Event Type MS_OFFICE365_SecurityComplianceCenter_AlertTriggered is missing details.

New Reports

- FortiSIEM UEBA detected hacking tool usage
- FortiSIEM UEBA detected ransomware
- FortiSIEM UEBA detected backup applications
- FortiSIEM UEBA detected ransomware file types
- FortiSIEM UEBA detected MTP write
- FortiSIEM UEBA detected potential pirated media
- FortiSIEM UEBA detected file printed
- FortiSIEM UEBA detected removable media read
- FortiSIEM UEBA detected snipping tool
- FortiSIEM UEBA detected encryption tools
- FortiSIEM UEBA detected email upload
- FortiSIEM UEBA detected cloud upload
- FortiSIEM UEBA detected potential leaver editing a CV at work
- FortiSIEM UEBA detected email download
- FortiSIEM UEBA detected NFS write
- FortiSIEM UEBA detected browser download
- FortiSIEM UEBA detected hacking tool and footprints
- FortiSIEM UEBA detected ransomware file names
- FortiSIEM UEBA detected gaming application
- FortiSIEM UEBA detected removable media write
- FortiSIEM UEBA detected NFS read
- FortiSIEM UEBA detected files copied over remote desktop
- FortiSIEM UEBA detected browser upload
- FortiSIEM UEBA detected software installation
- FortiSIEM UEBA detected MTP read
- FortiSIEM UEBA detected file archiver application

New Rules

There are 846 built-in correlation rules in the system. The following rules have been added to 6.1.0 release.

- FortiSIEM UEBA AI detects unusual file movement
- FortiSIEM UEBA AI detects unusual process created
- FortiSIEM UEBA AI detects unusual file download
- FortiSIEM UEBA AI detects unusual file upload
- FortiSIEM UEBA AI detects unusual machine on
- FortiSIEM UEBA AI detects unusual machine off
- FortiSIEM UEBA AI detects unusual host logon
- FortiSIEM UEBA AI detects unusual machine logoff
- FortiSIEM UEBA AI detects unusual file renamed
- FortiSIEM UEBA AI detects unusual file printed

- FortiSIEM UEBA AI detects unusual new drive mounted
- FortiSIEM UEBA AI detects unusual drive unmounted
- FortiSIEM UEBA AI detects unusual process not restarted
- FortiSIEM UEBA Policy detects antivirus not started
- FortiSIEM UEBA Policy detects antivirus stopped
- FortiSIEM UEBA Policy detects malicious powershell execution
- FortiSIEM UEBA Policy detects suspicious applications
- FortiSIEM UEBA Policy detects Tor client usage
- FortiSIEM UEBA Policy detects uncommon VPN client
- FortiSIEM UEBA Policy detects hacking tool usage
- FortiSIEM UEBA Policy detects ransomware
- FortiSIEM UEBA Policy detects backup applications
- FortiSIEM UEBA Policy detects ransomware file types
- FortiSIEM UEBA Policy detects MTP write
- FortiSIEM UEBA Policy detects potential pirated media
- FortiSIEM UEBA Policy detects file printed
- FortiSIEM UEBA Policy detects removable media read
- FortiSIEM UEBA Policy detects snipping tool
- FortiSIEM UEBA Policy detects encryption tools
- FortiSIEM UEBA Policy detects email upload
- FortiSIEM UEBA Policy detects cloud upload
- FortiSIEM UEBA Policy detects potential leaver editing a CV at work
- FortiSIEM UEBA Policy detects email download
- FortiSIEM UEBA Policy detects nfs write
- FortiSIEM UEBA Policy detects browser download
- FortiSIEM UEBA Policy detects hacking tool and footprints
- FortiSIEM UEBA Policy detects ransomware file names
- FortiSIEM UEBA Policy detects gaming application
- FortiSIEM UEBA Policy detects removable media write
- FortiSIEM UEBA Policy detects NFS read
- FortiSIEM UEBA Policy detects files copied over remote desktop
- FortiSIEM UEBA Policy detects browser upload
- FortiSIEM UEBA Policy detects software installation
- FortiSIEM UEBA Policy detects MTP read
- FortiSIEM UEBA Policy detects file archiver application

Key Concepts

This section describes several key concepts used in FortiSIEM.

- Clustering Architecture
- Licensing
- Multi-tenancy and Organizations
- Role-based Access Control
- Discovery and CMDB
- Windows and Linux Agents
- Business Services
- Parsers and Monitors
- Entity Risk Score
- User Identity and Location
- Searches, Reports and Compliance
- Rules and Incidents
- Incident Notification Policy
- Remediation Library
- External Ticketing Systems Integration
- Dashboard

Clustering Architecture

FortiSIEM scales seamlessly from small enterprises to large and geographically distributed enterprises and service providers.

- For smaller deployments, FortiSIEM can be deployed as a single all-in-one hardware or virtual appliance that contains full functionality of the product.
- For larger environments that need greater event handling throughput, FortiSIEM can be deployed in a cluster of Supervisor and Worker Virtual Appliances.

There are three types of FortiSIEM nodes – Collector, Worker, and Supervisor. Collectors are used to scale data collection from various geographically separated network environments potentially behind firewalls. Collectors communicate to the devices, collect, parse and compress the data and then send this information to the Worker nodes over a secure HTTP(S) channel in a load balanced manner. Supervisor and Worker nodes reside inside the data center and perform data analysis functions using distributed co-operative algorithms.

There are five primary data analysis tasks:

1. Data indexing and storing in an event database
2. Data searching
3. Correlating data in streaming mode to trigger rules (behavioral anomalies)
4. Creating a user identity and location database to add context for data
5. Creating baselines for anomaly detection

For scalability, each of these tasks is divided into a heavyweight Worker component executed by the Worker nodes and a lightweight Master component executed by the Supervisor node. The Supervisor nodes, accessible via the GUI is comprised of a self-contained three-tier model – the GUI, the Application Server containing the business logic, and a relational database for holding the FortiSIEM application state.

For scalable event storage, FortiSIEM provides three options:

- Local disk
- FortiSIEM NoSQL event database with data residing on an NFS Server
- Elasticsearch distributed database

Hardware appliance and All-in-one virtual appliance solutions use the local disk option while the NoSQL or Elasticsearch options can be exploited by a FortiSIEM cluster of Supervisor and Workers.

The NoSQL event database option is a purpose built FortiSIEM proprietary solution. The Supervisor and Worker nodes create and maintain the database indices. To scale event insertion and search performance in this mode requires (a) a fast communication network between the Supervisor/Worker nodes and the NFS Server and (b) high NFS IOPS that can be achieved using fast RAID disk or tiered SSD and magnetic disks.

Elasticsearch provides a true distributed, redundant columnar database option for scale-out database performance at the expense of higher storage needs. In this option, FortiSIEM Worker nodes push the data in real time to Elasticsearch cluster, which maintains the event database. FortiSIEM has developed an intermediate adaptation layer, so that the same GUI can run seamlessly on both Elasticsearch and FortiSIEM NoSQL event database.

Licensing

FortiSIEM is licensed based on the following:

- Number of devices FortiSIEM monitors or receives logs from
- Number of Windows Agents and Linux Agents
- Aggregate Events per Second (EPS) it receives

Note that FortiSIEM licensing is not based on storage - you can store and query the data as needed for your compliance needs without any concern regarding licensing. The license parameters can be perpetual or subscription based. Maintenance and FortiGuard Threat Intelligence are subscription based.

You can have unlimited devices in CMDB. However, the total number of devices that send logs to FortiSIEM or are monitored by FortiSIEM cannot exceed the device license. The devices under license are called 'Managed' while the remaining devices are called 'Unmanaged'. If you do a discovery and the number of newly discovered devices combined with Managed CMDB devices exceed the license, then the extra devices are tagged in CMDB as 'Unmanaged'. You can either buy more device license or exchange an Unmanaged device with a Managed device.

FortiSIEM calculates Events per Second (EPS) over a 3-minute period as the total number of events received over a 3-minute period divided by 180. FortiSIEM is a distributed system where events can be received at any node - Collector, Worker, or Supervisor. The EPS licensing is enforced as follows:

At the end of every 3-minute interval, Incoming EPS is calculated at each event entry node (Collector, Worker, or Supervisor) and the value is sent to the central decision-making engine on the Supervisor node.

1. The Supervisor node takes all Incoming EPS values and based on the Licensed EPS, computes the Allocated EPS for the next 3-minute interval for every node and communicates those values to every node.

2. For the next 3-minute interval, each node accepts up to (Allocated EPS * 180) events. It also reports Incoming EPS for the current interval to the Supervisor node.
3. The continuous EPS reallocation process continues.

FortiSIEM includes some additional refinements to EPS enforcement as follows:

- Each Collector has a Guaranteed EPS. The Allocated EPS for this Collector is always greater than the Guaranteed EPS.
- FortiSIEM keeps track of Unused EPS as the sum of positive differences of Allocated EPS and Incoming EPS over all nodes. At the beginning of the day (12:00 am), Unused EPS is set to 50% of previous day’s Unused EPS and then Unused EPS accumulates throughout the day before maxing out at five times Licensed EPS. Unused EPS can be used for bursting during attacks or other event surge periods, beyond Licensed EPS.

Multi-tenancy and Organizations

Multi-tenancy enables you to manage multiple groups of devices (Organizations) within a single installation. FortiSIEM provides logical separation between Organizations at an application layer. The users of one Organization cannot see another Organization’s data, which includes devices, users and logs.

You have to choose the Service Provider Installation type when you first install FortiSIEM. Organizations can be defined in two ways:

- *By adding a Collector to an Organization* – all devices sending logs to a Collector or all devices monitored by a Collector are automatically assigned to the Organization to which the Collector belongs. Device Names and IP Addresses can overlap between two Organizations. This situation can be used to model Remote Managed Service Providers.
- *By assigning IP ranges to Organizations* – there are no Collectors and devices will be discovered from Supervisor node and send logs to Supervisor or Worker nodes. If the IP addresses of ALL interfaces of a device are wholly included within the IP range for an Organization, then the device is assigned to that Organization. Else, the device is assigned to the Super/Local Organization (see below).

In addition to user-defined Organizations, FortiSIEM creates two Organizations for ease of management:

- **Super/Local Organization** – this can be used to model a Service Provider’s own network.
  - For Organizations with Collectors, if a device sends logs directly to Supervisor or Worker nodes or is discovered from the Supervisor node, then it belongs to the Super/Local Organization.
  - For Organizations without Collectors, if all the IP addresses of a device (being discovered or sending logs) are not wholly included within the IP range for any Organization, then that device is assigned to the Super/Local Organization.
- **Super/Global Organization** – this is a virtual Organization that can 'see' all the other Organizations. This is useful for Service Provider administrative users.

FortiSIEM Multi-tenancy principles are as follows:

1. Users belonging to Super/Global Organization can see other organizations and their data.
2. Users belonging to Super/Local Organization and user-defined Organizations can only see their own Organization.
3. Devices and events are automatically tagged by FortiSIEM with the Organization Id and Name.

4. Rules can be written at a Global level or for a specific Organization. Incidents trigger when rule conditions are met and they trigger independently for each organization. Each Incident is labeled with Customer Id and Name.
5. Searches/Reports can be executed from Super/Global Organization for any combinations of Organizations.
6. From a specific user-defined Organization or Super/Local Organization, Searches/Reports can run on that Organization.
7. Viewing Incidents is simply a specific Search and follows the same principles as specified in 5 and 6.

Role-based Access Control

After installation, FortiSIEM automatically creates an admin user with Full Admin rights for Super/Global and Super-/Local Organization. When the user creates a new Organization, FortiSIEM creates an admin user for that Organization. These are accounts with Full Admin rights. FortiSIEM users with Full Admin rights can create Roles and then create users and assign them a role.

A FortiSIEM role is based on the following aspects:

- What the user can see:
  - Restrict GUI visibility by hiding parts of the GUI
  - Restrict some Organizations for Service Provider installations
  - Restrict data by writing filters on device type, event type and any parsed event attribute
- What the user can do:
  - Restrict or even hide Admin tab where most of the configuration takes place
  - Restrict any other GUI tab
  - Restrict write capability on certain parts of the GUI

FortiSIEM has a few built-in roles that the users can customize to meet their own needs.

Discovery and CMDB

Discovery is a key differentiator for FortiSIEM as it enables users to seamlessly discover their infrastructure (the 'truth') and auto-populate the CMDB, which can then be used to facilitate analytics.

Discovery can be of two types:

- **Simple LOG discovery** – FortiSIEM has mappings for device type to parse logs for all its in-built log parsers. When it sees a log that matches a parser, it associates the corresponding device type to that device and creates a CMDB entry.
- **Detailed device discovery** – LOG discovery is very basic since only the Vendor and Model can be guessed (for example: Cisco IOS, Fortinet FortiGate, Microsoft Windows, Generic Linux). It is not possible to deduce more details about the device, for example: Operating System version, hardware model, installed patches, installed software, running processes, network device configurations, interfaces, monitor-able performance metrics, etc. In addition to discovering all of the above, FortiSIEM can also discover certain inter-device relationships, for example, Virtualization Guest to Host mappings, WLAN AP to Controller mappings, Multi-context device to physical device mappings, network topology etc. Devices in the AWS Cloud and MS Azure Cloud can be discovered as well.

Discovered information is used to automatically populate a CMDB. As new devices get added or deleted from the infrastructure, scheduled rediscoveries can keep FortiSIEM CMDB up to date. The user can also define some rules to map certain groups of devices to certain CMDB device groups.

The key advantages of FortiSIEM Discovery and CMDB are as follows:

1. The customer has an *accurate picture of the infrastructure* and its relationships from a simple discovery. If a new rogue device is added to the network, FortiSIEM rediscovery learns immediately of the new device and can send an alert of this potential security issue. If an inadvertent configuration change to a key file is made, FortiSIEM rediscovery or configuration monitoring also detects and alerts.
2. *Performance and availability monitoring is automated* since FortiSIEM simply learns what can be monitored and starts monitoring immediately. This approach eliminates human error from the process.
3. *Certain key CMDB Objects such as Business Services can remain up to date against infrastructure changes* as they can be auto-populated by discovery.
4. *CMDB Objects make rules and reports easy to create*. First, no long explicit list of IP addresses or host names are needed for rules or reports. Secondly, rules do not need to be rewritten as devices get added or deleted.
5. *Discovery enables configuration change detection* for both day-to-day changes and changes to golden versions.

Windows and Linux Agents

Some logs and performance metrics can be collected remotely from Windows servers via WMI and by running the Winexe command. Some key performance metrics and file monitoring on Linux servers can be done via SSH. However, the following limitations exist:

For Windows Servers:

- Not all metrics can be collected from a FortiSIEM Linux platform via WMI (for example: Sysmon, Generic Event Logs in the Event Log navigation tree, Registry changes). WMI can be used to collect only Windows Event logs.
- *File Integrity Monitoring Data collected via Windows Security logs is very verbose* (~8 logs per file operation) and creates unnecessary noise in FortiSIEM.
- Remotely running *some programs such as Winexe start services on the servers* may trigger security alerts in certain environments.
- A domain account is required to collect certain logs. A regular account does not provide all logs.
- WMI Service often creates CPU load on the servers when a large number of logs are pulled via WMI.
- *Collecting logs via polling from thousands of servers is not efficient.* If a server is not responsive or slow, you have to wait for the connection to timeout and this wastes resources.

Linux Servers send log via syslog. However, if you want to collect File Integrity Monitoring Data, then a certain configuration is required for this to be done remotely.

Agents provide a clean and efficient way to collect exactly the data that is needed. FortiSIEM Agents are very lightweight and do not consume more than 5% of system CPU and memory. FortiSIEM Windows Agents have the following functionality:

- Collect any Windows Event log including Security, Application and Performance event logs, DHCP/DNS logs, Sysmon logs, etc.
- Collect Custom log files
- Detect registry changes

- Detect File read, write and edits (FIM) with added user context
- Run any PowerShell command and send the output as logs – this allows users to capture any data at periodic intervals and send it to FortiSIEM.
- Detect removable media insertion, deletion, read and write

FortiSIEM Windows Agent Manager can manage a large number of FortiSIEM Windows Agents using configuration templates. The user needs to create a template and associate it with many servers. Windows Agents can be configured to send logs to FortiSIEM collectors in a round robin fashion. If one collector is not available, the Agent can send it to the next Collector in the list. This provides a robust and scalable way to collect logs from a large number of servers.

Linux Agents can be used to detect file reads, writes, and edits (FIM functionality) with added user context.

Business Services

A Business Service provides a collection of devices and applications serving a common business purpose. You can define a Business Service in FortiSIEM either manually or by the Dynamic CMDB Group framework that adds it to the Business Service once a device matching certain criteria appears in CMDB.

The primary objective of a Business Service is to assist in incident triage. Once a Business Service is defined, every incident is tagged with the impacted Business Services. A Business Service dashboard provides a top-level Incident-centric view of Business Services. The user can take care of incidents for critical Business Services and ensure that they stay up.

Parsers and Monitors

The ability to parse any log to any depth is a key SIEM functionality. FortiSIEM comes inbuilt with over 2,500 event attributes, 175,000 event types and 250 parsers for various device types and applications. In addition, it has a flexible GUI based framework for customers to enhance existing log parsers, and create completely new device types, event attributes, event types and log parsers. The user can test parser changes on a live system and apply them to become effective immediately on all nodes – so changes take effect without any downtime. Parsers can also be exported out of one system and imported into another system. In Service Provider environments, a parser change can be created at a global level and deployed to all organizations.

FortiSIEM also comes with a number of built-in performance monitors and configuration pulling scripts for device types and applications. Discovery automatically enables the applicable monitors and the user can adjust some parameters, such as polling intervals. Similar to log parsers, the user can create and test performance monitors on a live system and apply them to become effective immediately on all nodes – so changes take effect without any downtime. Performance Monitors can also be exported out of one system and imported into another system.

FortiSIEM tracks changes to installed software and network device configuration. If a new configuration file needs to be monitored and can be obtained via a script, then the user can add them to the system. FortiSIEM monitors changes from a current version to a previous version, deviation from a blessed file, and changes between running config and startup config for certain devices.

Entity Risk Score

FortiSIEM displays devices and users (entities) ranked by risk, providing entity risk scores in Risk View. An entity risk score is calculated based on triggering incidents using a proprietary algorithm that incorporates asset criticality, incident severity, frequency of incident occurrence, and vulnerabilities found. In addition, scores are color coded to quickly identify high risk (red), medium risk (yellow) and low risk (green), and also show occurrence trends, such as whether a risk has gone up or down. Each entity can be selected to show a more detailed risk score trend, along with timeline incident data.

User Identity and Location

FortiSIEM creates an Audit trail of User Identity and Location data in real time by associating a network identity (for example: an IP address, or MAC address) to user identity (for example: a user name, computer name, or domain or Cloud logon) and tying that to a location (like a wired switch port, a wireless LAN controller, or VPN gateway or geo-location for VPN logins). The associations are generated by piecing together various pieces of information from Windows Active Directory events, DHCP events, WLAN and VPN logon events and various Cloud service logon events, with discovery results.

FortiSIEM Supervisor and Worker nodes collaborate in a distributed manner to create User Identity and Location records. The IdentityWorker module on Worker nodes keep a partial User Identity and Location in-memory database based on the events that they see. Whenever the IdentityWorker module on a specific Worker sees new information, for example: a new IP address to User association, it updates the database and communicates to the IdentityMaster module on the Supervisor node. The global User Identity and Location database is created by the IdentityMaster module on the Supervisor node by combining information from all IdentityWorker modules. Whenever the IdentityMaster module sees new information, it sends a signal to parser modules in all nodes, which then gets the latest updates from the Supervisor node. The parser module injects IP to User meta-data into events in real time so that this information can be searched without complicated database join operations.

Searches, Reports and Compliance

FortiSIEM provides a unified way to search the data it collects from various devices. All data whether it is system logs, performance metrics, or configuration changes, is converted to an event with parsed event attributes to make it easy to search.

Searches can be done for real-time data or historical data. In real time mode, search occurs in a streaming node on incoming data without touching the event database. In historical mode, the user specifies a time period and data residing in the event database is searched for that time period. Searches can be specified on raw logs or parsed attributes. A rich variety of grouping and aggregation constructs are supported to display data at various granularity. The raw log data is saved into the same event database as the parsed attributes and any attributes added via enrichment are also added to the event and stored in the event database.

FortiSIEM comes pre-built with a large number of reports that can be used as starting points. The user can customize these reports and save them as their own reports for later use. Reports can be scheduled to run at specified times and be delivered in various formats, such as PDF and CSV, via email. FortiSIEM provides a large number of compliance reports, each with reference to specific compliance mandates. To run these reports, the user simply needs to add devices to the specific compliance device group (Business Service) and then run the report.

All searches run in a distributed fashion in FortiSIEM. For deployments with FortiSIEM NoSQL database, the Supervisor node distributes each search query to Worker nodes and summarizes the partial results sent back from the Worker nodes. Assuming you have sufficient NFS IOPS, searches can be made faster up by adding Worker nodes. Worker nodes can be added to a live system. Since event data is centrally stored in NFS, newly added Workers can participate in queries.

For deployments with Elasticsearch, the Supervisor node sends each search query to the Elasticsearch Coordinating node, which then distributes each search query to Elasticsearch Data Node and summarizes the partial results sent back from the Data Node to the Supervisor node. Adding Elasticsearch Data Nodes can make up searches faster. Since each Data Node has its own storage, it takes some time for data to be distributed to the newly added Data Node. However, since data is stored locally on each Data Node, this solution scales horizontally.

Rules and Incidents

Rules detect bad behavioral anomalies for machines and users in real time. FortiSIEM has developed SQL-like XML based rule specification language. The user creates a rule from the GUI, tests it using real events, and then deploys the rule. The XML language is quite powerful and uses CMDB Objects (e.g. Device, Network and Application Groups, Event Type Groups, Malware Objects, Country groups, Watch Lists) to keep the rules concise.

A rule specification involves multiple sub-patterns of events connected by temporal operators (AND, OR, AND NOT, FOLLOWED BY, and NOT FOLLOWED BY). Each sub-pattern is like a SQL Query with filters, group by attributes and thresholds on aggregates. The thresholds can be static or dynamically specified based on statistics. A rule can be nested, meaning a rule can be set to trigger another rule. A rule can also create a watch list that, like a CMDB Object, can be used in another rule.

Rule computation happens in a streaming mode using distributed in-memory computation involving Super and Worker nodes. Latest rule definitions are distributed to Super and Worker nodes. Worker nodes evaluate each rule based on the events it sees and periodically sends partial rule results to the Supervisor node. The Supervisor node keeps the global rule state machine and creates an incident when rule conditions are met. When a rule involves a statistical attribute (for example: mean or standard deviation), a baseline report is created which computes the statistics and updates the rule conditions. The baseline report also runs in a streaming mode using in-line distributed computation. When a CMDB Object changes, an App Server module on the Supervisor node sends a change signal to the Worker nodes, which then downloads the changes. This distributed in-memory computation enables FortiSIEM to scale to near real time performance with high EPS and a large number of rules.

Since FortiSIEM analyzes all data including logs, performance and availability metrics, flows and configuration changes, the rule engine can detect suspicious behavior. This ability to cross correlate across different functional IT domains is what makes the FortiSIEM rule framework powerful.

Incident Notification Policy

Once an incident triggers, the user may want to take an action, for example: send an email, create a ticket or initiate a remediation action. Rather than attaching an action to an incident, which does not scale, FortiSIEM takes a policy-based approach. You can write Incident Notification policies involving Time Of Day, Incident Severity, Affected Items, and Affected Organization and attach actions to policies. This allows you to create corporate wide policies on who works on what and on which time of day. Affected items are specified using CMDB Groups and Assigned Users can be specified using CMDB Users – this makes incident notification policies easy to specify and maintain.

Remediation Library

You may want to remediate an incident by running a script. In FortiSIEM, this amounts to creating an Incident Notification Policy and attaching the Remediation Script as an Action to the Notification Policy. The remediation script may run on the Supervisor node or on the Collectors since the enforced devices may be behind a firewall.

When an incident triggers and a Remediation Action has to be taken, the App Server sends a signal to the involved enforcement points (Supervisor and Collectors). The enforcement point first retrieves necessary information (such as enforced on device IP or Host name, enforced on device credentials and incident details) from the Supervisor node and passes that information to the Remediation Script. After the script executes, the Remediation results are attached to the Incident.

FortiSIEM provides a wide collection of inbuilt Remediation Scripts. The user can create new Remediation Scripts in FortiSIEM.

External Ticketing System Integration

This feature allows you to manage a FortiSIEM incident in an external ticketing system. Several API based built-in integrations are available – ServiceNow, Salesforce and ConnectWise. A Java based framework is available for the user to create integrations to other ticketing systems.

There are four types of integrations available – Device or Incident and Inbound or Outbound.

- *Incident Outbound Integration* is used to create a ticket in an external ticketing system.
- *Incident Inbound Integration* is used to update the external ticket status in FortiSIEM of a ticket opened previously using Incident Outbound Integration. If a ticket is closed in external ticketing system, the ticket status is also updated in FortiSIEM.
- *Device Outbound Integration* is used to update CMDB in an external ticketing system from FortiSIEM CMDB. Every ticketing system needs a CMDB.
- *Device Inbound Integration* is used to update FortiSIEM device attributes from an external CMDB.

To use built-in *Incident Outbound* and *Device Outbound Integrations*, define an appropriate integration and attach it as an Action to an Incident Notification Policy. You can use extensive field mappings to customize how the ticket will appear in the external ticketing system. Incident Inbound and Device Inbound integrations have to be scheduled to run at periodic intervals.

Dashboards

FortiSIEM offers various types of dashboards for the user to understand the data it collects and the incidents that are triggering in the system:

- Summary Dashboards
- Widget Dashboards
- Business Service Dashboards
- Identity and Location Dashboards
- Incident Dashboards

- Interface Usage Dashboards
- PCI Logging Dashboards

Summary Dashboards

Summary dashboards show a near real time view of health, up-time, incidents and other key performance metrics of many devices in a single spreadsheet format – each row is a device and each column is a metric. Cells are color-coded (Red, Yellow, Green) to highlight the values when they cross certain customizable limits. The advantage of this type dashboard is that user can simultaneously compare many metrics of many devices from a single view and instantaneously spot issues. The user can customize the groups of devices and the corresponding metrics. Additionally, the user can build multiple Summary dashboards. FortiSIEM has developed an in-memory database that powers this dashboard – continuous querying event database does not scale. For more information, see Summary Dashboards.

Widget Dashboards

Widget dashboards offer the more traditional Top N dashboard view – one chart for one metric. A wide variety of chart types are available and are described in FortiSIEM Charts and Views.

Any FortiSIEM Report – whether it is reported on Events or on CMDB – can be added to a Widget dashboard. FortiSIEM Widget Dashboards have these distinct advantages.

- Color Coding – Items in each widget can be color coding based on thresholds – this can quickly help the user to spot problems
- Dynamic Search – The user can filter the entire dashboard by Host Name or IP Address to quickly locate what they're searching for
- Streaming Computation – The reports in the widget dashboard are computed in a streaming mode without making repeated queries to the event database. This makes the dashboards fast to load.

For more information, see Widget Dashboards.

Business Service Dashboards

Business Service Dashboards provide a top-down view of Business Service health. The user can see the incidents related to each Business Service and then drill down on the impacted devices and incidents. For more information, see Business Service Dashboards.

Identity and Location Dashboards

Identity and Location dashboards provide a tabular view of network identity to user identity mappings. For more information, see Identity and Incident Dashboards.

Incident Dashboards

FortiSIEM provides two Incident Dashboards – Overview and Risk View.

- The Overview dashboard shows a top-down view into Incidents By Category, Top Incidents and where they are triggering, and Top Impacted Devices and what Incidents they are triggering.
- The Risk View dashboard organizes devices and users by Risk.

For more information, see Overview and Risk View.

Interface Usage Dashboards

This dashboard provides an overview of individual interface usage for Router and Firewall devices. You can obtain metrics at three levels:

device level, interface level and application level. For more information, see Interface Usage Dashboards.

PCI Logging Dashboards

A PCI Logging Status dashboard provides an overview of which devices in PCI are logging. The devices are displayed by CMDB Device Groups (for example Windows, Linux, Firewalls and so on) and by Business Units. For more information, see PCI Logging Dashboards.

Getting Started

The following are the basic steps for getting started with FortiSIEM:

Step 0 - Pre-Install Considerations

FortiSIEM can run in the following modes:

- Single node all in one Virtual Appliance (Supervisor node) running on a wide variety of hypervisors with local event database storage
- Virtual Appliance Cluster – Supervisor and Worker nodes - external event database storage
- Dedicated hardware appliances – single node with local event database storage or cluster with external event database storage

Before starting the installation process, make the following decisions:

- Installation type: Hardware appliance or Virtual appliance
- If Virtual Appliance, then decide:
  - Hypervisor type – ESX, KVM, HyperV, AWS, Azure
  - Enterprise version or Service Provider version
  - Single node (All-in-one Supervisor) or a Cluster (single Supervisor and multiple Workers)
  - Local event database or External storage (cluster requires external storage)
  - External storage type - FortiSIEM event database or Elasticsearch
  - Whether Collectors are needed
- If hardware appliance, then decide:
  - Enterprise version or Service Provider version
  - Single node (All-in-one Supervisor Appliance) or a Cluster (single Supervisor Appliance e.g. 3500F and multiple Workers e.g. 2000F)
  - Local event database or External storage (cluster requires external storage
  - External storage type - FortiSIEM event database or Elasticsearch
  - Whether Collectors are needed

Step 1 - Install the Virtual or Hardware Appliance

You can choose to use an all-in-one FortiSIEM Hardware Appliance or a Virtual Appliance based solution.

To install a FortiSIEM Hardware Appliance (FSM-2000F, FSM-3500F, FSM-500F), see here.

To install a FortiSIEM Virtual Appliance based solution:

- Select the hypervisor (VMWare ESX, AWS, HyperV, KVM) on which FortiSIEM is going to run
- Select event database storage – local or NFS or Elasticsearch
- Set up external storage if needed: NFS and Elasticsearch
  See *NFS Storage Guide* and *Elasticsearch Storage Guide*
- Install FortiSIEM Virtual Appliance (see the installation guides here.)

Step 2 - Install License

Apply the license provided by Fortinet. Note that for virtual appliance install, the UUID of the Supervisor node must match the license while for hardware appliance, the hardware serial numbers must match the license.

After applying the license, the system will reboot and provide a login page.

Login with the following default values:

- **USER ID** - admin
- **PASSWORD** - admin*1
- **CUST/ORG ID** - super
- **DOMAIN** - LOCAL

For more information about FortiSIEM Licensing, see the *Licensing Guide* here.

Step 3 - Specify Event Database Storage

If you chose Virtual Appliances, then specify the storage option (see here – **ADMIN** > **Setup** > **Storage**).

Hardware appliances only support local disk event database storage.

Step 4 - Check System Health and License

Ensure that:

- All system components are up and in good health (**ADMIN** > **Health** > **Cloud Health** – see here)
- The license matches your purchase by visiting the **ADMIN** > **License** > **License** page – see here

Step 5 - (Optional) Create Organizations for Service Provider Deployments

A Service Provider would consist of multiple Organizations.

These Organizations can be defined in two ways:

- **Case 1** - By associating one or more collectors to an Organization – any log received by those Collectors or any devices discovered by those collectors will belong to that Organization. This typically makes sense for remote management scenarios.
- **Case 2** - By associating an IP range to an Organization – this typically makes sense for hosted scenarios

In both cases, create organizations by navigating to **ADMIN** > **Setup** > **Organizations** (see here).

The system will create default system users with Full Admin functionality for each created organization.

Step 6 - (Optional) Check Full Admin Organization Users for Service Provider Deployments

FortiSIEM will automatically create a Super-global Full Admin user and one Full Admin user for each Organization. Ensure that you are able to log in to:

- each Organization using the system created Full Admin users
- Super-Global mode using Super-global Full Admin user and then switch to any Organization

Step 7 - Add Email Gateway

FortiSIEM will send notifications for incidents via email. Setup the email gateway by navigating to **ADMIN** > **Settings** > **System** > **Email** (see here for details).

Step 8 - (Optional) Add Collector

If your monitored devices are behind a firewall or in a distant location across the Internet, then you will need a Collector to collector to collect logs and performance metrics from that location.

FortiSIEM Collectors can be Hardware Appliances or Virtual Appliances. Hardware Appliances are easiest to install.

- For FSM-500F

See *500F Collector Configuration Guide for 6.1* for the installation above.

Install the FortiSIEM Collector Virtual appliance based on the Hypervisor of your choice:

- VMWare ESX
- AWS
- KVM
- Microsoft Hyper-V

See the specific Installation Guides here for the installations above.

Register the Collector to the FortiSIEM Supervisor node.

See the section *Registering Collectors* for the registration process.

Step 9 - (Optional) Set Event Upload Destination for the Collector(s)

You must specify the FortiSIEM nodes where the Collector will upload events to, in **ADMIN** > **Settings** > **System** > **Worker Upload** (see here). There are three options:

- In a simple setup with one Supervisor node, specify the Supervisor node. This is not recommended in larger setups as this will make the Supervisor node busy.
- You may want to specify one or more Worker nodes, listed by Worker IP addresses. The Collectors will load balance across the specified Worker nodes. In this manner, streaming analytics like inline reports and rule are distributed over Worker nodes.
- You may specify a load balancer name that sits in front of the Worker nodes. Note that in this case, you have to carefully tune the load balancing configuration to get optimum performance.

The second option works the best in most cases.

Step 10 - (Optional) Check Collector Health

You want to make sure that Collectors are up and running properly. Go to **ADMIN** > **Health** > **Collector Health** to check (see here for details).

At this point, the system is ready to receive events or perform discovery.

Step 11 - Receive Syslog and Netflow

First check the list of supported devices whose logs are parsed by FortiSIEM out of the box. The list is at **ADMIN** > **Device Support** > **Parsers**. Review the external device support document for further details (see here). If your device is in that list, then FortiSIEM will likely parse your logs out of the box.

Note that with every new version, vendors add new log types or sometimes, even change the log format in a non-backward compatible manner. In that case, the built-in parser may need to be adjusted (this topic is covered in Advanced Operations). If your device is not on the list of built-in parsed devices, then a custom parser needs to be written. This topic is covered in Advanced Operations.

Configure your device to send logs to FortiSIEM. If your device is behind a Collector, then the logs will be sent to the Collector. Otherwise, logs can be sent to Supervisor or Worker node. For devices with high event rates, it is recommended to add a Worker node (Step 19) and send logs directly to Worker node. Most vendors have straightforward methods to send syslog to external systems – see here, but be aware that the information may be a little out of date. Consult your vendor's manual in these situations.

FortiSIEM automatically receives Netflow variations of well-defined ports.

Step 12 – Check CMDB Devices and Run Searches for Received Events

If the logs in Step 11 are received correctly in FortiSIEM, then you should see the sending devices in the correct CMDB device and application group.

You can also search for the logs and see how they are parsed. Go to **ANALYTICS** > **Shortcuts** from the folder dropdown and run 'Raw Messages', 'Top Reporting Devices' or 'Top Event Types' queries (see here for details).

Step 13 - Discover Devices

Some systems (for example, Linux based servers) have generic log patterns – so logs cannot precisely identify the Operating system. If you want to get accurate information from such systems, you must discover them via protocols such as SNMP, and SSH. For Windows servers, if you want to collect logs via WMI, then you must discover them via WMI only or SNMP and WMI.

To perform discovery, first go to **ADMIN** > **Setup** > **Credentials** and set up credentials, and then go to **ADMIN** > **Setup** > **Discovery** and run discoveries. For Service Provider deployments with collectors, do the discoveries from each organization because IP addresses and names can overlap.

You can run discovery in the foreground or in the background. If you run in the foreground, then you will know when it finishes. If you run in the background, then you must go to Tasks section to see the discovery completion percentages and status. Note that ill-defined discoveries can take a long time to complete – see here for guidelines.

To see the benefits of discovery, see the *External Systems Configuration Guide* here and search your device type.

Step 14 - Check CMDB and Performance Monitors for Discovered Devices

After discovery is complete, you will see the CMDB populated with the discovered devices in the correct device, application and network segment folders.

Note the following:

- If the number of devices is within your license limits, then the discovered devices will be in the Managed and Pending states. Otherwise, a set of (randomly chosen) devices exceeding your license limit will be in the Unmanaged state. FortiSIEM will not receive logs from unmanaged devices, nor can they be monitored. You can flip a device from Unmanaged to Managed and vice-versa. You can also buy additional licenses to rectify this situation.
- If devices have overlapping IP addresses, then they will be merged. Check for this incident “PH_RULE_DEVICE_MERGED_OVERLAP_IP” to look for merged devices. To correct this situation, you have two choices:
  - Change the overlapping IP address on the device, delete the device from CMDB, and rediscover.
  - If the overlapping IP is a Virtual IP (VIP), then add this IP to the VIP list in **ADMIN** > **Settings** > **Discovery**. Delete the device from **CMDB** and rediscover.

After you have corrected the situation, make sure that devices are not merged and appear correctly in **CMDB**.

Note that in the enterprise mode, discoveries are done by the Supervisor node. In the Service Provider version, there are two possibilities, depending on how organizations are defined (see Step 5).

- For Organizations defined by IP addresses, discoveries are done by the Supervisor node. After discovery, the devices should belong to the correct organization.
  - If all interfaces of a device belong to the specified Organization IP range, then the device belongs to that Organization.
  - On the other hand, if at least one IP does not belong to specified Organization IP range, then the device belongs to the Super/local Organization (representing the Hosting Service Provider Organization).
- For Organizations with Collectors, discoveries are done by the associated Collector node. Check **CMDB** to see that the devices are marked with the correct Organization and Collector.

As part of discovery, FortiSIEM also discovers which performance metrics it can collect and which logs it can pull. See **ADMIN** > **Setup** > **Pull Events** and **ADMIN** > **Setup** > **Monitor Performance** tabs (see here for details). You can turn off log/performance metric collection or tune the polling intervals.

Performance monitoring and log collection is a continuous process. If you tested the credentials before running discoveries (**ADMIN** > **Setup** > **Credentials** > **Test Connectivity**) and fixed the errors showing up in Discovery error tab, then the metric/log collection should not have errors. After running for some time, there can be errors – some reasons being (a) network connectivity issues from FortiSIEM to the devices, (b) someone changed the credentials or access policies on the device, (c) the device can have performance issues. Please check for errors in the **ADMIN** > **Setup** > **Pull Events** and **ADMIN** > **Setup** > **Monitor Performance** tabs (see here for details) and fix them. If credentials have changed, then you must change the credentials in **ADMIN** > **Setup** > **Credentials** and rediscover the corresponding devices.

Step 15 - Check Monitored Device Health

You can watch the current health of a device in CMDB by selecting the device and choosing the Device health option from the menu. To see the performance metrics in real time, select the device in CMDB and choose the Real time performance option from the menu.

Step 16 - Check Incidents

FortiSIEM provides a large number of built-in machine and user behavior anomalies in the form of rules. These rules are active by default and will trigger incidents. See here on how to navigate incidents. Advanced Operations describes how to tune these rules for your environment.

Step 17 - Notify an Incident via Email

You may want to notify users via email when an incident triggers. This is achieved in one of two ways.

- Create an Incident Notification Policy and specify the incident matching criteria and the receiver email address. See here for details.
- Select an incident from **INCIDENTS** > **List** view, go to **Actions** and select **Notify via Email**. See here for details.

Note that many other advanced actions are possible such as:

- Customizing the email template
- Remediating the incident by running a script
- Opening a ticket in an external ticketing system and so on.

See Advanced Operations for details.

Step 18 - Create a Ticket in FortiSIEM

You can use FortiSIEM built-in ticketing system to handle tickets. Currently, this is handled outside of the notification policy concept (Step 17).

To create a FortiSIEM ticket, select one or more incidents from **INCIDENTS** > **List** view, go to **Actions** and select **Create Ticket**.

Step 19 - View System Dashboards

FortiSIEM provides several built-in dashboards:

- Incident Dashboard – Overview and Risk View
- Incident Location View - (see here for details)

- Incident and Location Dashboard – select **DASHBOARD** > Incident and Location Dashboard (this requires you to collect DHCP, Active Directory logon events – see here for details

Go to **DASHBOARD** and select the dashboard of your choice.

Step 20 - (Optional) Add Worker

For larger software based deployments that involve multiple collectors or large number of monitored devices or devices with high event rates, it is highly recommended to deploy one or more Workers to distribute the Supervisor node's workload. Note that Workers cannot be added to Hardware-based appliances.

Workers can be added by navigating to **ADMIN** > **License** > **Nodes** - see here for details.

After adding the Worker(s), remember to add the workers to the collect event upload destination list (**ADMIN** > **Settings** > **System** > **Worker Upload** - see here for details).

Step 21 - (Optional) Check Worker Health

Check the health of the Workers by visiting **ADMIN** > **Health** > **Cloud Health**.

- The health of all nodes should be Normal, load average should be within bounds (typically less than the number of cores), CPU should not be pegged at 99%, and little swap should be used.
- Click on any node and check the health of individual processes running on that node in the bottom pane. Status should be Up with large Up times and reasonable CPU and memory usage.

Step 22 - Check License Usage

Check whether the system is operating within licensed parameters (Monitored device count and EPS) by visiting **ADMIN** > **License** > **Usage** (see here for details).

Step 23 - Set Home Page and Complete Your User Profile

Click the **User Profile** icon (🪪) in the upper right corner of the UI. The dialog box contains three tabs:

Basic - Use the **Basic** tab to change your password into the system.

Contact - Use the **Contact** tab to enter your contact information.

UI Settings - Use the **UI Settings** tab to set the following:

Settings	Guidelines
Home	Select the tab which opens when you log in to the FortiSIEM UI.
Incident Home	Select the Overview, List, Risk, or Explorer display for the **INCIDENTS** tab.
Dashboard Home	Select the Dashboard to open by default under the **DASHBOARD** tab from this drop-down list.
Dashboard Settings	Select the type of dashboards to be visible/hidden using the left/right arrows. The up/-

Settings	Guidelines
	down arrows can be used to sort the Dashboards.
Language	Specify which language will be used for the UI display. Many UI items have been translated into the languages in the drop-down list, including buttons, labels, top-level headings, and breadcrumbs. Items that are data-driven are not translated.
Theme	Select Dark or Light theme for FortiSIEM UI. Save and refresh the browser to view the change.

Step 24 - Log on to the Console and Check Status

In rare situations when the GUI is not responding, you may need to SSH in to the system console of Supervisor, Worker and Collector nodes and issue some commands. The list of node IP addresses are available in **ADMIN** > **License** > **Nodes**, **ADMIN** > **Health** > **Cloud Health** and **ADMIN** > **Health** > **Collector Health**.

Log on to each of them using the default password as below. Step 25 describes how to change the default password.

FortiSIEM provides two SSH user accounts:

- User: 'root' and password: `ProspectHills`
- User: 'admin' and password: `admin*1`

The following commands are available:

- Run `phstatus` from the admin account – shows the status of all FortiSIEM processes
- Run `phstatus -a` from the root account – shows the detailed status of all FortiSIEM processes along with events per second and local I/O rates

The following Linux commands can be useful:

- Run `top` from the admin account – shows the CPU, memory usage of all Linux processes
- Run `iostat -x 2` to check the I/O statistics for local disk
- Run `nfsiostat -x 2` to check the NFS I/O statistics for Supervisor and Worker for NFS based deployments
- Run `tail -300f /opt/phoenix/log/phoenix.log` to see the C++ module log

Step 25 - Change Default Passwords

FortiSIEM provides these default passwords. Please change them before running the system for production.

On Supervisor, Workers, Collectors and Report Server:

- User: `root` and password: `ProspectHills`
- User: `admin` and password: `admin*1`

On GUI:

- Enterprise deployment – User: `admin` and password: `admin*1` with full Admin User rights
- Service Provider deployment – One user for Super/Global, Super/Local and each user created organizations - user: `admin` and password: `admin*1`

The GUI accounts can be changed from the GUI by clicking the **User Profile** icon on top right corner (🪪) and opening the **Basic** tab. Linux passwords can be changed by issuing the `passwd` command as a logged in user.

Advanced Operations

FortiSIEM enables you to perform advanced operations for the following:

CMDB Advanced Operations

FortiSIEM enables you to perform the following CMDB advanced operations.

- Discovering Users
- Creating FortiSIEM Users
- Setting Eternal Authentication
- Setting 2-factor Authentication
- Assigning FortiSIEM Roles to Users
- Creating Business Services
- Creating Dynamic DMDB Groups
- Setting Device Geo-Location
- Creating CMDB Reports

Discovering Users

Users can be discovered via LDAP, OpenLDAP, or they can be added manually. Discovering users via OpenLDAP or OKTA are similar.

To discover users in Windows Active Directory, discover the Windows Domain Controller:

1. Go to **ADMIN** > **Setup** > **Credentials**.
2. Click **New** to create an LDAP discovery credential by entering the following in the Access Method Definition dialog box:
   a. **Name** for the credential
   b. **Device Type** as "Microsoft Windows Server 2012 R2"
   c. **Access Protocol** as "LDAP"
   d. **Used For** as "Microsoft Active Directory"
   e. Enter the **Base DN** and **NetBios Domain**
3. Test the LDAP Credentials.

4. Run discovery.
5. Go to **CMDB** > **Users**.
6. Click the "Refresh" icon on left panel and see the users displayed on the right panel.

To add users manually:

1. Go to **CMDB** > **Users**.
2. Click **New** and add the user information.

For details about Discovering Users, see here (Refer to the table by searching: Credentials for Microsoft Windows Server)

For details about Adding Users, see here.

Creating FortiSIEM Users

To create users that access FortiSIEM:

1. Login as a user with "Full Admin" rights.
2. Create the **user** in CMDB.
3. Set a password – after logging in, the user can set a new password.
4. Select the user and click **Edit**.
5. Select **System Admin** and enter the following:
   a. **Authentication Mode** - "Local" or "External"
   b. **Enterprise case** - select the Role
   c. **Service Provide Case** - select the Role for each Organization

For details about creating users, see here.

To change the password:

1. Login as the user.
2. Click the "User Profile" icon on the top-right corner.
3. Click **Save**.

Setting External Authentication

FortiSIEM users can be authenticated in two ways:

- **Local** authentication – user credentials are stored in FortiSIEM
- **External** authentication – user credentials are stored in an external database (AAA Server or Active Directory) and FortiSIEM communicates with the external database to authenticate the user

Step 1: Set up an Authentication Profile

1. Login as a user with **Full Admin** rights.
2. Create an authentication profile by visiting **ADMIN** > **Settings** > **General** > **External Authentication**.
3. Click **New**.
4. Provide the following information in the External Authentication Profile dialog box:
   a. Enter a Name for the profile
   b. Select an **Organization** from the drop-down list

  c. Set **Protocol** appropriately (for example, LDAP, LDAPS, or LDAPTLS for Active Directory)
  d. Enter the **IP/Host** and **Port** number
5. Make sure the credentials are defined in **ADMIN** > **Setup** > **Credentials**.
6. Select the entry and click **Test** to ensure it works correctly.

Step 2: Attach the Authentication Profile to the user

1. Select the user under **CMDB** > **User** and click **Edit**.
2. Select **System Admin** and click the edit icon.
3. Set **Mode** to "External" and set the Authentication Profile created.

For details about Setting up Authentication Profiles, see here.

For details about Editing Users, see here.

Setting 2-factor Authentication

FortiSIEM supports Duo as 2-factor authentication for FortiSIEM users:

Step 1: Set up an Authentication Profile

1. Login as a user with **Full Admin** rights.
2. Create an authentication profile by visiting **ADMIN** > **Settings** > **General** > **External Authentication**:
   a. Set **Protocol** to "Duo"
   b. Make sure the credentials are defined in **ADMIN** > **Setup** > **Credentials**
   c. Select the entry and click **Test** to make sure it works correctly

Step 2: Attach the Authentication Profile to the user

- Select the user **CMDB** > **Users** and click **Edit**
- Select **System Admin** and click the edit icon
- Set **Mode** to "External" and set the Authentication Profile created

For details about Setting up Authentication Profiles, see here.

For details about Editing Users, see here.

Assigning FortiSIEM Roles to Users

FortiSIEM allows the admin user to create Roles based on what data the user can see what the user can do with the data. To set up Roles:

Step 1: Create a Role of your choice

1. Login as a user with **Full Admin** rights.
2. Go to **ADMIN** > **Settings** > **Role** > **Role Management**.
3. Make sure there is a Role that suits your needs. If not, then create a new one by clicking **New** and entering the required information. You can also Clone an existing Role and make the changes.

Step 2: Attach the Role to the user

1. Select the user **CMDB** > **Users** and click **Edit**.
2. Select **System Admin** and click the edit icon.
3. Set **Default Role**:
   a. Enterprise case – select the **Role**
   b. Service Provide Case – select **Role** for each Organization

For details about Setting up Roles, see here.

For details about Editing Users,see here.

Creating Business Services

Business Service is a smart grouping of devices. Once created, incidents are tagged with the impacted Business Service(s) and you can see business service health in a custom Business Service dashboard.

For details about creating a Business Service, see here.

For details about setting up Dynamic Business Service, see here.

For details about viewing Business Service health, see here.

Creating Dynamic CMDB Groups and Business Services

CMDB Groups are a key concept in FortiSIEM. Rules and Reports make extensive use of CMDB Groups. While inbuilt CMDB Groups are auto-populated by Discovery, user-defined ones and Business Services are not. You can use the Dynamic CMDB Group feature to make mass changes to user-defined CMDB Groups and Business Services.

To create Dynamic CMDB Group Assignment Rules:

1. Login as a user with **ADMIN** tab modification rights.
2. Go to **ADMIN** > **Settings** > **Discovery** > **CMDB Group**.
3. Click **New**.
4. Enter CMDB Membership Criteria based on **Vendor**, **Model**, **Host Name** and **IP Range**.
5. Select the CMDB group (**Groups**) or Business Services (**Biz Services**) to which the Device would belong if the criteria in Step 3 is met.
6. Click **Save**.

You can now click **Apply** to immediately move the Devices to the desired CMDB Groups and Business Services. Discovery will also honor those rules – so newly discovered devices would belong to the desired CMDB Groups and Business Services.

For details about Setting up Dynamic CMDB Groups and Business Services, see here.

Setting Device Geo-Location

FortiSIEM has location information for public IP addresses. For private address space, you can define the locations as follows:

1. Login as a user with **ADMIN** tab modification rights.
2. Go to **ADMIN** > **Settings** > **Discovery** > **Location**.
3. Click **New**.
4. Enter **IP/IP Range**.

5. Specify the Corresponding **Location** for the IP address Range.
6. Select **Update Manual Devices** if you want already discovered device locations to be updated.
7. Click **Save**.
   You can now click **Apply** to set the geo-locations for all devices matching the IP ranges.

For details about Setting Device Location, see here.

Creating CMDB Reports

If you want to extract data from FortiSIEM CMDB and produce a report, FortiSIEM can run a CMDB Report and display the values on the screen and allows you to export the data into a PDF or CSV file.

For details about Creating CMDB Reports, see here.

Incidents and Cases Advanced Operations

FortiSIEM enables you to perform the following advanced operations:

- Changing the Home Country
- Searching Incidents
- Tuning Incidents via Exceptions
- Tuning Incidents via Modifying Rules
- Tuning Incidents via Drop Rules
- Tuning Incidents by Adjusting Thresholds
- Clearing Incidents
- Adding Comments or Remediation Advice to an Incident
- Remediating an Incident
- Notifying an Incident via Email
- Creating New Rules
- Creating a FortiSIEM Ticket
- Creating a Ticket in External Ticketing System

Changing the Home Country

Many rules and reports use the My Home CMDB Object as defined in **RESOURCES** > **Country Groups** > **My Home**. By default, it is set to United States of America.

For details on changing this, see here.

Searching Incidents

If you want to search for specific incidents, go to **INCIDENTS** > **List** > **Actions** > **Search**. A Search Windows appears on left. First, select the Time Window of interest. Then by clicking on any of the criteria, you can see the current values. You can select values to see matches incidents in the right pane.

For details about Searching Incidents, see here.

Tuning Incidents via Exceptions

If you do not want a rule to trigger for a specific Incident Attribute, then you can create an exception.

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident.
4. Click **Actions** > **Edit Rule Exception**.
5. Enter the exception criteria – attribute based or time-based.

For details about Tuning Incidents via Exceptions, see here.

Tuning Incidents via Modifying Rules

Sometimes modifying the rule is a better idea than creating exceptions. For example, if you do not want a rule to trigger for DNS Servers, simply modify the rule condition by stating something like “Source IP NOT CONTAIN DNS Server”. To do this:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident.
4. Click **Actions** > **Edit Rule**.
5. Edit the Rule.
   If it is a System Rule, then you must save it as a User Rule. Deactivate the old System Rule and activate the new User Rule.

For details, see here.

Tuning Incidents via Drop Rules

Sometimes the rule can be prevented from triggering by dropping the event from rule considerations. There are two choices - (a) store the event in database but not trigger the rule or (b) drop the event completely.

To do this:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incident shows in the right pane.
3. Highlight the Incident.
4. Click **Actions** > **Create Event Dropping Rule**.
5. Specify event drop criteria and action. Events can be dropped on certain parsed fields (like Reporting/Source/Destination IP and Regex filter on the content).

For details, see here.

Tuning Incidents by Adjusting Thresholds

Some performance rules are written using global thresholds, for example - the Rule “High Process CPU: Server” uses the global threshold “Process CPU Util Critical Threshold” defined in **ADMIN** > **Device Support** > **Custom Property**.

You have two choices – (a) modify the global threshold or (b) modify the threshold for a specific device or a group of devices. If you change the global threshold, then the threshold will change for all devices.

To modify the global threshold, follow these steps:

1. Go **ADMIN** > **Device Support** > **Custom Property**.
2. Select the property and click **Edit**.
3. Enter the new value and click **Save**.

For details, see here.

To modify the threshold for one device, follow these steps:

1. Go to **CMDB**.
2. Select the device and click **Edit**.
3. In the **Properties** tab, enter the new value and click **Save**.
   To modify the threshold for a group of devices, repeat the above step for all devices.

Clearing Incidents

In some cases, the Incident may not be happening anymore as the exception condition was corrected.

To clear one or more Incidents:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Actions** > **Clear Incident**.
5. Enter **Reason** and click **OK**.

For details, see here.

Adding Comments or Remediation Advice to an Incident

To add a comment to an Incident:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Actions** > **Edit Comment**.
5. Enter the **Comment** and click **OK**.

For details, see here.

Sometimes, it is necessary to add Remediation advice for the recipient of an Incident, so he can take some action to remediate the Incident. This has to be done by editing the Rule.

1. Go to **RESOURCES** > **Rules**.
2. Select a Rule and click **Edit**.
3. Enter **Remediation Note** text and click **Save**.

For details, see here.

The Remediation text can be added to the Incident Notification email template.

For details, see here.

Remediating an Incident

You can use the following commands to enable Windows Remote Management (WinRM) and set authentication on the target Windows Servers. See Remediations for information on adding, editing, and deleting a remeditation from the FortiSIEM UI.

In the remediation script:

1. When you initiate the WinRM session, set `transport` parameter to `ssl`.
2. Set the `server_cert_validation` option accordingly. If you do not need to validate the certificate, set to `ignore`. For example:
   ```
   session = winrm.Session(enforceOn, auth = (user, password), transport="ssl",
   server_cert_validation = "ignore")
   ```

In the target Windows server:

Note: You might need to disable Windows Firewall before running remediation.

1. Create the self-signed certificate in the certificate store, for example:
   ```
   New-SelfSignedCertificate -CertStoreLocation Cert:\LocalMachine\My -DnsName
   "mySubjectName.lan"
   ```

   where `Cert:\LocalMachine\My` is the location of the certificate store and `mySubjectName.lan` is the subject alternate name extension of the certificate.
2. Create an HTTPS listener, for example:
   ```
   winrm create winrm/config/Listener?Address=*+Transport=HTTPS '@{Port
   ="5986";Hostname="{your host name}"; CertificateThumbprint="{Cer-
   tificateThumbprint}"}'
   ```
3. Start the WinRM service and set the service `startup` type to `auto-start`. The `quickconfig` command also configures a listener for the ports that send and receive WS-Management protocol messages using either HTTP or HTTPS on any IP address.
   ```
   winrm quickconfig -transport:https
   ```
4. Validate the WinRM service configuration and Listener.
   a. Check whether basic authentication is allowed, for example:
      ```
      winrm get winrm/config/service
      ```
   b. Check whether a listener is running, and verify the default ports, for example:
      ```
      winrm get winrm/config/listener
      ```

Remediation can be done either on an ad hoc basis (for example, user selects an Incident that has already occurred to Remediate) or using a Notification Policy where the system takes the Remediation action when Incident happens. First, make sure the Remediation script for your scenario is defined. Check the existing Remediation scripts in **ADMIN** > **Settings** > **General** > **Notification Policy** > Remediation settings. If your device is not in the list, add the needed Remediation script.

To set ad hoc remediation:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incident you want to remediate (you can remediate only one Incident at a time)..
4. Click **Actions** > **Remediate Incident**.

5. In the **Run Remediation** dialog box:
    a. Select the script in the **Remediation** drop-down list that you want to run.
    b. Select the role that the script will run on from the **Run On** drop-down list.
    c. Open the **Enforce On** drop-down list to choose which devices the remediation script will run on. In the **Run Remediation** dialog box, open the **Device** tree. Select individual devices and shuttle them to the **Selections** column. (You can choose only individual devices; you cannot choose device groups.)
6. Click **Run** in the **Run Remediation** dialog box.

For details, see here.

To set policy-based remediation:

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**.
2. Click **New**.
3. Under **Action**, click the edit icon next to **Run Remediation/Script**.
4. In the **Notification Policy - Define Script/Remediation** dialog box click New.
5. In the dialog box tha topens click either **Legacy Script** or **Remediation**:
    - **Legacy Script**:
        - Enter the name and path to the script in the **Script** field.
        - Select the role the script will run on from the **Run On** drop-down list.
    - **Remediation**:
        - Select a remediation script from the **Script** drop-down list.
        - Select the role that the script will run on from the **Run On** drop-down list.
        - Open the **Enforce On** drop-down list to choose which devices the remediation script will run on. In the**Notification Policy - Define Script/Remediation - Enforce On** dialog box, open the **Device** tree. Select individual devices and shuttle them to the **Selections** column. (You can choose only individual devices; you cannot choose device groups.)
6. Click **Save**.

For details, see here.

To see the Notification history of an Incident:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Actions** > **Show Notification History**.

For details, see here.

Notifying an Incident via Email

Notifying an Incident can be done either on ad hoc basis (for example - user selects an Incident that has already occurred to notify) or using a Notification Policy where the system takes the notification action when Incident happens.

First, make sure that Email Server has been properly defined in **ADMIN** > **Settings** > **Email** > **Email Settings**.

FortiSIEM has a built-in Incident Notification Email template. If you want a different one, please define it under **ADMIN** > **Settings** > **Email** > **Incident Email Template**.

For details, see here.

To set ad hoc notifications:

1. Go to **INCIDENTS** > **List** view.
2. Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
3. Highlight the Incidents.
4. Click **Actions** > **Notify via Email**.
5. Choose Receive Email Address and Email Template.
6. Click **Send**.

For details, see here.

For Policy based Notification

To send policy-based notifications:

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**.
2. Click **New**.
3. Specify the Incident Filter Conditions (**Severity**, **Rules**, **Time Range**, **Affected Items**, **Affected Organizations**) carefully to avoid excessive emails.
4. Under **Action**, click **Send Email/SMS to Target Users**.
5. Enter **Email Address** or Users from CMDB.
6. Click Save.

For details, see here.

To see the Notification history of an Incident:

- Go to **INCIDENTS** > **List** view.
- Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
- Highlight the Incidents.
- Click **Action** > **Show Notification History**

For details, see here.

Creating New Rules

Sometime, you may want to create a new rule from scratch.

For details, see here.

Creating a FortiSIEM Ticket

First make sure that:

- Ticket's assigned user is in CMDB
- Assigned user's Manager that is going to handle escalation is in CMDB
- A Ticket Escalation Policy is defined

For adding users see Advanced Operations > Creating System users.

For defining ticket escalation policy, see here.

To create a FortiSIEM ticket:

- Go to **INCIDENTS** > **List** view.
- Search the Incident (**Actions > Search**) or make sure that Incidents show in the right pane.
- Highlight the Incidents.
- Click **Actions** > **Create Ticket**.
- Click **Save**

Note that you can put multiple Incidents on one ticket or add an Incident to an existing ticket.

For details, see here.

Creating a Ticket in External Ticketing System

First, define an Incident Outbound Integration Policy by visiting **ADMIN** > **Settings** > **General** > **External Integration**.

For details, see here.

Then set the Incident Outbound Integration Policy in Notification Policy Action:

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**.
2. Click **New**.
3. Specify the Incident Filter Conditions (**Severity**, **Rules**, **Time Range**, **Affected Items**, **Affected Organizations**) carefully to avoid excessive emails.
4. Under **Action**, click **Invoke an Integration Policy**.
5. Choose the Integration Policy.
6. Click **Save**.

For details, see here.

To update external ticket state in FortiSIEM:

1. Define an Incident Inbound Integration Policy by visiting **ADMIN** > **Settings** > **General** > **External Integration**.
2. Select the Policy and click **Schedule** to run the Incident Inbound Integration Policy.

For details, see here.

Device Support Advanced Operations

FortiSIEM enables you to perform the following advanced operations:

- Checking Device Monitoring Status and Health
- Setting Devices Under Maintenance
- Creating Custom Monitors
- Setting Important Interfaces and Processes

- Modifying System Parsers
- Creating Custom Parsers
- Handling Multi-line Syslog
- Creating Synthetic Transaction Monitors
- Mapping Events to Organizations
- Adding Windows Agents
- Adding Linux Agents
- Forwarding Events to External Systems

Checking Device Monitoring Status and Health

For Performance Monitoring scenarios, you would like to know:

- Is FortiSIEM is able to monitor the devices on time? Is FortiSIEM falling behind?
- Are there monitoring errors?
- What is the current health of monitored devices?

To check whether FortiSIEM is able to collect monitoring data on time:

1. Go to **CMDB**.
2. Search for the device and by typing in a string in the search window.
3. Check the **Monitor Status** column.
4. If Monitor Status Warning or Critical, then select the Device and check the Monitor sub-tab in the bottom pane to find out the reason.

FortiSIEM is an optimized multi-threaded solution. If one node is given too many devices to monitor, each device with many metrics, then it may not be able to keep up. If FortiSIEM is not able to keep up (e.g. polling interval is 1 minute and last poll was 3 minutes ago), then you can do one of the following:

1. Check the Monitored Device resources (CPU, memory) and the network between FortiSIEM and the Monitored Device. Many monitoring protocols such as SNMP, WMI will not operate under WAN type latencies (greater than 10 msec).
2. Increase the polling intervals by visiting **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Edit Intervals**. **Note**: If you increase polling intervals, some performance monitoring rules that require a certain number of polls in a time window may not trigger. Please adjust those rules either by reducing the number of polls or increasing the time window. For example, if a rule needs 3 events (polls) for a 10 min time window with original polling interval as 3 min, the rule will not trigger if polling interval is changed to 4 min or higher. To make the rule trigger again, either reduce the number of events needed (for example, from 3 to 2) or increase the time window (for example, from 10 min to 15 min).
3. Turn off some other jobs by visiting **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Edit Intervals**.
4. Deploy Collectors close to the Monitored Devices or deploy more Collectors and distribute performance monitoring jobs to Collectors by doing re-discovery.

To check for Monitoring errors:

- Go to **ADMIN** > **Setup** > **Monitor Performance** > **More** > **Errors**.

For details see here.

To see current health of a monitored device:

1. Go to **CMDB**.
2. Search for the device and by typing in a string in search window.
3. Choose **Actions** > **Device Health**.

For details, see here.

Setting Devices Under Maintenance

If a device will undergo maintenance and you do not want to trigger performance and availability rules while the device is in maintenance, then

1. Go to **ADMIN** > **Setup** > **Maintenance**.
2. Select the Maintenance Schedule.
3. Select the Group of Devices or Synthetic Transaction Monitors (STM) for maintenance.
4. Make sure the **Generate Incidents for Devices under Maintenance** is checked.

For details, see here

Creating Custom Monitors

Although FortiSIEM provides out of the box monitoring for many devices and applications, user can add monitoring for custom device types or add monitoring for supported device types.

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Click **Enter Performance Object** > **New** and enter the specification of the Performance Object.
3. Select the Performance Object and click **Test**.
4. Click **Enter Device Type to Performance Object Association** > **New** and choose a set of Device Types and associated Performance Objects.
5. Go to **ADMIN** > **Setup** > **Credentials** and enter the Device Credentials for a set of device types specified in Step 4.
6. Go to **ADMIN** > **Setup** > **Discovery** and discover these devices.
7. FortiSIEM will pick the customer monitors defined in Step 2 if the Tests in Step 3 succeeded.
8. Go to **ADMIN** > **Setup** > **Monitor Performance** and see the monitors
   From the same tab, Select one or more devices and Click **More** > **Report** and check whether the monitoring events are generated correctly.

Steps 1-4 are described here.

Steps 5 is described here.

Steps 6 is described here.

Step 8-9 are here.

Setting Important Interfaces and Processes

A network may have hundreds of interfaces and you have may have hundreds of network devices. Not all interfaces may not be interesting for up/down and utilization monitoring. For example, you may only want to monitor WAN links and trunk ports and leave out Access Ports. This saves you lots of CPU and storage. Similar logic applies to critical processes on servers.

Since FortiSIEM discovers interfaces and processes, it is easy to select Critical Interfaces and Processes for Monitoring.

1. Go to **ADMIN** > **Settings** > **Monitoring**.
2. Click **Important Interfaces**> **Enable** > **New** and select the Interfaces.
3. Click **Important Processes**> **Enable**> **New** and select the Processes.

Note that once you select Important Interfaces and Processes, only these Interfaces and Processes will be monitored for availability and performance.

For details, see here.

Modifying System Parsers

If you want to modify a built-in log parser, then do the following steps:

1. Go to **ADMIN** > **Device Support** > **Parsers**.
2. Select a Parser and click **Disable** since you have two parsers for the same device.
3. Select the same Parser and click **Clone**.
4. Make the required modifications to the parser.
5. Click **Validate** to check the modified Parser syntax.
6. Click **Test** to check the semantics of the modified Parser.
7. If both Validate and Test pass, then click **Enable** and then **Save**.
   The modified Parser should show **Enabled**
8. Click **Apply** to deploy the modified Parser to all the nodes.

For details, see here.

Creating Custom Parsers

If you want to create a completely new log parser, then do the following steps:

1. Go to **ADMIN** > **Device Support** > **Parsers**.
2. Parsers are evaluated serially from top to bottom in the list. Select the parser just before the current custom parser and click **New**.
3. Fill in the parser details – **Name**, **Device Type**, test Events and the parser itself.
4. Click **Validate** to check the syntax
5. Click **Test** to check the semantics of the modified parser.
6. If all passes, then click **Enable** and then click **Save**.
   The newly added parser should show **Enabled**.
7. Click **Apply** to deploy the change to all the nodes.

For details, see here.

Handling Multi-line Syslog

When devices send the same log in multiple log messages, you can combine them into one log in FortiSIEM to facilitate analysis and correlation.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Multiline Syslog**.
2. Click **New** to begin a multi-line syslog handling rule.
3. Enter a **Protocol** – TCP or UDP.
4. Enter a **Begin Pattern** and **End Pattern** regular expressions.
   All the logs matching a begin pattern and an end pattern are combined into a single log
5. Click **Save**.

For details, see here.

Creating Synthetic Transaction Monitors

You can define a Synthetic Transaction Monitor to monitor the health an application or a web service. To do this:

1. Go to **ADMIN** > **Setup** > **STM**.
2. **Step 1: Create a monitoring definition**, click **New** and enter the required fields. When the protocol is HTTP, then a Selenium script can be input. Specify the timeout values for detecting STM failures.
3. **Step 2: Apply the monitoring definition to a host**
4. **Step 3: Make sure it is working correctly** - click **Monitor Status**.

For details, see here.

Mapping Events to Organizations

In most cases, the events received by a Collector is tagged with the Organization to which the Collector belongs. In some cases, events for multiple Organizations are aggregated by an upstream device and then forwarded to FortiSIEM. In this case, FortiSIEM needs to map events to organizations based on some parsed event attribute. An example is the FortiGate VDOM attribute.

This is accomplished as follows:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping**.
2. Click **New** to create an Event Org mapping definition.
3. Select a **Device Type** from the drop-down list.
4. Specify the **Event Attribute** that contains the Organization information.
5. Specify the **Collector** that will do this Event Org Mapping.
6. Specify an **IP** or **IP Range**.
7. Specify the mapping rules by clicking the edit icon next to **Org mapping**. In the Event Organization Mapping dialog box, map Event Attribute values to Organizations.

For details, see here.

Adding Windows Agents

FortiSIEM Windows Agents provides a scalable way to collect performance metrics, logs and other audit violations from a large number of Windows servers. Windows Agents (version 3.1 onwards) can be configured and managed from the FortiSIEM GUI. Windows Agent Manager is not required. As long as license is available, you can install Windows Agents and register to the FortiSIEM Supervisor node.

For details about Installing Windows Agents, see Windows Agent 3.2.0 Installation Guide.

For details about Configuring Windows Agent in FortiSIEM, see here.

Adding Linux Agents

Starting release 5.2.1, Linux Agent requires a license. Install a Linux Agent and register to the FortiSIEM Supervisor node. As long as the license is available, you can install Linux Agent and register to the FortiSIEM Supervisor node. Linux Agents can be configured and managed from the FortiSIEM GUI.

For details about Installing Linux Agents, see Linux Agent Installation Guide.

For details about Configuring Linux Agent in FortiSIEM, see here.

Forwarding Events to External Systems

Events received by FortiSIEM can be forwarded to external systems. FortiSIEM provides a flexible way to define forwarding criteria and forwarding mechanism such as syslog, Kafka and Netflow.

For details, see here.

Rules, Reports and Dashboards Advanced Operations

FortiSIEM enables you to perform the following advanced operations:

- Creating New Rules
- Creating New Reports
- Scheduling Reports
- Customizing Built-in Dashboards
- Creating Custom Dashboards
- Customizing Business Service Dashboards

Creating New Rules

To create new Rules, go to **RESOURCES** > **Rules**, choose a folder and click **New**. Remember to test and activate the rule.

For details, see here.

Rules can also be created from **ANALYTICS** tab. Once you have run a search, create a rule from it by clicking **Actions** > **Create Rule.**

For details, see here.

Creating New Reports

New Reports can be created from **RESOURCES** > **Reports** > Choose a Folder > Click **New**.

For details, see here.

Reports can also be created from **ANALYTICS** tab. Once you have run a search, you can save it as a Report by clicking **Actions** > **Save as Report**.

For details, see here.

Scheduling Reports

Reports can be scheduled to run at later time and contain data for a specific period of time. Go to **RESOURCES** > **Reports** > Choose a Report > **More** > **Schedule**.

For details, see here.

Customizing Built-in Dashboards

FortiSIEM Built-in Dashboards are organized in Folders with multiple Dashboards in each Folder. You can add dashboards to any Folder or modify the dashboards in any built-in folder. Dashboard modification can include – modifying chart layout, chart settings or even adding new widgets for widget dashboards.

For details, see here.

You can also choose to display only a set of Dashboard Folders by visiting **ADMIN** > **Settings** > **System** > **UI** > **Dashboard Settings**.

Creating Custom Dashboards

You can either create a new Dashboard Folder and move dashboards in it or add dashboards to an existing folder.

To create a new Dashboard folder:

1. Click **DASHBOARD**
2. Open the Dashboard Folder drop-down list.
3. Click **New**.

To create a new Dashboard for the folder:

1. Select the Dashboard Folder from the drop-down list.
2. Click **+** to the right of the selected folder.
3. Enter a **Name** and Dashboard **Type** from the drop-down list in the Create New Dashboard dialog box.
4. If you created a Widget Dashboard, click **+** beneath the folder name to add Widgets to the Dashboard.

For details, see here.

Creating Business Service Dashboards

After creating a new Dashboard, choose Type = Business Service Dashboard. Then select the Business Service Selector on the top right to add Business Services to the Dashboard.

For details, see here.

Advanced Health System Advanced Operations

FortiSIEM enables you to perform the following advanced operations:

- Monitoring System Health
- Monitoring Collector Health
- Monitoring Elasticsearch Health
- System Errors
- Monitoring User and Query Activity

Monitoring System Health

To see the system level health of every FortiSIEM Supervisor/Worker node, go to **ADMIN** > **Health** > **Cloud Health**. The top pane shows the overall health of various nodes – Supervisor and Workers. Click any one node and the bottom pane shows the health of the various processes in that node.

For details, see here.

Monitoring Collector Health

To see the system level health of every FortiSIEM Collector node, go to **ADMIN** > **Health** > **Collector Health**.

For details, see here.

Monitoring Elasticsearch Health

To see the Elasticsearch health information, go to **ADMIN** > **Health** > **Elasticsearch Health**.

For details, see here.

System Errors

To see the system errors, click the **Jobs/Errors** icon on the top-right corner of FortiSIEM GUI and select the **Error** tab. You can also run a report in **ANALYTICS** > click the **Folders** icon > **Shortcuts** > **Top FortiSIEM Operational Errors**.

Monitoring User and Query Activity

To see FortiSIEM User and Query Activity, click the **User Activity** icon () on the top-right corner of FortiSIEM GUI.

The User Activity dialog box contains these tabs:

- Logged in Users
- Locked Users
- Query Status
- Query Workload

All of the tabs in the User Activity dialog box contain the time of the last refresh and the number of seconds until the next automatic refresh. By default, the automatic refresh interval is 60 seconds. To refresh the table on demand, click the **Refresh** button.

Logged in Users

This tab displays a table listing the users currently logged in to FortiSIEM. You can perform the following operations on this tab:

- **Log Out** - Select one or more users in the table and click **Log Out**. The selected users will be logged out of FortiSIEM.
- **Log Out and Lock Out** - Select one or more users in the table and click **Log Out and Lock Out**. The selected users will be logged out of FortiSIEM and prevented from logging back in.

The Logged in Users table contains the following information:

Column	Description
Organization	The Organization to which the user belongs.
User	The name of the user.
Full Name	The full name of the user.
Login IP	The IP address from which the user logged in.
Role	The name of the user's role.
Login Time	The date and time when the user logged in.
Session ID	The ID of the user's FortiSIEM session.

Locked Users

This tab displays a table listing the users currently locked out of FortiSIEM. Typically, user access to FortiSIEM can be locked due to multiple login failures. You can perform the following operations on this tab:

- **Unlock** - Select one or more users in the table and click **Unlock**.

Note: Users can also be unlocked by going to **CMDB > Users > Actions > Unlock**.

The Locked Users table contains the following information:

Column	Description
Organization	The Organization to which the user belongs.
User	The name of the user.
Full Name	The full name of the user.
Login IP	The IP address from which the user logged in.
Role	The name of the user's role.
Locked Time	The date and time when the user was locked out of FortiSIEM.

Query Status

This tab displays a table listing the status of current and recent queries. You can perform the following operations on this tab:

- **Stop Query** - Select a query from the table and click **Stop Query**. The selected query will be stopped remotely. If the query was sent from the **ANALYTICS** page, you should see a warning message saying this query was stopped manually. You should also be able to see the partial results you received before it was stopped.
- **Search** - Click the **Search** button to search for queries by Query name (plain text search), User name (multiple options selected via a checkbox), and/or query Type (multiple options selected via a checkbox).
- **Sort** - Click a column name. You can sort the column data in ascending or descending order.
- **Job Distribution for Query** - Click a query in the Query Status table to see the Job Distribution for Query <*query_name*> table. This table identifies the Worker nodes employed in processing the query and their status. For more information, see Obtaining Job Distribution for Query.

The Query Status table contains the following information:

Column	Description
Query ID	The ID of the query.
Query Name	The name of the query.
User	The name of the user who issued the query.
Type	The value of Type can be: • **Interactive** - Queries executed directly from the **ANALYTICS** page. • **Scheduled** - Queries scheduled from **RESOURCES > Reports**.
Start Time	The date and time when the query was issued.
Status	The value of Status can be: • **Running** - The query is currently running. • **Waiting** - The query is waiting in the queue because the maximum number of running queries has been reached.
Progress	The percent of progress the query has made towards completion.
Elapsed	The time, in seconds, that the query has run.

Obtaining Job Distribution for Query

To see how the query job is distributed between Worker nodes, click a query in the Query Status table. The Job Distribution for Query <*query_name*> table appears beneath the Query Status table.

- **Sort** - Click a column name. You can sort the column data in ascending or descending order.

The Job Distribution for Query <*query_name*> table contains the following information:

Column	Description
Node	The Worker IP address.
Status	The value of Status can be: • **Unknown** - The query process is in an unknown state. • **Starting** - The query has started processing. • **Running** - The query is currently processing. • **Pausing** - The query is in the process of pausing processing. • **Resuming** - The query has resumed processing. • **Stopping** - the query is in the process of stopping processing. • **Paused** - The query has temporarily paused processing. • **Stopped** - The query has stopped processing. • **Completed** - The query has completed processing.
Progress	The percent of progress the query has made towards completion.
Running For	The time (in seconds) elapsed since the Start Time. *Note: This value is calculated from the last refresh time, not the Last Update minus the Start Time.*
Start Time	The date and time when the query began processing.
Last Update	The data and time when the Worker last reported a progress update.

Query Workload

This tab displays a table listing the available Worker nodes for a query job. You can perform the following operations on this tab:

- **Sort** - Click a column name. You can sort the column data in ascending or descending order.
- **Status of Running Tasks** - Click a Worker node row in the Query Workload table to display the Tasks Running On <*Worker_IP_address*> table. For more information, see Obtaining Running Tasks.

The Query Workload table contains the following information:

Column	Description
Node	The Worker IP address.
Status	The value of Status can be: • **Online** - The Worker node is currently online. • **Offline** - The Worker node is currently offline.
Interactive Tasks	The number of interactive tasks (that is, sent from the **ANALYTICS** page) assigned to the Worker node.
Scheduled Tasks	The number of scheduled tasks assigned to the Worker node.
Task Workload	The total number of tasks assigned to the Worker node.

Obtaining Running Tasks

To see the status of running tasks, click a Worker node in the Query Workload table. The Tasks Running On <*Worker_IP_address*> table appears beneath the Query Workload table. You can perform the following operations on this tab:

- **Sort** - Click a column name. You can sort the column data in ascending or descending order.

The Tasks Running On <*Worker_IP_address*> table contains the following information:

Column	Description
Query ID	The ID of the query.
Query Name	The name of the query.
User	The name of the user who issued the query.
Type	The value of Type can be: • **Interactive** - Queries executed directly from the **ANALYTICS** page. • **Scheduled** - Queries scheduled from **RESOURCES > Reports**.
Start Time	The date and time when the query began processing.
Status	See Status in Obtaining Job Distribution for Query.
Progress	The percent of progress the query has made towards completion.

Managing FortiSIEM Advanced Operations

FortiSIEM provides the following advanced operations to manage your FortiSIEM:

- Administrator Tools
- Backing Up and Restoring FortiSIEM Directories and Databases

Administrator Tools

For information on Administrator Tools, see here.

Backing Up and Restoring FortiSIEM Directories and Databases

For information on Backing Up and Restoring FortiSIEM Directories and Databases, see here.

Administration

The **ADMIN** tab provides the tools required to setup and monitor FortiSIEM.

The following tools are available:

Setup

Before initiating discovery and monitoring of your IT infrastructure, configure the following settings:

Configuring Storage

Overview

FortiSIEM provides a wide array of event storage options. Upon arrival in FortiSIEM, events are stored in the Online event database. The user can define retention policies for this database. When the Online event database becomes full, FortiSIEM will move the events to the Archive Event database. Similarly, the user can define retention policies for the Archive Event database. When the Archive becomes full, events are discarded.

The Online event database can be one of the following:

- FortiSIEM EventDB
  - On local disk for All-in-one installation
  - On NFS for cluster installation
- Elasticsearch
  - Native installation
  - AWS OpenSearch (Previously known as AWS Elasticsearch)

The Archive event database can be one of the following:

- FortiSIEM EventDB on NFS
- HDFS

Note the various installation documents for 3rd party databases, for example.

- Elasticsearch Storage Guide
- NFS Storage Guide

In this release, the following combinations are supported:

Event DB		Retention	
Online	**Archive**	**Online**	**Archive**
FortiSIEM EventDB (local or NFS)	FortiSIEM EventDB (NFS)	Policy-based and Space-based	Policy-based and Space-based
Elasticsearch	FortiSIEM EventDB (NFS)	Space-based	Policy-based and Space-based
Elasticsearch	HDFS	Space-based	Space-based

Configuring Online Event Database on Local Disk

- Setting Up the Database
- Setting Up Retention
- Viewing Online Data

This section describes how to configure the Online Event database on local disk. Use this option when you have an all-in-one system, with only the Supervisor and no Worker nodes deployed.

Setting Up the Database

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Local Disk**.
3. Enter the following parameters :

Settings	Guidelines
Disk Name	[Required] Local disk name. During FortiSIEM installation, you can add a 'Local' data disk of appropriate size as the 4th disk. Use the command `fdisk -l` to find the disk name. If you want to configure Local Disk for the physical 2000F or 3500F appliances, enter "`hardware`" in this field. This prompts a script to run that will configure local storage.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When Online database becomes full, then events have to be deleted to make room for new events. This can be Space-based or Policy-based.

- Setting Up Space-Based Retention
- Setting Up Policy-Based Retention
- How Space-Based and Policy-Based Retention Work Together

Setting Up Space-Based Retention

Space-based retention is based on two thresholds defined in the `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phDataPurger]
online_low_space_action_threshold_GB=10
online_low_space_warning_threshold_GB=20
[END]
```

When the Online Event database size in GB falls below the value of `online_low_space_action_threshold_GB`, events are deleted until the available size in GB goes slightly above the `online_low_space_action_threshold_GB` value. If Archive is defined, then the events are archived. Otherwise, they are purged.

If you want to change these values, then change them on the Supervisor and restart `phDataManager` and `phDataPurger` modules.

Setting Up Policy-Based Retention

Policies can be used to enforce which types of event data remains in the Online event database.

For information on how to create policies, see Creating Online Event Retention Policy. **Note**: This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space-Based and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below the value of `online_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Online Event Database on NFS

The following sections describe how to configure the Online database on NFS.

- Setting Up the Database
- Setting Up Retention
- Viewing Online Data

Setting Up the Database

You must choose this option when you have multiple Workers deployed and you plan to use FortiSIEM EventDB.

The NFS Storage should be configured as NFS version 3 with these options: “rw,sync,no_root_squash”.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > NFS**
3. Enter the following parameters :

Settings	Guidelines
Server IP/Host	[Required] the IP address/Host name of the NFS server
Exported Directory	[Required] the file path on the NFS Server which will be mounted

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When the Online database becomes full, then events must be deleted to make room for new events. This can be Space-based or Policy-based.

- Setting Up Space-Based Retention
- Setting Up Policy-Based Retention
- How Space-Based and Policy-Based Retention Work Together

Setting Up Space-Based Retention

Space-based retention is based on two thresholds defined in the `phoenix_config.txt` file on the Supervisor node.

```
        [BEGIN phDataPurger]
        online_low_space_action_threshold_GB=10
        online_low_space_warning_threshold_GB=20
        [END]
```

When the Online Event database size in GB falls below the value of `online_low_space_action_threshold_GB`, events are deleted until the available size in GB goes slightly above the `online_low_space_action_threshold_GB` value. If Archive is defined, then the events are archived. Otherwise, they are purged.

If you want to change these values, then change them on the Supervisor and restart the `phDataManager` and `phDataPurger` modules.

Setting Up Policy-Based Retention

Policies can be used to enforce which types of event data stays in the Online event database.

For information on how to create policies, see Creating Online Event Retention Policy. **Note**: This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space-Based and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below the `online_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Online Event Database on Elasticsearch

The following sections describe how to set up the Online database on Elasticsearch:

- Setting Up the Database
- Setting Up Space-Based/Age-Based Retention
- Viewing Online Data

Setting Up the Database

There are three options for setting up the database:

- Native Elasticsearch Using REST API
- AWS OpenSearch (Previously known as AWS Elasticsearch) Using REST API
- Elastic Cloud Using REST API

Native Elasticsearch Using REST API

Use this option when you want FortiSIEM to use the REST API Client to communicate with Elasticsearch.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Elasticsearch** and for **ES Service Type**, select **Native**.
3. Enter the following parameters:

Settings	Guidelines
URL	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The **IP/Host** must contain `https`. Click **+** to add more URL fields to configure any additional Elasticsearch cluster Coordinating nodes. Click **-** to remove any existing URL fields.
Port	[Required] The port number
User Name	[Optional] User name
Password	[Optional] Password associated with the user
Shard Allocation	• **Fixed** -Enter the number of **Shards** and **Replicas**. • **Dynamic**-Dynamically shards data using the Elasticsearch rollover API. Enter the number of **Starting Shards** and **Replicas**.
Per Org Index	Select to create an index for each organization.
Event Attribute Template	• **Default**-Select if you wish to cover FortiSIEM Event attributes covering all event attribute types. • **Custom**-Select if you wish to cover specific FortiSIEM Event attributes. A reduced list of Event Attributes can improve Elasticsearch performance.

Settings	Guidelines
	After selecting **Custom**, click **Select**, and select your CSV file with your FortiSIEM Event attributes. For information on the `listElasticEventAttributes.sh` tool that gathers Event Attributes so you can build a custom event attribute template, see Administrator Tools.

4. Click **Test**.
5. If the test succeeds, click **Save**.

AWS OpenSearch (Previously known as AWS Elasticsearch) Using REST API

Use this option when you have FortiSIEM deployed in AWS Cloud and you want to use AWS OpenSearch (Previously known as AWS Elasticsearch).

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Elasticsearch** and for **ES Service Type**, select **Amazon**.
3. Enter the following parameters:

Settings	Guidelines
URL	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The **IP/Host** must contain `https`. Click **+** to add more URL fields. **Note**: Additional URLs should not be needed for AWS OpenSearch configuration setup. Click **-** to remove any existing URL fields.
Port	[Required] The port number
Access Key ID	[Required] Provide your AWS access key id.
Secret Key	[Required] Provide your AWS secret key.
Shard Allocation	• **Fixed** -Enter the number of **Shards** and **Replicas**. • **Dynamic**-Dynamically shards data

Settings	Guidelines
	using the Elasticsearch rollover API. Enter the number of **Starting Shards** and **Replicas**.
Per Org Index	Select to create an index for each organization.
Event Attribute Template	• **Default**-Select if you wish to cover FortiSIEM Event attributes covering all event attribute types. • **Custom**-Select if you wish to cover specific FortiSIEM Event attributes. A reduced list of Event Attributes can improve Elasticsearch performance. After selecting **Custom**, click **Select**, and select your CSV file with your FortiSIEM Event attributes. For information on the `listElasticEventAttributes.sh` tool that gathers Event Attributes so you can build a custom event attribute template, see Administrator Tools.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Elastic Cloud Using REST API

1. Go to **ADMIN > Setup > Storage**.
2. Click **Online > Elasticsearch** and and for **ES Service Type**, select **Elastic Cloud**.
3. Enter the following parameters:

Settings	Guidelines
URL	[Required] IP address or DNS name of the Elasticsearch cluster Coordinating node. The IP/Host must contain https. Click **+** to add more URL fields. **Note**: Additional URLs should not be needed for Elastic Cloud configuration setup. Click **-** to remove any existing URL fields.
Port	Port number 443 by default

Settings	Guidelines
User Name	[Optional] User name
Password	[Optional] Password associated with the user
Shard Allocation	• **Fixed** - Enter the number of **Shards** and **Replicas**. • **Dynamic** - Dynamically shards data using the Elasticsearch rollover API. Enter the number of **Starting Shards** and **Replicas**. This is recommended if your EPS is dynamic.
Per Org Index	Select to create an index for each organization.
Event Attribute Template	• **Default**-Select if you wish to cover FortiSIEM Event attributes covering all event attribute types. • **Custom**-Select if you wish to cover specific FortiSIEM Event attributes. A reduced list of Event Attributes can improve Elasticsearch performance. After selecting **Custom**, click **Select**, and select your CSV file with your FortiSIEM Event attributes. For information on the `listElasticEventAttributes.sh` tool that gathers Event Attributes so you can build a custom event attribute template, see Administrator Tools.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Space-Based / Age-Based Retention

Depending on whether you use Native Elasticsearch, AWS OpenSearch (Previously known as AWS Elasticsearch), or ElasticCloud, Elasticsearch is installed using Hot (required), Warm (optional), and Cold (optional, availability depends on Elasticsearch type) nodes and Index Lifecycle Management (ILM) (availability depends on Elasticsearch type). Similarly, the space is managed by Hot, Warm, Cold node thresholds and time age duration, whichever occurs first, if ILM is available. See What's New for the latest information on elasticsearch retention threshold compatibility. For steps, see here.

- When the Hot node cluster storage capacity falls below the lower threshold or meets the time age duration, then:
  - if Warm nodes are defined, the events are moved to Warm nodes,
  - else if Warm nodes are not defined, but Cold nodes are defined, the events are moved to Cold nodes,

- else, if Archive is defined then they are archived,
- otherwise, events are purged

This is done until storage capacity exceeds the upper threshold.

- If Warm nodes are defined and the Warm node cluster storage capacity falls below lower threshold or meets the time age duration, then:
  - if Cold nodes are defined, the events are moved to Cold nodes,
  - else if Cold nodes are not defined, and Archive is defined, then they are archived,
  - otherwise, events are purged

  This is done until storage capacity exceeds the upper threshold.
- If Cold nodes are defined and the Cold node cluster storage capacity falls below lower threshold, then:
  - if Archive is defined, then they are archived,
  - otherwise, events are purged

  This is done until storage capacity exceeds the upper threshold

Viewing Online Data

For more information, see Viewing Online Event Data Usage.

Configuring Archive Event Database on NFS

The following sections describe how to set up the Archive database on NFS:

- Setting Up the Database
- Setting Up Retention
- Viewing Archive Data

Setting Up the Database

You must choose this option when you have multiple Workers deployed and you plan to use FortiSIEM EventDB.

The NFS Storage should be configured as NFS version 3 with these options: “rw,sync,no_root_squash”.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Archive > NFS**,
3. Enter the following parameters:

Settings	Guidelines
Server IP/Host	[Required] the IP address/Host name of the NFS server
Exported Directory	[Required] the file path on the NFS Server which will be mounted
Real Time Archive	(Optional) event data is written to NFS archive at the same time it is written to online storage, when enabled. Click the

Settings	Guidelines
	checkbox to enable/disable. **Note**: You must click **Save** in step 5 in order for the Real Time Archive setting to take effect. It is strongly recommended you confirm that the test works, in step 4 before saving.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Retention

When the Archive database becomes full, then events must be deleted to make room for new events. This can be Space-based or Policy-based.

- Space-Based Retention
- Policy-Based Retention
- How Space-Based and Policy-Based Retention Work Together

Space-Based Retention

Space-based retention is based on two thresholds defined in `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phDataPurger]
archive_low_space_action_threshold_GB=10
archive_low_space_warning_threshold_GB=20
[END]
```

When the Archive Event database size in GB falls below the value of `archive_low_space_action_threshold_GB`, events are purged until the available size in GB goes slightly above the value set for `archive_low_space_action_threshold_GB`.

If you want to change these values, then change them on the Supervisor and restart the `phDataManager` and `phDataPurger` modules.

Policy-Based Retention

Policies can be used to enforce which types of event data remain in the Archive event database.

For information on how to create policies, see Creating Offline (Archive) Retention Policy. **Note** - This is a CPU, I/O, and memory-intensive operation. For best performance, try to write as few retention policies as possible.

How Space-Based and Policy-Based Retention Work Together

1. First, Policy-based retention policies are applied.
2. If the available space is still below `archive_low_space_action_threshold_GB`, then Space-based policies are enforced.

Viewing Archive Data

For more information, see Viewing Archive Data.

Configuring Archive Event Database on HDFS

The following sections describe how to set up the Archive database on HDFS:

- Setting Up the Database
- Setting Up Space-Based Retention
- Viewing Archive Data

Setting Up the Database

HDFS provides a more scalable event archive option - both in terms of performance and storage.

1. Go to **ADMIN > Setup > Storage**.
2. Click **Archive > HDFS**.
3. Enter the following parameters:

Settings	Guidelines
Real Time Archive	(Optional) event data is written to HDFS archive at the same time it is written to online storage, when enabled. Click the checkbox to enable/disable. **Note**: You must click **Save** in step 5 in order for the Real Time Archive setting to take effect. It is strongly recommended you confirm that the test works, in step 4 before saving.
Spark Master Node	
IP/Host	IP or Host name of the Spark cluster Master node.
Port	TCP port number for FortiSIEM to communicate to Spark Master node.
HDFS Name Node	
IP/Host	IP or Host name of HDFS Name node. This is the machine which stores the HDFS metadata: the directory tree of all files in the file system, and tracks the files across the cluster.
Port	TCP port number for FortiSIEM to communicate to HDFS Name node.

4. Click **Test**.
5. If the test succeeds, click **Save**.

Setting Up Space-Based Retention

When the HDFS database becomes full, events have to be deleted to make room for new events.

This is set by Archive Thresholds defined in the GUI. Go to **ADMIN > Settings > Database > Online Settings**. Change the **Low** and **High** settings, as needed.

When the HDFS database size in GB rises above the value of `archive_low_space_action_threshold_GB`, events are purged until the available size in GB goes slightly above the value set for `archive_low_space_action_threshold_GB`.

Viewing Archive Data

For more information, see Viewing Archive Data.

Changing Event Storage Options

It is highly recommended to chose a specific event storage option and retain it. However, it is possible to switch to a different storage type.

Note: In all cases of changing storage type, the old event data is not migrated to the new storage. Contact FortiSIEM Support if this is needed - some special cases may be supported.

For the following three cases, simply choose the new storage type from **ADMIN** > **Setup** > **Storage**.

- Local to Elasticsearch
- NFS to Elasticsearch
- Elasticsearch to Local

The following four storage change cases need special considerations:

- Elasticsearch to NFS
- Local to NFS
- NFS to Local
- NFS to Elasticsearch to NFS

Elasticsearch to NFS

1. Log in to FortiSIEM GUI.
2. Select and delete the existing Workers from **ADMIN** > **License** > **Nodes** > **Delete**.
3. Go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **NFS** server
4. Go to **ADMIN** > **License** > **Nodes** and **Add** the recently deleted Workers in step #2.

Local to NFS

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount `/data` by running:
   `umount /data`
3. Validate that /data is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Log in to FortiSIEM GUI, go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **NFS** server.

NFS to Local

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount /data by running:
   `umount /data`
3. Validate that `/data` is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Connect the new disk to Supervisor VM.
6. Log in to FortiSIEM GUI, go to **ADMIN** > **Setup** > **Storage** and update the Storage type as **Local Disk**.

NFS to Elasticsearch to NFS

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount /data by running:
   `umount /data`
3. Validate that /data is unmounted by running:
   `df -h`
4. Edit /etc/fstab and remove /data mount location.
5. Repeat steps #1 to #4 on all Workers.
6. Log in to FortiSIEM GUI, select and delete all the existing Workers from **ADMIN** > **License** > **Nodes** > **Delete**.
7. Go to **ADMIN** > **Setup** > **Storage** and update the Storage type as appropriate.
8. Go to **ADMIN** > **License** > **Nodes** and add all recently deleted Workers in step #6.

Changing NFS Server IP

If you are running a FortiSIEM Cluster using NFS and want to change the IP address of the NFS Server, then take the following steps.

Step 1: Temporarily Change the Event Storage Type from EventDB on NFS to EventDB on Local

1. Go to **ADMIN > License > Nodes** and remove all the Worker nodes.
2. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
3. Unmount `/data` by running:
   `umount /data`
4. Validate that `/data` is unmounted by running:
   `df -h`
5. Edit `/etc/fstab` and remove `/data` mount location.
6. Attach new local disk to the Supervisor. It is recommended that it is 50~80GB.
7. Go to **ADMIN > Setup > Storage > Online**.
8. Change the storage type to **Local Disk** and add the local disk's partition to the **Disk Name** field. (e.g. `/dev/sde`).
9. Click **Test** to confirm.
10. Click **Save**.

Step 2: Change the NFS Server IP Address

This is a standard system administrator operation. Change the NFS Server IP address.

Step 3: Change the Event Storage Type Back to EventDB on NFS

1. SSH to the Supervisor and stop FortiSIEM processes by running:
   `phtools --stop all`
2. Unmount `/data` by running:
   `umount /data`
3. Validate that `/data` is unmounted by running:
   `df -h`
4. Edit `/etc/fstab` and remove `/data` mount location.
5. Go to **ADMIN > Setup > Storage > Online**.
6. Change the storage type to **NFS**.
7. In the **Server** field, with **IP** selected, enter the new IP address of the NFS server.
8. In the **Exported Directory** field, enter the correct NFS folder's path.
9. Click **Test** to confirm.
10. Click **Save**.
11. Go to **ADMIN > License > Nodes** and add back all the Worker nodes.

Disk Space Management

When the Online storage is nearly full, events must either be archived or purged to make room for new events. Similarly, when the Archive storage is nearly full, events are purged to make room for new events from Online storage. This strategy keeps FortiSIEM running continuously.

This section provides details for the various storage options.

- Online Event Database on Local Disk or on NFS
- Online Event Database on Elasticsearch
- Archive Event Database on NFS
- Archive Event Database on HDFS

Online Event Database on Local Disk or on NFS

There are two parameters in the `phoenix_config.txt` file on the Supervisor node that determine the operations. They appear under the `phDataPurger` section.

```
[BEGIN phDataPurger]
- online_low_space_action_threshold_GB (default 10GB)
- online_low_space_warning_threshold_GB (default 20GB)
[END]
```

When Online disk space reaches the low threshold (`online_low_space_action_threshold_GB`) value, then events are archived (if archive directory is set) or purged. This operation continues until the Online disk space reaches the `online_low_space_warning_threshold_GB` value. This check is done hourly.

You can change these parameters to suit your environment and they will be preserved after upgrade. You must restart `phDataPurger` module to pick up your changes.

Online Event Database on Elasticsearch

Log in to the FortiSIEM GUI and go to **ADMIN > Settings > Online Settings**. If Elasticsearch is chosen as Online storage, depending on your elasticsearch type, and whether you have archive configured, the following choices will be available in the GUI.

- **Hot Node** - Low Threshold (default 25%), High Threshold (35%), Age 90 days
- **Warm Node** - Low Threshold (default 20%), High Threshold (30%), Age 90 days
- **Cold Node** - Low Threshold (default 20%), High Threshold (30%)
- **Archive** - Low Threshold (default 10%), High Threshold (20%)

When Hot Node disk free space reaches the Low Threshold value, events are moved until the Hot Node disk free space reaches the High Threshold value. Event destination can be one of the following:

- **Warm Node**
- **Cold Node** - if Warm Nodes are not defined
- **Archive** - if prior nodes (Warm, Cold) are not defined
- **Purged** - if neither Warm Node, Cold Node, nor Archive is defined

When Warm Node disk free space reaches the Low Threshold value, events are moved to Cold node. If Cold node is not defined, events are moved to Archive or purged (if Archive is not defined) until Warm disk free space reaches High Threshold.

When Cold Node disk free space reaches the Low Threshold value, events are moved to Archive or purged (if Archive is not defined), until Cold disk free space reaches High Threshold.

Archive Event Database on NFS

There are two parameters in the `phoenix_config.txt` file on the Supervisor node that determine when events are deleted. They appear under the `phDataPurger` section:

```
[BEGIN phDataPurger]
- archive_low_space_action_threshold_GB (default 10GB)
- archive_low_space_warning_threshold_GB (default 20GB)
[END]
```

When the Archive disk space reaches the low threshold (`archive_low_space_action_threshold_GB`) value, events are purged until the Archive disk space reaches the high threshold (`online_low_space_warning_threshold_GB`) value. This check is done hourly.

You can change these parameters to suit your environment and they will be preserved after upgrade. You must restart `phDataPurger` module to pick up your changes.

Archive Event Database on HDFS

This is set by configuring the **Archive Threshold** fields in the GUI at **ADMIN > Settings > Database > Online Settings**. Elasticsearch must be configured as online storage, and HDFS as offline storage in order for the **Archive Threshold** option/field to appear in the configuration. This is the only way to purge data from HDFS. For more information on configuring thresholds, see Setting Elasticsearch Retention Threshold.

Setting Organizations and Collectors (Service Provider)

FortiSIEM supports multi-tenancy via Organizations in a Service Provider deployment. The devices and logs belonging to two Organizations are kept separate. Incidents trigger separately for Organizations.

A Collector enables FortiSIEM to collect logs and performance metrics from geographically disparate networks. Data collection protocols such as SNMP and WMI are often chatty and the devices may only be reachable from the Supervisor node via Internet and behind a firewall. Syslog protocol specially over UDP is unreliable and insecure. A Collector can be deployed behind the firewall to solve these issues. The Collector registers with FortiSIEM Supervisor node and then receives commands from the Supervisor regarding discovery and data collection. The Collector parses the logs and forwards the compressed logs to Supervisor/Worker nodes over an encrypted HTTPS channel. The Collector also buffers the logs locally for a period of time if the network connection to the Super/Worker is not available.

Organizations can be defined in one of two ways:

- Associating one or more Collectors to an Organization – the devices monitored by the Collector or the events sent to the Collector automatically belong to the associated Organization.
- Defining an IP range for an Organization – if the sending IP of a device belongs to the IP range, then the device and logs belong to that Organization.

This section provides the procedures to configure an Organization for a multi-tenant FortiSIEM deployment.

- Creating an Organization
- Installing a Collector
- Registering a Collector

Make sure the Worker Upload has been configured prior to defining the Collectors.

Creating an Organization

Complete these steps to add an Organization:

1. Go to **ADMIN** > **Setup** > **Organizations** tab.
2. Click **New**.
3. In the **Organization Definition** dialog box, enter the information below.

Settings	Guidelines
Organization	[Required] Name of the Organization
Full Name	Full name of the Organization
Admin User	[Required] User name that will be used two purposes: (a) Users logging in to FortiSIEM Supervisor GUI for that Organization and (b) Collector registration to Supervisor. This user has 'Full Admin' role.
Admin Password/Confirm Admin Password	[Required] Password of the Admin user.

Settings	Guidelines
Admin Email	[Required] Email id of the Admin user for the Organization.
Phone	Contact number for the Organization
Include IP/IP Range	IP range for the Organization in case the Organization is defined by IP addresses. Allowed format is comma-separated individual IPs or IP range 10.10.10.1-10.10.10.8
Exclude IP/IP Range	IP range to be excluded for the Organization. Allowed format is comma-separated individual IPs or IP range 10.10.10.1-10.10.10.8
Agent User	User name used by FortiSIEM Windows and Linux Agents to register to FortiSIEM Supervisor. **Note**: An Agent User cannot be used to log into the UI.
Agent Password/Confirm Agent Password	Password of Agent User.
Max Devices	Maximum number of monitored CMDB devices for the Organization
Address	Contact address for the Organization

4. If your Organization uses Collectors, click **New** under **Collectors** and enter the information below.

Settings	Guidelines
Name	[Required] Name of the Collector
Guaranteed EPS	[Required] Events from this Collector are always accepted when its event rate is below this Guaranteed EPS. FortiSIEM will re-allocate excess EPS (license minus the sum of Guaranteed EPS over all the collectors) based on need but the allocation will never go below the Guaranteed EPS.
Upload Rate Limit (Kbps)	Maximum rate limit (in Kbps) at which a Collector can send events to all Workers.
Start Time	[Required] Select a specific start date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.

Settings	Guidelines
End Time	[Required] Select a specific end date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.

5. Enter the **Description** about the Organization.
6. Click **Save**.

Installing a Collector

For installing Collectors, see the "Install Collector" sections in the specific Installation Guides. See also the Upgrade Guide and the Sizing Guide.

Registering a Collector

Once a Collector has been created in the GUI, the Collector needs to be installed and registered.

For registering a Collector, follow these steps:

1. SSH to the Collector.
2. Run the following command:

   ```
           phProvisionCollector --add <user> '<password>' <super IP or host> <organization>
   <collectorName>
   ```

   The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped. In Enterprise mode, use `super` as the organization .

   Refer to the tables in steps 3 and 4 here for more information about these settings: `<user>`, `<password>`, `<organization>` and `<collectorName>`

Setting Collectors (Enterprise)

A Collector enables FortiSIEM to collect logs and performance metrics from geographically disparate networks. Data collection protocols such as SNMP and WMI are often chatty and the devices may only be reachable from the Supervisor node via Internet and behind a firewall. Syslog protocol, especially over UDP, is unreliable and insecure. A Collector can be deployed behind the firewall to solve these issues. The Collector registers with FortiSIEM Supervisor node and then receives commands from the Supervisor regarding discovery and data collection. The Collector parses the logs and forwards the compressed logs to Supervisor/Worker nodes over an encrypted HTTPS channel. The Collector also buffers the logs locally for a period of time if the network connection to the Super/Worker is not available.

This section provides the procedures to configure a Collector in Enterprise deployment.

- Adding a Collector
- Installing a Collector
- Registering a Collector

Make sure the Worker Upload has been configured prior to defining the Collectors.

Adding a Collector

Complete these steps to add an Collector:

1. Go to **ADMIN** > **Setup** > **Collector** tab.
2. Click **New**.
3. In the **Event Collector Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Collector name
Guaranteed EPS	[Required] Events from this Collector are always accepted when its event rate is below this Guaranteed EPS. FortiSIEM will re-allocate excess EPS (license minus the sum of Guaranteed EPS over all the collectors) based on need but the allocation will never go below the Guaranteed EPS.
Upload Rate Limit (Kbps)	Maximum rate limit (in Kbps) at which a Collector can send events to all Workers. Rate limit is enforced at periodic 3 minute intervals. When either the upload rate limit or EPS limit are hit, events are buffered at the Collector and sent later.
Upload EPS Limit	Maximum events per second at which a Collector can send events to all Workers. EPS limit is enforced at periodic 3 minute intervals. When either the upload rate limit or EPS limit are hit, events are buffered at the Collector and sent later.
Start Time	[Required] Select a specific start date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.
End Time	[Required] Select a specific end date or check 'Unlimited'. Collectors will not work outside of start and end dates if specific dates are chosen.
Agent User	User name used by FortiSIEM Windows and Linux Agents to register to FortiSIEM Supervisor.
Agent Password/Confirm Agent Password	Password of Agent User

4. Click **Save**.

Installing a Collector

For installing Collectors, see the "Install Collector" sections in the specific Installation Guides. See also the Upgrade and Sizing Guides here.

Registering a Collector

Once a Collector has been created in the GUI, the Collector needs to be installed and registered.

For registering a Collector, follow these steps:

1. SSH to the Collector.
2. Run the following command:

   ```
           phProvisionCollector --add <user> '<password>' <super IP or host> <organization>
   <collectorName>
   ```

   The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped. In Enterprise mode, use `super` as the organization .

   Refer to the tables in steps 3 and 4 here for more information about these settings: `<user>`, `<password>`, `<organization>` and `<collectorName>`

Setting Credentials

FortiSIEM communicates with various systems to collect operating system/hardware/software information, logs, and performance metrics. This section provides the procedures to set up a device credential and associate them to an IP or IP range.

- Creating a Credential
- Associating a Credential to IP Ranges or Hosts
- Testing Credentials and API Event Collection
- Modifying Device Credential
- Modifying a Credential Association
- Credentials Based on Access Protocol

Creating a Credential

Complete these steps to create a login credential:

1. Go to **ADMIN** > **Setup** > **Credentials** tab.
2. Under **Step 1: Enter Credentials** section, click **New**.
3. In the **Access Method Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Name of the credential that will be used for reference purpose.
Device Type	Type of device from the drop-down.
Access Protocol	Type of access protocol from the drop-down. Note that this list depends on the selected device type.
Port	TCP/UDP Port number for communicating to the device for the access protocol.
Password config	Choose **Manual**, **CyberArk SDK** or **CyberArk REST API**. - **Manual**: The credentials will be defined and stored in FortiSIEM. See the External Systems Configuration Guide for the corresponding device type configuration settings.

Settings	Guidelines
	- **CyberArk SDK**: FortiSIEM will get credentials from CyberArk password Vault. See "CyberArk SDK Password Configuration" in the External Systems Configuration Guide for configuration settings. -**CyberArk REST API**: FortiSIEM will get credentials from CyberArk password Vault through REST API access. See "CyberArk REST API Password Configuration" in the External Systems Configuration Guide for configuration settings.

4. Enter the options in the remaining fields that appear based on the **Device Type** selection.
5. Click **Save**.

Associating a Credential to IP Ranges or Hosts

The association is on a per-Collector basis.

1. Under **Step 2: Enter IP Range to Credential Associations** section, click **New**.
2. In the **Device Credential Mapping Definition** dialog box, enter the information below.

Settings	Guidelines
IP/Host Name	[Required] Host name, IP address or IP range to associate with a credential. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10. Host names are only allowed for a specific set of credentials see below.
Credentials	Select one or more credentials by name. Use **+** to add more.

3. Click **Save**.

Testing Credentials and API Event Collection

Credentials can be tested to ensure that they are working correctly and do not perform a full discovery, and therefore provide results more quickly.

Test Connectivity also has a special function for certain Device API integrations. Instead of performing separate Discovery to integrate FortiSIEM with a Device API, clicking **Test Connectivity** will test the credential and start collecting event from the API. The External System Configuration Guide details Device integrations that require only this step to collect events.

1. Select an association.
2. Click **Test** after choosing:
   - **Test Connectivity** – the device will be pinged first and then the credential will be attempted. This shortens the test connectivity process in case the device with specified IP is not present or reachable.
   - **Test Connectivity without Ping** – the credential will be attempted without pinging first.
3. Check the test connectivity result in the pop up display.

Modifying Device Credentials

Complete these steps to modify device credentials:

1. Select an association from the list and click the required option.
   - **Edit** - to modify any credential settings.
   - **Delete** - to delete a credential.
   - **Clone** - to duplicate a credential.
2. Click **Save**.

Modifying a Credential Association

Complete these steps to modify a credential association:

1. Select the credential association from the list and click the required option under **Step 2: Enter IP Range to Credential Associations**:
   - **Edit** - to edit an associated IP/IP range
   - **Delete** - to delete any association
2. Click **Save**.

Credentials Based on Access Protocol

For information on the credential configuration settings for selected devices, see the External Systems Configuration Guide.

Discovering Devices

FortiSIEM automatically discovers devices, applications, and users in your IT infrastructure and start monitoring them. You can initiate device discovery by providing the credentials that are needed to access the infrastructure component, and from there FortiSIEM will discover information about your component such as the host name, operating system, hardware information such as CPU and memory, software information such as running processes and services, and configuration information. Once discovered, FortiSIEM will also begin monitoring your component on an ongoing basis.

This section provides the procedures for discovering devices.

- Creating a Discovery Entry
- Discovering on Demand
- Scheduling a Discovery
- Searching Previous Discovery Results
- Editing a Discovery
- Exporting Discovery Results

Creating a Discovery Entry

Complete these steps to create a discovery:

1. Go to **ADMIN** > **Setup** > **Discovery** tab.
2. Click **New**.

3. In the **Range Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Name of the discovery entry that will be used for reference.
Discovery Type	Select the type of discovery: • **Range Scan** - FortiSIEM will sequentially discover each device in one or more IP ranges and CIDR subnets. • **Smart Scan** - FortiSIEM will first discover the Root IP, which will provide a list of devices that it knows about. Then FortiSIEM will discover each of the devices learnt from the Root IP device. Each of these devices will provide a list of devices they know about, which FortiSIEM will then discover. This process continues until the list of known devices is exhausted. • **AWS Scan** - FortiSIEM will discover the devices in Amazon Web Services (AWS) Cloud learnt via AWS SDK. For AWS Scan to succeed, there needs to be an AWS Credential mapped to aws.com or amazon.com in the IP to Credential mapping. • **L2 Scan** - FortiSIEM will discover only the Layer 2 connectivity of the devices. • **Azure Scan** - FortiSIEM will discover the devices in Azure Cloud learnt via Azure SDK. For Azure Scan to succeed, there needs to be a Credential mapped to azure.com in the IP to Credential mapping.
Root IPs	IP address of the Starting device for Smart Scan. See Smart scan definition above.
Include	[Required] A list of IP addresses that will be included for discovery. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10.
Exclude	A list of IP addresses that will be excluded for discovery. Allowed IP range syntax is single IP, single range, single CIDR or a list separated by comma – e.g. 10.1.1.1, 10.1.1.2,20.1.1.0/24, 30.1.1.1-30.1.1.10.
Include Types	A list of device Types that will be included for discovery. Click the edit icon to configure the **Range Definition** and **Save**.
Exclude Types	A list of device Types that will be excluded for discovery. Click the edit icon to configure the **Range Definition** and **Save**.
Name resolution	Host names can learn from DNS look up or SNMP/WMI. If these do not match, then choose which discovery method with higher priority. For example, if DNS is chosen then FortiSIEM will get host names from DNS. If DNS lookup fails for an IP, the host names will be obtained from SNMP/WMI.
Options	Select the options for this discovery:

Settings	Guidelines
	- **Do not ping before discovery**: Device will not be pinged before attempting the credentials. - **Ping before discovery**: Device will be pinged before attempting the credentials. A successful ping can shorten discovery times; since FortiSIEM may have to wait for a protocol timeout in case of failed credentials. - **Winexe based discovery** - for windows servers, we discover HyperV metrics and other AD replication metrics via Winexe. However, winexe installs a service and uninstalls the service after it finishes for certain old OS. This setting enables to control this behavior. - **Only discover devices not in CMDB** - **Discover Routes**: Routes help to discover neighboring devices for Smart Scan but “show route” can be expensive for BGP routers. This selection provides a way to control this behavior. - **Include powered off VMs**: This allows the administrator to control whether powered off VMs will be discovered during VCenter discovery - **Include VM templates**: This allows the administrator to control whether VM templates will be discovered during VCenter discovery. - **Set discovered devices as unmanaged**: This allows the administrator to set the discovered devices as unmanaged.

4. Click **Save**.

Discovering on Demand

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Select the required discovery from the table.
3. Click **Discover**.
4. Click **Results** to view the discovery result.
5. Click **Errors** to check for any errors found during discovery.
   Use the **Run in Background** to run discovery in background while performing other operations.
6. After successful discovery, **Discovery Completed.** message is displayed with the discovery results.

Scheduling a Discovery

Discovery can be a long-running process when performed on a large network, or over a large IP range, and so you may want to schedule it to occur when there is less load on your network or during off hours. You may also want to set up a schedule for the process to run and discover new devices on a regular basis.

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Click **Scheduled**.
3. Under **Discovery Schedule** dialog box, click **New**.
4. Select from the available ranges.
   You can select multiple ranges and set the order in which discovery will run on them using the up and down arrows.

5. Set the time at which you want discovery to run.
   - For a one-time scheduled discovery, select the **Start Time**.
   - For recurring discoveries, select how often (hourly, daily, weekly, monthly), you want discovery to run, and then enter other scheduling options.
6. Click **Save**.

Searching Previous Discovery Results

Complete these steps to search previously discovered results:

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Select a discovery result.
3. Click **History**.
4. In the **Discovery History** dialog box, click **View Results**, **View Errors** or **View Changes** to see the related information.

Editing a Discovery

Complete these steps to modify discovery settings:

1. Select the required option from the table below.
   - **Edit** - to edit any scheduled discovery settings.
   - **Delete** - to delete any scheduled discovery.
2. Click **OK**.

Exporting Discovery Results

Complete these steps to export discovery history:

1. Click **History**.
2. In the **Discovery History** dialog box, select the discovery type.
3. Based on the type of information required, select the required option:
   - **View Results** - to see the discovery results
   - **View Errors** - to see the errors during discovery
   - **View Changes** - to see the changes in discovery
4. Click **Export** based on your selection in step#3.
5. Optional - Enter the **User Notes**.
6. Select the **Output Format** as **PDF** or **CSV**.
7. Click **Generate**.
   'Export successful message' is displayed under **Export Report** dialog box.
8. Click **View** to see the discovery results.

Editing Event Pulling

After discovery is complete, FortiSIEM starts pulling events from devices with correct credentials. Examples include Windows Servers via WMI, VMWare VCenter via VMWare SDK, AWS CloudTrail via AWS SDK, etc.

The following section describes the procedures to see the status of these event pulling jobs and turn them on/off.

Viewing Event Pulling Jobs

Complete these steps to enable event pulling:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. See the listed jobs:
   - Enabled – the job is enabled at a device level.
   - Device name – name of the device in CMDB.
   - Access IP – IP address with which FortiSIEM accesses this device.
   - Device Type – the device type in CMDB.
   - Organization – the organization to which this device belongs (for a multi-tenant FortiSIEM install).
   - Method – the event pulling method – format - credential name (Access Protocol).
   - Maintenance – indicates if this device is in maintenance or not.
3. See **Enabled** option to view the enabled device.
4. Select **Errors** to view the list of errors, if any.

Modifying Event Pulling Jobs

Complete these steps to enable/disable event pulling at all device level (all jobs will be enabled/disabled).

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Select **All** check-box to enable all jobs or deselect to disable.
4. Click **Apply**.

Complete these steps to enable/disable a specific event pulling job for a device:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Click **Edit**.
4. Check the specific job to enable/disable.
5. Click **Apply**.

Checking Status of Event Pulling Jobs

Complete these steps to the status of event pulling jobs:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select the device from the list.
3. Hover over the method column – the tool tip shows the Execution Status.
4. To see the events generated from the event pulling job, click **Report**.
   A report is run for all the events generated by this event pulling job in the last 10 minutes.

Exporting Event Pulling Jobs into a Report

Complete these steps to export an event pulling job report:

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Click **Export**.
3. Optional - Enter the **User Notes**.
4. Select the output format to **PDF** or **CSV** and click **Generate**.
5. Click **View** to download and view the report.

Viewing Event Pulling Reports

1. Go to **ADMIN** > **Setup** > **Pull Events** tab.
2. Select **Super/Local** or **Org with collector** or use the **Search** field to view any related jobs.

Editing Performance Monitors

After the discovery is complete, FortiSIEM starts monitoring successfully discovered devices for performance, availability and change. The following section describes the procedure to see the status of these performance monitoring jobs and edit them.

- Viewing Performance Monitoring Jobs
- Enabling/Disabling Performance Monitoring Jobs
- Modifying Performance Monitoring Jobs

Viewing Performance Monitoring Jobs

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. To check the **Device Health** details, select the device from the list and click the drop-down near the device name.
3. To check the errors during the monitoring job, select the device and click **More** > **Errors**.
4. To export a Performance Monitor, select the device and click **More** > **Export Monitors**.
5. To generate a Performance Monitoring report for any device(s), select the device and click **More** > **Report**.

Enabling/Disabling Performance Monitoring Jobs

Complete these steps to enable/disable performance monitoring at a device level – all jobs will be enabled/disabled:

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Select the device from the list.
3. Select **Enabled** check-box to enable and select again to disable.
4. Click **Apply**.

Modifying Performance Monitoring Jobs

Complete these steps to enable/disable a specific performance monitoring job for a device:

1. Change the Scope to Local and go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Select the device from the list.

3. Click **More** and select the required option:
   - **Edit System Monitors** to select the Protocols and click **Save**.
   - **Edit App Monitors** to select the Protocols and click **Save**.
4. Click **Save**.
5. Click **Apply**.

Another way to enable/disable a specific job or tune monitoring intervals for specific jobs for all devices:

1. Go to **ADMIN** > **Setup** > **Monitor Performance** tab.
2. Click **More** > **Edit Intervals**.
3. In the **Set Intervals** pop-up:
   - Choose the Monitor on the left panel.
   - Choose the device on the middle panel.
   - Click **>>** to move the chosen jobs on the chosen devices to the right panel.
   - Choose the new polling interval or choose **Disabled**.
   - Click **Save**.
4. Click **Apply**.

Configuring Synthetic Transaction Monitoring

A Synthetic Transaction Monitoring (STM) test lets you test whether a service is up or down, and measure the response time. An STM test can range from something as simple as pinging a service, to complex as sending and receiving an email or a nested Web transaction.

This section provides the procedures to set up Synthetic Transaction Monitoring tests.

- Create Monitoring Definition
- Create STM Test
- Edit Monitoring Definition
- Protocol Settings for STM Tests

Creating Monitoring Definition

Complete these steps to create monitor definitions:

1. Go to **ADMIN** > **Setup** > **STM** tab.
2. Under **Step 1: Edit Monitoring Definitions**, click **New**.
3. In the **Add Monitor Definition** dialog box, enter the information below.
   a. Name – enter a name that will be used for reference.
   b. Description – enter a description.
   c. Frequency – how often the STM test will be performed.
   d. Protocol - See 'Protocol Settings for STM Tests' for more information about the settings and test results for specific protocols.
   e. Timeout – when the STM test will give up when it fails.
   f. Probe Settings - enter the timeout period in seconds.
4. Click **Save**.

Creating an STM Test

Complete these steps to create an STM test:

1. Go to **ADMIN** > **Setup** > **STM** tab.
2. Under **Step 2: Create synthetic transaction monitoring entry by associating host name to monitoring definitions**, select **New**.
3. Click **New** and enter the following information:
   a. **Monitoring Definition** – enter the name of the Monitor (previous step).
   b. **Host name or IP/IP Range** – enter a host name or IP or IP range on which the test will be performed.
   c. **Service Ports** – click the Port(s) on which the test will be performed. To add/delete Ports, click **+**/**-**.
   d. Check **SSL** option to enable SSL for encryption.
   e. Click **Test and Save** to test and save the changes.
   f. Click **Apply**.

Editing Monitoring Definition

Complete these steps to modify monitor definition settings:

1. In the **Step 1: Edit Monitoring Definitions** dialog box, click the tab based on the required action.

Tab	Description
Edit	To modify the Monitoring Definitions.
Delete	To delete the selected Monitoring Definition.
Clone	To duplicate the selected Monitoring Definition.

2. Click **Save**.

Protocol Settings for STM Tests

This table describes the settings associated with the various protocols used for Creating Monitoring Definition.

Protocol	Description	Settings	Notes
Ping	Checks packet loss and round trip time.	**Maximum Packet Loss PCT**: tolerable packet loss. **Maximum Average Round Trip Time**: tolerable round trip time (seconds) from FortiSIEM to the destination and back. If either of these two thresholds are exceeded, then the test is considered as failed.	Make sure the device is accessible from the FortiSIEM node from which this test is going to be performed.

Protocol	Description	Settings	Notes
LOOP Email	This test sends an email to an outbound SMTP server and then attempts to receive the same email from a mailbox via IMAP or POP. It also records the end-to-end time.	**Timeout**: the time limit by which the end to end LOOP EMAIL test must complete. **Outgoing Settings**: these specify the outgoing SMTP server account for sending the email. • **SMTP Server**: name of the SMTP server. • **User Name**: user account on the SMTP server. • **Email Subject**: content of the subject line in the test email. **Incoming Settings**: These specify the inbound IMAP or POP server account for fetching the email. • **Protocol Type**: choose IMAP or POP. • **Server**: name of the IMAP or POP server. • **User Name**: user account on the IMAP or POP server. • **Email Subject**: content of the subject line in the test email.	Before you set up the test you must have set up access credentials for an outbound SMTP account for sending email, and an inbound POP/IMAP account for receiving email.
HTTP(S) - Selenium Script	This test uses a Selenium script to play back a series of website actions in FortiSIEM.	**Upload**: select the java file you exported from Selenium. **Total Timeout**: the script must complete by this time or the test will be considered failed. **Step Timeout**: each step must complete by this time.	**How to export**: • Make sure Selenium IDE is installed within Firefox browser. • Open Firefox. • Launch Tools > Selenium IDE. From now on, Selenium is recording user actions. • Visit websites. • Once done, stop recording. • Click File > Export Test case as > Java / Junit 4 /WebDriver. • Save the file as .java in your desktop. This file has to be inputted in FortiSIEM.

Protocol	Description	Settings	Notes
HTTP(S) - Simple	This test connects to a URI over HTTP(s) and checks the response time and expected results.	**URI**: the URI to connect to. **Authentication**: any authentication method to use when connecting to this URI. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results. The format should be a list of words, separated with a space, e.g. “fortinet firewall”. If **All** is selected, then every listed word is expected, e.g. “fortinet” AND “firewall” are expected to be found within the web page. If **Any** is selected, then any of the listed words are expected, e.g. “fortinet” OR “firewall” is expected to be found within the web page. **Response Code**: an expected HTTP(S) response code in the test results. The default is set to **200 - 204**.	
TCP	This test attempts to connect to the specified port using TCP.	**Timeout**: this is the single success criterion. If there is no response within the time specified here, then the test fails.	
DNS	Checks response time and expected IP address.	**Query**: the domain name that needs to be resolved. **Record Type**: the type of record to test against. **Result**: specify the expected IP address that should be associated with the DNS entry. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails.	
SSH	This test issues a com-	**Remote Command**: the command to run	You must set up an SSH cre-

Protocol	Description	Settings	Notes
	mand to the remote server over SSH, and checks the response time and expected results.	after logging on to the system **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Contains**: an expected string in the test results.	dential on the target server before setting up this test. As an example test, you could set **Raw Command** to `ls`, and then set **Contains** to the name of a file that should be returned when that command executes on the target server and directory.
LDAP	This test connects to the LDAP server, and checks the response time and expected results.	**Base DN**: an LDAP base DN you want to run the test against. **Filter**: any filter criteria for the Base DN. **Scope**: any scope for the test. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails. **Number of Rows**: the expected number of rows in the test results. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results.	You must set up an access credential for the LDAP server before you can set up this test
IMAP	This tests checks connectivity to the IMAP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
POP	This test checks connectivity to the IMAP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
SMTP	This test checks connectivity to the SMTP service.	**Timeout**: this is the single success criterion - if there is no response within the time specified here, then the test fails.	
JDBC	This test issues a SQL command over JDBC to a target database, and checks the response time and expected results.	**JDBC Type**: the type of database to connect to. **Database Name**: the name of the target database. **SQL**: the SQL command to run against the target database. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails.	

Protocol	Description	Settings	Notes
		Number of Rows: the expected number of rows in the test results. **Contains**: an expected string in the test results. **Does Not Contain**: a string that should not be contained in the test results.	
FTP	This test issues a FTP command to the server and checks expected results.	**Anonymous Login**: choose whether to use anonymous login to connect to the FTP directory. **Remote Directory**: the remote directory to connect to. **Timeout**: this is the primary success criterion - if there is no response within the time specified here, then the test fails.	
TRACE ROUTE	This test issues a trace route command to the destination and parses the results to create PH_DEV_MON_TRACEROUTE events, one for each hop.	**Timeout**: If there is no response from the system within the time specified here, then the test fails. **Protocol Type**: Specifies the IP protocol over which trace route packets are send - current options are UDP, TCP and ICMP. **Max TTL**: Max time to live (hop) value used in outgoing trace route probe packets. **Wait Time**: Max time in seconds to wait for a trace route probe response.	For the trace route from AO to destination D via hops H1, H2, H3, FortiSIEM generates 3 hop by hop PH_DEV_MON_TRACEROUTE events. **First event:** Source AO, destination H1, Min/Max/Avg RTT, Packet Loss for this hop. **Second event:** Source H1, destination H2, Min/Max/Avg RTT, Packet Loss for this hop. **Third event:** Source H2, destination H3, Min/Max/Avg RTT, Packet Loss for this hop. **Fourth event:** Source H3, destination D, Min/Max/Avg RTT, Packet Loss for this hop **Fourth event:** Source H3, destination D, Min/Max/Avg RTT, Packet Loss for this hop.

When an STM test fails, three system rules are triggered, and you can receive an email notification of that failure by creating a notification policy for these rules:

- **Service Degraded - Slow Response to STM**: Detects that the response time of an end-user monitored service is greater than a defined threshold (average over 3 samples in 15 minutes is more than 5 seconds).
- **Service Down - No Response to STM:** Detects a service suddenly went down from the up state and is no longer responding to synthetic transaction monitoring probes.
- **Service Staying Down - No Response to STM**: Detects a service staying down, meaning that it went from up to down and did not come up, and is no longer responding to end user monitoring probes.

Configuring Maintenance Calendars

A Maintenance Calendar displays when a device is undergoing maintenance (likely due to hardware and software upgrades). When a device is in maintenance, it is not monitored for performance, availability and change and the corresponding rules do not trigger.

This section provides the procedures to set up maintenance calendars.

- Create a Maintenance Calendar
  - Specifying a Schedule
  - Specifying the Devices Under Maintenance
- Viewing Existing Maintenance Calendars
- Modifying Existing Maintenance Calendars

Create a Maintenance Calendar

Complete these steps to schedule maintenance:

1. Go to **ADMIN** > **Setup** > **Maintenance** tab.
2. Click **New** and specify the following:

Settings	Guidelines
Name	[Required] Name of the Calendar. This will be displayed on the Calendar.
Description	Description or details about this schedule.
Schedule	[Required] Specify the times during which devices will be in maintenance.
Groups/Devices	Specify the groups/devices and Synthetic Transaction Monitoring (STM) tasks that will be in maintenance.

3. Optional - To generate incidents during maintenance, enable **Generate Incidents for Devices under Maintenance**.
4. Click **Save**.

Specifying a Schedule

1. Click the **Schedule** drop-down list in the **Device Maintenance** window.
2. Enter values for the following options:
   - **Time Range** specifies start time (within the day) and the duration of the maintenance window.
   - **Recurrence Pattern** specifies if and how the maintenance window will repeat.
     - If the maintenance window is one time:
       a. Select **Once** for **Recurrence Pattern**.
       b. Select the specific date on the **Recurrence Range**.
     - If the maintenance window should repeat on certain days of the week:
       a. Select **Recurring Days** and select the Repeat Days and Repeat months.
       b. Select the start and end dates for Recurrence Range.
     - If the maintenance window should repeat on certain months of the year:
       a. Select **Recurring Months** and select the Repeat Months.
       b. Select the **Start From**/**End By** dates for Recurrence Range or select **No end date** to continue the recurrance forever.
3. Click **Save** to apply the changes.

Specifying the Devices Under Maintenance

1. Click the **Groups/Devices** drop-down list in the **Device Maintenance** dialog box.
2. From the **Folders** on the left pane, select either the Devices folder or the STM folder of all the STM jobs defined so far.
3. From the devices/STM jobs shown in the middle pane, select the appropriate ones and click **>** for them to appear in the right **Selections** pane.
4. To select all devices in a folder, select the folder on the left windows and click **>>** to move the folder into the right window.
5. Click **Save**.

Viewing Existing Maintenance Calendars

The existing maintenance calendars can be displayed in various time windows. These options are available on the top-right:

- Monthly view - click **Month**.
- Weekly view - click **Week** or **List (Week)**.
- Day view - click **Day**.

You can navigate to a specific month on the Calendar, click the **<** and **>** buttons on the top-left of the Calendar. To view the current Maintenance, click **Current**.

Modifying Existing Maintenance Calendars

Complete these steps to modify a maintenance schedule:

1. Select the schedule from the Calendar.
2. Click the tab based on the required action:
   - Edit - to edit the scheduled maintenance settings.
   - Delete - to delete the scheduled maintenance.

3. Click **Save**.

Configuring Windows Agent

Starting with version 3.0, Windows Agents can be configured and managed from the FortiSIEM Supervisor node. Windows Agent Manager is not required.

Before proceeding, follow the instructions in the Windows Agent Installation Guide to complete these steps:

1. Install the Windows Agent using the correct installation file.
2. Make sure the Agent appears in the CMDB page of the FortiSIEM GUI, using the host name defined in the installation file.
3. Configure the Windows Server to receive the types logs of interest (see Configuring Windows Servers for FortiSIEM Agents in the Windows Agent Installation Guide).

To receive logs from Windows Agent, you must complete the following steps:

1. Define Windows Agent Monitor Templates
2. Associate Windows Agents to Templates

Once these steps are completed, the Supervisor node will distribute monitoring policies to the Agents and you will be able to see events in FortiSIEM.

This section also covers these topics:

- Viewing Agent Status
- Enabling or Disabling an Agent
- Viewing Files in FortiSIEM
- Verifying Events in FortiSIEM
- Service Level Protection Properties
- Auto Restart Service Behavior
- Configuring Debug Trace Logging without Agent Service Restart
- Configuring the Agent Database Size
- Sample Windows Agent Logs
- Agent Troubleshooting Notes

Define the Windows Agent Monitor Templates

A Windows Monitoring Template consists of:

- Log Settings: Windows Event Logs and Log Files
- Change Settings: File Integrity Monitoring, Registry Changes, Installed Software Changes, Removable media
- Script Settings: WMI Classes and PowerShell Scripts

Complete these steps to add a Windows Agent Monitor Template:

1. Go to **ADMIN** > **Setup** > **Windows Agent** tab.
2. Click **New** under the section **Windows Agent Monitor Templates**.
3. In the **Windows Agent Monitor Template** dialog box, enter the information under each tab with reference to the tables below.

a. Configure the **Generic** settings with reference to the table below:

Generic settings	Guidelines
Name	Enter the name of the Windows Agent Monitor Template. This name is used as a reference in Template associations.
Description	Enter a description of the Windows Agent Monitor Template.

b. Configure the **Event** settings with reference to the table below. Make sure you have completed these steps from the Windows Agent Installation Guide:

- To enable DNS logging, follow the steps in Configuring Windows DNS.
- To enable DHCP logging, follow the steps in Configuring Windows DHCP.
- To enable IIS logging, follow the steps in Configuring Windows IIS.
- To get sysmon events, follow the steps in Configuring Windows Sysmon.
- To get print log events, follow the steps in Configuring Print Log.

Event settings	Guidelines
Event Log	To configure **Event log** settings: a. Select the **Type** of log from the drop-down: • **Application** — Events that are logged by Windows Application. Select All, Exchange Server or SQL Server as Source. • **Security** — Log that contains records of login/logout activity or other security-related events specified by the system's audit policy. • **System** — Events that are logged by the operating system components. • **DFS** — Logs to identify the users who accessed the Distributed File System. • **DNS** — DNS Debug logs and Name Resolution Activity logs. • **Hardware Events** — Events related to hardware. • **Key Management Service** — Events related to creation and control of keys used to encrypt your data. • **Setup** — Log files for all actions that occur during installation. • **Windows PowerShell** — Logs related to Windows PowerShell. • **Other** — Any other log type (specify the name under **Event Name** setting.) b. Enter the events to be included under **Include Event** and the ones to exclude under **Exclude Event**.

c. Select UEBA to turn on UEBA functionality for all hosts running Windows 4.0 that are permitted by the UEBA license. For example, if you have 10 UEBA licenses and you applied the template to 100 hosts, system will apply the UEBA license to 10 random hosts. You can turn on/off UEBA on hosts via CMDB.

d. Configure the **User Log** settings with reference to the table below:

User Log settings	Guidelines
User Log	Click **New** to add the custom log files that must be monitored: • **File**—(Required) Enter the full file name. • **Log Prefix**—(Required) Any prefix to the identify events from this file for better accessibility.

e. Configure the **FIM** settings with reference to the table below. Make sure you have completed these steps from the Windows Agent Installation Guide:

- To enable logging appropriately, follow the steps in Configure Security Audit Logging Policy.
- To get user meta data in the file auditing logs, follow the steps in Configure File Auditing Policy.
- To enable change events for permission and/or ownership changes to files and/or directories, follow the steps in Configure Audit File System Policy.

FIM settings	Guidelines
FIM	To include the file directory details: a. Click **New** to add the file directory details: • **File/Directory**— Enter the full path of the file directory: • **Include Subfolder(s)** — Select if you must include the directory sub-folders. • **Exclude Subfolder(s)** — Enter any sub-folders to exclude, if any. • **Include File Type** — Enter the file types to include separated by a semi-colon. • **Exclude File Type** — Enter the file types to exclude, if any, separated by a semi-colon. • **On Modify:** • **Push Files**—Select this if you want Windows Agent to push files to FortiSIEM whenever there is a change. **File/Directory** must specify a specific file and not a directory. Also, the absolute file name, including the path, must be specified. For example `C:\temp\fileToBeMonitored.txt`. The files are stored in SVN and are accessible from the Supervisor. These files are displayed in **CMDB > Device > File**. Send only important files, as this can fill up disk space. • **Compare Baseline**—Select this if you want to be alerted when the file changes from a baseline. **File/Directory** must specify a specific file and not a directory. Also, the absolute file name, including the path, must be specified. For example `C:\temp\fileToBeMonitored.txt`. This is common for configuration files that rarely change. If you choose this option, you will be asked to provide a copy of the baseline file. Click **Choose**

FIM settings	Guidelines
	File and upload the file from your workstation. The Supervisor will compute the MD5 checksum and distribute the checksum to the agents for comparison. b. Click **Save**. Use the **Edit**/**Delete** buttons to modify/remove any file directory information.

f. Configure the **Change** settings with reference to the table below:

Change settings	Guidelines
Registry Change	Select the required key(s) to monitor: • **HKEY_CLASSES_ROOT**—key that contains file extension association information, as well as a programmatic identifier, Class ID, and Interface ID data. • **HKEY_CURRENT_USER**—key that contains configuration information for Windows and software specific to the currently logged in user. • **HKEY_LOCAL_MACHINE**—hive that contains the majority of the configuration information for the software you have installed, as well as for the Windows Operating System. • **HKEY_USERS**—key that contains user-specific configuration information of all currently active users on the computer. • **HKEY_CURRENT_CONFIG**—key that acts as a shortcut to a registry key which keeps information about the hardware profile currently used.
Check Every	Set the time period to check the Registry Change in Minute(s) or Hour(s).
Installed Software Change	Select to enable monitoring of any installed software change.
Removable Drive	Select the removable drive to track: • USB drive(s) • CD-DVD drive(s)

g. Configure the **Script** settings with reference to the table below:

Script settings	Guidelines
WMI Classes	To include a WMI Class: a. Click **New** to add a new WMI Class. Select the **Name**, **WMI Class**, and **Attributes** from the drop-down lists (Use ';' as the separator). b. Set the time period to monitor in Minute(s) or Hour(s) under **Check Every** setting. Use the **Edit**/**Delete** buttons to modify/remove any WMI Classes.
PowerShell Script	To include a PowerShell Script: Click **New** to add a new PowerShell Script and enter the **Name** and **Script**. Use the **Edit**/**Delete** buttons to modify/remove any PowerShell Script.

4. Click **Save**.
   Use the **Edit** button to modify any template or **Delete** button to remove any Windows Agent Monitor template.

Associate Windows Agents to Templates

After defining the monitoring templates, you must associate hosts to templates. To scale to a large number of hosts, this is done via Policies. A Policy is a mapping from Organization and Host to Templates and Collectors. Policies are evaluated in order (lower order or rank is higher priority) and the policy that matches first is selected. Therefore, define the exceptions first followed by broad policies. Hosts are defined in terms of CMDB Device Groups or Business Services. Multiple templates can be used in one Policy and the system detects conflicts, if any.

Complete these steps to associate a Host to Template:

1. Click **New** under the section **Host To Template Associations**.
2. In the **Host To Template Associations** dialog box, enter the information below.

Settings	Guidelines
Name	Name of the Host to Template Association.
Organization	Select the organization.
Host	Use the drop-down list to browse the folders and select the **Devices** or/and **Business Services** to monitor and click **Save**.
Template	Select one or more monitoring templates from the list or select **All Templates** to include all. You can also use the search bar to find any specific template.
Collector	Select the Collector from the list or select **All Collectors** to include all. Agents forward events to Collectors via HTTP(S). A Collector is chosen at random and if that Collector is not available or non-responsive, then another Collector in the list is chosen.

3. Click **Save** and **Apply**.
   A **Rank** is automatically assigned to the association.

You can use the **Edit** button to modify or **Delete** button to remove any template association.

Viewing Agent Status

Complete these steps to view the Windows Agent status for any specific device:

1. Go to **CMDB** > **Devices** and select the device.
   The following fields display the information related to the Agent:
   - Agent Status: status of the Agent on the device
   - Agent Policy: agent policy name
   - Monitor Status: status of monitoring

   The **Agent Status** indicates the following:

Status	Description
Registered	Agent has completed registration but has not received the monitoring template.
Running Active	Agent has received a monitoring template and it is performing properly.
Running Inactive	Agent is running but does not have a monitoring template – the reasons can be (a) no license or (b) incomplete definition - no Collector or Template is defined for that host.
Stopped	Agent is stopped on the Linux Server.
Disconnected	Supervisor did not receive any status from the Agent for the last 10 minutes.

Enabling or Disabling an Agent

Complete these steps to enable or disable Agent for a specific device:

1. Go to **CMDB** > **Devices** and select the required device.
2. Select the **Action** drop-down menu and click **Enable Agent** to enable or **Disable Agent** to disable Agent monitoring for the selected device.

Viewing Files in FortiSIEM

If the FortiSIEM Agent is running on a Server and a FIM policy is enabled with **Push Files On Modify**, then the FortiSIEM Agent will send the files to FortiSIEM when a change is detected. FortiSIEM stores the files in SVN on the Supervisor.

1. Go to the **CMDB** page. Make sure that **AGENT** is one of the **Methods**.
2. Search for the device in CMDB by name.
   Use the host name that you used in the `InstallSettings.xml` file to install the Windows Agent.
3. Click **File** beneath the device table.
   You will see all of the files that were changed since the monitoring template was applied.

4. Select a file.
   If you need to search for a file, set the **From** and **To** dates. The files which changed between those dates will be displayed.
5. Click the file name on the left and its contents will be displayed in the right hand window.
   Each file has a header containing file meta data followed by the actual file content.
   - **FILEPATH:** The full file name, including the path.
   - **ARCHIVE:** Set to true if **ArchiveBit** is set; set to false if it is not.
   - **HASHCODE:** The file hash.
   - **HASHALGO:** The algorithm used to compute file hash.
   - **OWNER:** The file owner.
   - **USER, PERMIT, DENY:** Permissions are specified as a (User, Permit, Deny) triple. This describes the actions that the user is allowed to perform.
   - **MODIFIED_TIME:** The time when the file was last modified.
6. To see the differences between two files, select two files on left and click **Diff**.

Verifying Events in FortiSIEM

Follow the steps below to verify the events in FortiSIEM:

1. Go to **ANALYTICS** tab.
2. Click the **Filters** field.
3. Create the following condition: **Attribute**= Raw Event Log, **Operator** = CONTAIN, **Value** = AccelOps-WUA and click **Save & Run.**
   Note: All event types for all Windows Server generated logs are prefixed by **AccelOps-WUA**.
4. Select the following **Group By**:
   a. Reporting Device Name
   b. Reporting IP
5. Select the following **Display Fields:**
   a. Reporting Device Name
   b. Reporting IP
   c. COUNT(Matched Events)
6. Run the query for the last 15 minutes.
   The query will return all hosts that reported events in the last 15 minutes.

Service Level Protection Properties

When Windows Agent is running, the FSMLogAgent is shown as part of your services on your Windows machine. The ability to Start, Stop, Pause, or Resume this service is disabled. This is intentional, to provide service level protection.

Auto Restart Service Behavior

In the event of a Windows Agent crash, Windows Agent will automatically restart itself after 60 seconds has passed.

Configuring Debug Trace Logging without Agent Service Restart

To enable/disable debug trace logging, you will need to modify the `LogLevel` entry in your Registry Editor. Take the following steps:

1. Using the Registry Editor (Regedit), navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\AccelOps\Agent`.
2. Select `LogLevel` to edit.

- Select Decimal for **Base** and change **Value data** to 2 to enable trace logging. Both "DBGTRACE" and "TRACE" information will be logged.
- Select Decimal for **Base** and change **Value data** to 1 to enable debug logging. Only "DBGTRACE" information will be logged.

  Note: It will take about 2-3 minutes for your change to take effect.

Go to your log folder, typically `C:\ProgramData\AccelOps\Agent\Logs`, and examine your `FSMLogAgent.log` file with any text editor.

Configuring the Agent Database Size

The default size for your Agent Database is 1GB. If you wish to change this, you will need to modify the `MaxDBSizeInMB` entry in your Registry Editor. Take the following steps:

1. Using the Registry Editor (Regedit), navigate to `HKEY_LOCAL_MACHINE\SOFTWARE\AccelOps\Agent`.
2. Select `MaxDBSizeInMB` to edit.
3. Select Decimal for **Base** and change **Value data** to the number of MB you wish to apply as the maximum capacity.

Sample Windows Agent Logs

FortiSIEM Windows Agent Manager generates Windows logs in an easy way to analyze "attribute=value" style without losing any information.

- System Logs
- Application Logs
- Security Logs
- DNS Logs
- DHCP Logs
- IIS Logs
- DFS Logs
- File Content Monitoring Logs
- File Integrity Monitoring Logs
- Installed Software Logs
- Registry change Logs
- WMI Logs
- Agent Troubleshooting Notes

System Logs

```
#Win-System-Service-Control-Manager-7036
Thu May 07 02:13:42 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="System"
[eventSource]="Service Control Manager" [eventId]="7036" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:13:41" [deviceTime]="May 07 2015 10:13:41"
[msg]="The Skype Updater service entered the running state."

Thu May 07 02:13:48 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="System"
[eventSource]="Service Control Manager" [eventId]="7036" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:13:47" [deviceTime]="May 07 2015 10:13:47"
[msg]="The Skype Updater service entered the stopped state."
```

Application Logs

```
#Win-App-MSExchangeServiceHost-2001
Thu May 07 03:05:42 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="Application" [eventSource]="MSExchangeServiceHost"
[eventId]="2001" [eventType]="Information" [domain]="" [computer]="WIN-2008-249.ersijiu.com"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 11:05:42" [deviceTime]="May 07 2015 11:05:42"
[msg]="Loading servicelet module Microsoft.Exchange.OABMaintenanceServicelet.dll"


#MSSQL
#Win-App-MSSQLSERVER-17137
Thu May 07 03:10:16 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="Application"
[eventSource]="MSSQLSERVER" [eventId]="17137" [eventType]="Information" [domain]="" [computer]="WIN-2008-249.ersijiu.com" [user]=""
[userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 11:10:16" [deviceTime]="May 07 2015 11:10:16"
[msg]="Starting up database 'model'."
```

Security Logs

```
#Win-Security-4624(Windows logon success)
Thu May 07 02:23:58 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="Security"
[eventSource]="Microsoft-Windows-Security-Auditing" [eventId]="4624" [eventType]-
]="Audit Success" [domain]=""
[computer]="WIN-2008-249.ersijiu.com" [user]="" [userSID]="" [userSIDAcctType]=""
[eventTime]="May 07 2015 10:23:56"
[deviceTime]="May 07 2015 10:23:56" [msg]="An account was successfully logged on."
[[Subject]][Security ID]="S-1-0-0" [Account Name]=""
[Account Domain]="" [Logon ID]="0x0" [Logon Type]="3" [[New Logon]][Security ID]="S-1-
5-21-3459063063-1203930890-2363081030-500"
[Account Name]="Administrator" [Account Domain]="ERSIJIU" [Logon ID]="0xb9bd3" [Logon
GUID]="{00000000-0000-0000-0000-000000000000}"
[[Process Information]][Process ID]="0x0" [Process Name]="" [[Network Information]]
[Workstation Name]="SP171" [Source Network Address]="10.1.2.171"
[Source Port]="52409" [[Detailed Authentication Information]][Logon Process]="NtLmSsp"
[Authentication Package]="NTLM" [Transited Services]=""
[Package Name (NTLM only)]="NTLM V2" [Key Length]="128" [details]=""
```

DNS Logs

```
#DNS Debug Logs
#AccelOps-WUA-DNS-Started
Thu May 07 02:35:43 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success"
[msg]="5/7/2015 10:34:05 AM 20BC EVENT   The DNS server has started."


#AccelOps-WUA-DNS-ZoneDownloadComplete
Thu May 07 02:35:43 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015 10:34:05 AM 20BC EVENT
The DNS server has finished the background loading of zones. All zones are now available
for DNS updates and zone
transfers, as allowed by their individual zone configuration."


#AccelOps-WUA-DNS-A-Query-Success
Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
 10:47:13 AM 5D58 PACKET  0000000002B74600 UDP Rcv 10.1.20.232  0002   Q [0001   D
NOERROR] A      (8)testyjyj(4)yjyj(3)com(0)"Thu May 07 02:48:25 2015 WIN-2008-LAW-agent
```

```
10.1.2.242 AccelOps-WUA-DNS [monitorStatus]="Success" [msg]="5/7/2015
 10:47:13 AM 5D58 PACKET  0000000002B74600 UDP Snd 10.1.20.232     0002 R Q [8085 A DR
NOERROR] A      (8)testyjyj(4)yjyj(3)com(0)"


#AccelOps-WUA-DNS-PTR-Query-Success
Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
10:47:22 AM 5D58 PACKET  00000000028AB4B0 UDP Rcv 10.1.20.232 0002   Q [0001   D   NOERROR]
PTR
(3)223(3)102(3)102(3)102(7)in-addr(4)arpa(0)"

Thu May 07 02:48:25 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DNS [mon-
itorStatus]="Success" [msg]="5/7/2015
10:47:22 AM 5D58 PACKET  00000000028AB4B0 UDP Snd 10.1.20.232     0002 R Q [8085 A DR
NOERROR] PTR
(3)223(3)102(3)102(3)102(7)in-addr(4)arpa(0)"


#DNS System Logs
#Win-App-DNS-2(DNS Server started)
Thu May 07 02:39:17 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success"
[eventName]="DNS Server" [eventSource]="DNS" [eventId]="2" [eventType]="Information"
[domain]="" [computer]="WIN-2008-LAW-agent"
[user]="" [userSID]="" [userSIDAcctType]="" [eventTime]="May 07 2015 10:39:17" [deviceTime]-
]="May 07 2015 10:39:17"
[msg]="The DNS server has started."


#Win-App-DNS-3(DNS Server shutdown)
Thu May 07 02:39:16 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DNS Server"
[eventSource]="DNS" [eventId]="3" [eventType]="Information" [domain]="" [computer]="WIN-
2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 10:39:16" [deviceTime]="May 07 2015 10:39:16"
[msg]="The DNS server has shut down.
```

DHCP Logs

```
AccelOps-WUA-DHCP-Generic
Thu May 07 05:44:44 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="00" [Date]="05/07/15"
[Time]="13:44:08" [Description]="Started" [IP Address]="" [Host Name]="" [MAC Address]=""
```

```
[User Name]="" [ TransactionID]="0"
[ QResult]="6" [Probationtime]="" [ CorrelationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-IP-ASSIGN
Thu May 07 05:56:41 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="10" [Date]="05/07/15"
[Time]="13:56:37" [Description]="Assign" [IP Address]="10.1.2.124" [Host Name]="Agent-
247.yj" [MAC Address]="000C2922118E"
[User Name]="" [ TransactionID]="2987030242" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-Generic(Release)
Thu May 07 05:56:41 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="12" [Date]="05/07/15"
[Time]="13:56:33" [Description]="Release" [IP Address]="10.1.2.124" [Host Name]="Agent-
247.yj" [MAC Address]="000C2922118E"
[User Name]="" [ TransactionID]="2179405838" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""


#AccelOps-WUA-DHCP-IP-LEASE-RENEW
Wed Feb 25 02:53:28 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-DHCP [mon-
itorStatus]="Success" [ID]="11" [Date]="02/25/15"
[Time]="10:53:19" [Description]="Renew" [IP Address]="10.1.2.123" [Host Name]="WIN-2008-
249.yj" [MAC Address]="0050568F1B5D"
[User Name]="" [ TransactionID]="1136957584" [ QResult]="0" [Probationtime]="" [ Cor-
relationID]="" [Dhcid.]=""
```

IIS Logs

```
#AccelOps-WUA-IIS-Web-Request-Success
Thu May 07 03:49:23 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-IIS [mon-
itorStatus]="Success" [date]="2015-05-07"
[time]="03:44:28" [s-sitename]="W3SVC1" [s-computername]="WIN-2008-LAW-AG" [s-ip]-
]="10.1.2.242" [cs-method]="GET"
[cs-uri-stem]="/welcome.png" [cs-uri-query]="-" [s-port]="80" [cs-username]="-" [c-ip]-
]="10.1.20.232" [cs-version]="HTTP/1.1"
[cs(User-Agent)]="Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.36+(KHTML,+-
like+Gecko)+Chrome/42.0.2311.135+Safari/537.36"
[cs(Cookie)]="-" [cs(Referer)]="http://10.1.2.242/" [cs-host]="10.1.2.242" [sc-status]-
]="200" [sc-substatus]="0" [sc-win32-status]="0"
```

```
[sc-bytes]="185173" [cs-bytes]="324" [time-taken]="78" [site]="Default Web Site" [format]="W3C"
```

```
#AccelOps-WUA-IIS-Web-Client-Error
Thu May 07 03:49:23 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-IIS [monitorStatus]="Success" [date]="2015-05-07" [time]="03:44:37"
[s-sitename]="W3SVC1" [s-computername]="WIN-2008-LAW-AG" [s-ip]="10.1.2.242" [cs-method]="GET" [cs-uri-stem]="/wrongpage" [cs-uri-query]="-"
[s-port]="80" [cs-username]="-" [c-ip]="10.1.20.232" [cs-version]="HTTP/1.1" [cs(User-Agent)]="Mozilla/5.0+(Windows+NT+6.1;+WOW64)+AppleWebKit/537.36+(KHTML,+like+Gecko)+Chrome/42.0.2311.135+Safari/537.36" [cs(Cookie)]="-" [cs(Referer)]="-" [cs-host]="10.1.2.242" [sc-status]="404"
[sc-substatus]="0" [sc-win32-status]="2" [sc-bytes]="1382" [cs-bytes]="347" [time-taken]]="0" [site]="Default Web Site" [format]="W3C"
```

```
#AccelOps-WUA-IIS-Web-Forbidden-Access-Denied
Thu May 07 03:30:39 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-IIS [monitorStatus]="Success" [date]="2015-05-07" [time]="03:30:15" [s-ip]="10.1.2.249" [cs-method]="POST" [cs-uri-stem]="/AOCACWS/AOCACWS.svc" [cs-uri-query]="-" [s-port]="80" [cs-username]="-"
[c-ip]="10.1.2.42" [cs(User-Agent)]="-" [sc-status]="403" [sc-substatus]="4" [sc-win32-status]="5" [time-taken]="1" [site]="Default Web Site"
[format]="W3C"
```

DFS Logs

```
#Win-App-DFSR-1002
Thu May 07 03:01:12 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1002" [eventType]="Information" [domain]="" [computer]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:12" [deviceTime]="May 07 2015 11:01:12"
[msg]="The DFS Replication service is starting."
```

```
#Win-App-DFSR-1004
Thu May 07 03:01:12 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [monitorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1004" [eventType]="Information" [domain]="" [computer]="WIN-2008-LAW-agent" [user]="" [userSID]=""
```

```
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:12" [deviceTime]="May 07 2015 11:01:12"
[msg]="The DFS Replication service has started."


#Win-App-DFSR-1006
Thu May 07 03:01:10 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1006" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:10" [deviceTime]="May 07 2015 11:01:10"
[msg]="The DFS Replication service is stopping."


#Win-App-DFSR-1008
Thu May 07 03:01:11 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WinLog [mon-
itorStatus]="Success" [eventName]="DFS Replication"
[eventSource]="DFSR" [eventId]="1008" [eventType]="Information" [domain]="" [com-
puter]="WIN-2008-LAW-agent" [user]="" [userSID]=""
[userSIDAcctType]="" [eventTime]="May 07 2015 11:01:11" [deviceTime]="May 07 2015 11:01:11"
[msg]="The DFS Replication service has stopped."
```

File Content Monitoring Logs

```
#AccelOps-WUA-UserFile
Thu May 07 05:40:08 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-UserFile [mon-
itorStatus]="Success" [fileName]="C:\test\i.txt"
[msg]="another newline adddeddddd"
```

File Integrity Monitoring Logs

The following sections describe various use cases that can be detected by File Integrity Monitoring Logs.

- Use Case 1: File or Directory Created
- Use Case 2: File or Directory Deleted
- Use Case 3: File Content Modified
- Use Case 4: File Content Modified and Upload is Selected
- Use Case 5: File Renamed
- Use Case 6: File Permission Changed
- Use Case 7: File Ownership Changed
- Use Case 8: File Archive Bit Changed
- Use Case 9: File Baseline Changed

Use Case 1: File or Directory Created

Event Type

AO-WUA-FileMon-Added

Important Event Attributes

- userId: The ID of the user who added the file.
- domain: The user’s domain for a Domain computer.
- osObjType- Can be either File or Directory.
- fileName: The name of the file or directory that was added.
- hashCode, hashAlgo: The file hash obtained by using the specified algorithm.
- procName: The name of the Windows process that was used to create the file.
- fileOwner: The owner of the file.
- targetUserType, targetUser: The user or group to whom the permission applies.
- targetFilePermit: The permitted file operations.
- targetFileDeny: The denied file operations.
- archiveSet: Is true if the Archive bit is set for this file; false otherwise.

Reports

Agent FIM: Windows File/Directory Created/Deleted/Renamed

Rules

Agent FIM - Windows File or Directory Created

Sample Log

```
2020-03-25T07:30:50Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [cus-
tomer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-
bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]="Mar 25
2020 07:30:48" [fileName]="C:\\test\\New Text Document.txt" [osObjAction]="Added"
[objectType]="File" [hashCode]-
]="e3b0c44298fc1c149afbf4c8996fb92427ae41e4649b934ca495991b7852b855" [hashAlgo]="SHA256"
[procName]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="true" [fileOwner]=""
```

Use Case 2: File or Directory Deleted

Event Type

AO-WUA-FileMon-Removed

Important Event Attributes

- userId: The ID of the user who removed the file.
- domain: The user’s domain for a Domain computer.
- fileName: The name of the file that was removed.
- procName: The Windows process that was used to remove the file.

Report

Agent FIM: Windows File/Directory Creation/Deletion/Rename

Rule

Agent FIM - Windows File or Directory Deleted

Sample Log

```
2020-03-25T07:43:24Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 07:43:21" [fileName]="C:\\test\\test1.txt" [osObjAction]="Removed" [objectType]="Unknown" [hashCode]="" [hashAlgo]="SHA256" [procName]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="false" [fileOwner]=""
```

Use Case 3: File Content Modified

Event Type

AO-WUA-FileMon-Modified

Important Event Attributes

- userId: The user who modified the file.
- domain: The user’s domain for a Domain computer.
- fileName: The name of the file that was modified.
- procName: The Windows process that was used to modify the file.
- hashCode, hashAlgo: The file hash after modification and the algorithm used to calculate the hash.

Report

Agent FIM: Windows File Content Modified

Rule

Agent FIM - Windows File Content Modified

Sample Log

```
2020-03-25T10:50:40Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:50:37" [fileName]="C:\\test\\test.txt" [osObjAction]="Modified" [objectType]="File" [hashCode]="6396e3c19b155770f3ae25afa5f29832d6f35b315407ed88820339b705fd2bcc" [hashAlgo]="SHA256" [procName]="C:\\Windows\\System32\<br/>otepad.exe" [msg]="" [archiveSet]="true" [fileOwner]=""
```

Use Case 4: File Content Modified and Upload is Selected

Event Type

PH_DEV_MON_FILE_CONTENT_CHANGE

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user’s domain for a Domain computer.
- `fileName`: The name of the file that was modified.
- `procName`: The Windows process that was used to modify the file.
- `hashCode, hashAlgo`: The file hash after modification and the algorithm used to calculate the hash.
- `oldSVNVersion`: The SVN revision number of file before the change.
- `newSVNVersion`: The SVN revision number of file after the change.
- `addedItem`: The lines that were added to the file.
- `deletedItem`: The lines that were removed from the file.

Report

`Agent FIM: Windows File Content Modified in SVN`

Rule

`Audited file or directory content modified in SVN`

Sample Log

```
<14>Mar 25 20:30:44 sp3 phPerfMonitor[17521]: [PH_DEV_MON_FILE_CONTENT_CHANGE]:[eventSeverity]=PHL_INFO,[procName]=phPerfMonitor,[fileName]=phSvnUpdate.cpp,[lineNumber]=306,[phCustId]=2000,[hostName]=Win-169,[hostIpAddr]=10.30.3.169,[fileName]]=/C:/test/test.txt,[hashCode]=08998b2cce90ee6695bd8dae82d43137,[oldSVNVersion]=50,[newSVNVersion]=51,[deletedItem]=(none),[addedItem]=333;,[user]=Administrator,[hashAlgo]=SHA256,[phLogDetail]=
```

Use Case 5: File Renamed

Event Type

`AO-WUA-FileMon-Renamed-New-Name`

Important Event Attributes

- `userId`: The ID of the user who renamed the file.
- `domain`: The user’s domain for a Domain computer.
- `fileName`: The new name of the file.
- `procName`: The Windows process that was used to rename the file.
- `hashCode, hashAlgo`: The new file hash using the specified algorithm.

Report

`Agent FIM: Windows File/Directory Creation/Deletion/Rename`

Rule

None

Sample Log

```
2020-03-25T09:59:34Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 09:59:32" [fileName]-
]="C:\\test\\test5.txt" [osObjAction]="Renamed [New Name]" [objectType]="File"
[hashCode]="2b64c6d9afd8a34ed0dbf35f7de171a8825a50d9f42f05e98fe2b1addf00ab44" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\explorer.exe" [msg]="" [archiveSet]="true"
[fileOwner]=""
```

Event Type

`AO-WUA-FileMon-Renamed-Old-Name`

Important Event Attributes

`userId`: The ID of the user who modified the file.

`domain`: The user’s domain for a Domain computer.

`fileName`: The old name of the file before renaming.

`procName`: The Windows process that was used to remove the file.

Report

`Agent FIM: Windows File/Directory Creation/Deletion/Rename`

Rule

None

Sample Log

None

Use Case 6: File Permission Changed

Event Type

`AO-WUA-FileMon-PermissionChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file permission.
- `domain`: The user’s domain for a Domain computer.
- `objectType`: The type of object. Can be `File` or `Directory`.
- `fileName`: The name of the file or directory whose permission was changed.
- `procName`: The Windows process that was used to change the permission.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `fileOwner`: The name of the owner of the file.
- `targetUserType, targetUser`: The name of the user or group to whom the permission below applies.

- targetFilePermit: The permitted file operations after change.
- targetFileDeny: The denied file operations after change.
- archiveSet: Is true if the Archive bit is set for this file; false otherwise.

Report

Agent FIM: Windows File/Directory Permission Changes

Rule

Agent FIM - Windows File Permission Changed

Sample Log

```
2020-03-25T10:21:00Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon
[phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US"
[MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [user-
Id]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:20:58" [fileName]-
]="C:\\test\\test.txt" [osObjAction]="PermissionChange" [objectType]="File"
[hashCode]="7936d255ef43706a93fdd15f4bbfde45e3b2d2b9a0d4cc7c39184cf745ab78c5" [hashAl-
go]="SHA256" [procName]="C:\\Windows\\System32\\dllhost.exe" [msg]="" [archiveSet]-
]="true" [fileOwner]="Joe" [targetUserType]="USER"
[targetUser]="BUILTIN\Administrators" [targetFilePermit]="ALL" [tar-
getFileDeny]="WRITE"
```

Use Case 7: File Ownership Changed

Event Type

AO-WUA-FileMon-OwnershipChange

Important Event Attributes

- userId: The ID of the user who modified the file ownership.
- domain: The user's domain for a Domain computer.
- objectType: The type of object whose ownership was changed: File or Directory.
- fileName: The name of the file or directory whose ownership was changed.
- procName: The Windows process that was used to change ownership.
- hashCode, hashAlgo: The file hash using the specified algorithm.
- fileOwner: The name of the new file owner.
- archiveSet: Is true if the Archive bit is set for this file; false otherwise.

Report

Agent FIM: Windows File/Directory Ownership Changes

Rule

Agent FIM - Windows File Ownership Changed

Sample Log

```
2020-03-06T07:08:56Z Win-167 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="1" [customer]="super" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="Administrator" [domain]]="WIN-167" [eventTime]="Mar 06 2020 07:08:53" [fileName]="C:\\test\\test1.txt" [osObjAction]="OwnershipChange" [objectType]="File" [hashCode]="d17f25ecfbcc7857f7bebea469308be0b2580943e96d13a3ad98a13675c4bfc2" [hashAlgo]="SHA256" [procName]="C:\\Windows\\System32\\dllhost.exe" [msg]="" [archiveSet]]="true" [fileOwner]="“Joe”
```

Use Case 8: File Archive Bit Changed

Event Type

`AO-WUA-FileMon-ArchivedBitChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user’s domain for a Domain computer.
- `objectType`: The type of object whose `Archive` bit was changed: `File` or `Directory`.
- `fileName`: The name of the file whose archive bit was changed.
- `procName`: The Windows process that was used to change archive bit.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `archiveSet`: Is `true` if the `Archive` bit is set for this file; `false` otherwise.

Report

`Agent FIM: Windows File/Directory Archive Bit Changes`

Rule

`Agent FIM - Windows File/Directory Archive Bit Changed`

Sample Log

```
2020-03-25T10:02:38Z WIN-167.fortinet.wulei.com 10.30.2.167 AccelOps-WUA-FileMon [phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="e892a6e4-bbfa-4ba6-bc8c-00d2c31812b4" [timeZone]="+0800" [userId]="jdoe" [domain]="ACME" [eventTime]="Mar 25 2020 10:02:35" [fileName]]="C:\\test\\test.txt" [osObjAction]="ArchivedBitChange" [objectType]="File" [hashCode]="7936d255ef43706a93fdd15f4bbfde45e3b2d2b9a0d4cc7c39184cf745ab78c5" [hashAlgo]="SHA256" [procName]="C:\\Windows\\System32\\attrib.exe" [msg]="" [archiveSet]]="false" [fileOwner]=""
```

Use Case 9: File Baseline Changed

Event Type

`AO-WUA-FileMon-BaselineChange`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user’s domain for a Domain computer.
- `fileName`: The name of the file that was changed.
- `procName`: The Windows process that was used to remove the file.
- `hashCode, hashAlgo`: The file hash using the specified algorithm.
- `targetHashCode`: The hash of the target file (defined in the GUI).

Report

`Agent FIM: Windows File Change from Baseline`

Rule

`Agent FIM - Windows File Changed From Baseline`

Sample Log

```
2020-03-25T12:52:42Z Win-169 10.30.3.169 AccelOps-WUA-FileMon [phCustId]="2000" [customer]="org1" [monitorStatus]="Success" [Locale]="en-US" [MachineGuid]="5c83ec12-73fd-4e06-a396-1f128564f09e" [timeZone]="+0800" [userId]="Administrator" [domain]="WINSRV2012-169" [fileName]="C:\\test\\test.txt" [osObjAction]="BaselineChange" [hashCode]="c1f79ea2bbfb77bf30446a4c9be762eb" [hashAlgo]="MD5" [targetHashCode]="74DE7651DFC55294CC59240AE514A676" [msg]="
```

Installed Software Logs

```
#AccelOps-WUA-InstSw-Added
Thu May 07 05:28:17 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-InstSw [monitorStatus]="Success" [osObjAction]="Added"
[appName]="7-Zip 9.20 (x64 edition)" [vendor]="Igor Pavlov" [appVersion]="9.20.00.0"


#AccelOps-WUA-InstSw-Removed
Thu May 07 05:28:30 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-InstSw [monitorStatus]="Success" [osObjAction]="Removed"
[appName]="7-Zip 9.20 (x64 edition)" [vendor]="Igor Pavlov" [appVersion]="9.20.00.0"
```

Registry Change Logs

```
#AccelOps-WUA-Registry-Modified
Thu May 07 04:01:58 2015 WIN-2008-249.ersijiu.com 10.1.2.249 AccelOps-WUA-Registry [monitorStatus]="Success" [regKeyPath]="HKLM\\SOFTWARE\\Microsoft\\ExchangeServer\\v14\\ContentIndex\\CatalogHealth\\{0d2a342a-0b15-4995-93db-d18c3df5860d}" [regValueName]="TimeStamp" [regValueType]="1" [osObjAction]="Modified"
```

```
[oldRegValue]="MgAwADEANQAtADAANQAtADAANwAgADAAMwA6ADQAOQA6ADQANwBaAAAA"
[newRegValue]="MgAwADEANQAtADAANQAtADAANwAgADAANAA6ADAAMQA6ADQAOABaAAAA"
```

```
#AccelOps-WUA-Registry-Removed
Thu May 07 05:25:09 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-Registry [mon-
itorStatus]="Success"
[regKeyPath]="HKLM\\SOFTWARE\\RegisteredApplications" [regValueName]="Skype" [regValueType]-
]="1" [osObjAction]="Removed" [oldRegValue]-
="UwBPAEYAVABXAEEAUgBFAFwAQwBsAGkAZQBuAHQAcwBcAEkAbgB0AGUAcgBuAGUAdAAgAEMAYQBsAGwAXABTAGs-
AeQBwAGUAXABDAGEAcABhAGIAaQBsAGkAdABpAGUAcwBkAGgAZABoAGQAaABkAGgAZABoAGQAAAA="
[newRegValue]=""
```

WMI logs

```
#AccelOps-WUA-WMI-Win32_Processor
Thu May 07 03:53:33 2015 WIN-2008-LAW-agent 10.1.2.242 AccelOps-WUA-WMI [mon-
itorStatus]="Success"  [__CLASS]="Win32_Processor"
[AddressWidth]="64" [Architecture]="9" [Availability]="3" [Caption]="Intel64 Family 6
Model 26 Stepping 5" [ConfigManagerErrorCode]="" [ConfigManagerUserConfig]=""
[CpuStatus]="1" [CreationClassName]="Win32_Processor" [CurrentClockSpeed]="2266" [Cur-
rentVoltage]="33"
[DataWidth]="64" [Description]="Intel64 Family 6 Model 26 Stepping 5" [DeviceID]-
]="CPU0" [ErrorCleared]="" [ErrorDescription]=""
[ExtClock]="" [Family]="12" [InstallDate]="" [L2CacheSize]="0" [L2CacheSpeed]=""
[L3CacheSize]="0" [L3CacheSpeed]="0"
[LastErrorCode]="" [Level]="6" [LoadPercentage]="8" [Manufacturer]="GenuineIntel"
[MaxClockSpeed]="2266"
[Name]="Intel(R) Xeon(R) CPU           E5520  @ 2.27GHz" [NumberOfCores]="1" [Num-
berOfLogicalProcessors]="1"
[OtherFamilyDescription]="" [PNPDeviceID]="" [PowerManagementCapabilities]="" [Power-
ManagementSupported]="0"
[ProcessorId]="0FEBFBFF000106A5" [ProcessorType]="3" [Revision]="6661" [Role]="CPU"
[SocketDesignation]="CPU socket #0"
[Status]="OK" [StatusInfo]="3" [Stepping]="" [SystemCreationClassName]="Win32_Com-
puterSystem" [SystemName]="WIN-2008-LAW-AG"
UniqueId]="" [UpgradeMethod]="4" [Version]="" [VoltageCaps]="2"
```

Agent Troubleshooting Notes

A Windows Agent can be in following states (shown in CMDB):

- Registered
- Running Inactive
- Running Active
- Disabled
- Disconnected

When an Agent is installed and registered, then it is in Registered state. The following audit event is generated: `PH_AUDIT_AGENT_INSTALLED`.

When a monitoring template is assigned to the device, then the state moves to Running Inactive. When the agent receives the template and starts monitoring, then the state moves to Running Active. In both cases, the following audit event is generated: `PH_AUDIT_AGENT_RUNNING`.

Agent periodically sends heartbeat messages. When a heartbeat not received for 10 minutes, the state moves to Disconnected and the audit event `PH_AUDIT_AGENT_NOTRESPONDING` is generated. Status is checked every 1 hour. At that time, if we heard from the Agent in the last 15 minutes, the state moves back to Running Inactive and a `PH_AUDIT_AGENT_RUNNING` audit event is generated.

If the Agent is disabled from the GUI, the state moves to Disabled and `PH_AUDIT_AGENT_DISABLED` audit event is generated.

If the Agent is uninstalled or the service is stopped, then the state moves to Disconnected and the audit event `PH_AUDIT_AGENT_NOTRESPONDING` is generated.

Audit events are generated at state transitions, however, the event `PH_AUDIT_AGENT_NOTRESPONDING` is generated every hour to identify all agents that are currently disconnected. A nested query can be run to detect Agents that did not report in the last N hours. Note that `PH_AUDIT` events must be queried with `System Event Category = 2`. Rules do not need this condition.

Configuring Linux Agent

Linux Agents can be configured and managed from the FortiSIEM Supervisor node.

Before proceeding, install the Linux Agent following the instructions in the *Linux Agent Installation Guide.*

To receive logs from the Linux Agent, you must complete the following steps

1. Define the Linux Agent Monitoring Templates.
2. Associate Linux Agents to Templates.

Once these steps are completed, the Supervisor node will distribute monitoring policies to the Linux Agents and you will be able to see events in FortiSIEM.

Note: FortiSIEM Linux Agent will not perform file integrity monitoring on the `/root` directory.

This section also covers these topics.

- Viewing Agent Status
- Enabling or Disabling an Agent
- Viewing Files in FortiSIEM

- File Integrity Monitoring Logs
- Agent Troubleshooting Notes

Define the Linux Agent Monitor Templates

Complete these steps to add a Linux Agent Monitor Template:

1. Go to **ADMIN** > **Setup** > **Linux Agent** tab.
2. Click **New** under the section **Linux Agent Monitor Templates**.
3. In the **Linux Agent Monitor Template** dialog box, enter the information below.

Generic tab:

Configure the **Generic** settings with reference to the table below:

Generic Settings	Guidelines
Name	[Required] Enter the name of the FortiSIEM Linux Agent. This name is used as a reference in Template associations.
Description	[Required] Enter the description about the FortiSIEM Linux Agent.

Syslog tab:

Configure the **Syslog** settings with reference to the table below:

Syslog Settings	Guidelines
Syslog	Select the **Facility** with the corresponding Syslog levels: • **Emergency** • **Alert** • **Critical** • **Error** • **Warning** • **Notice** • **Info** • **Debug**

Log File tab:

Configure the **Log File** settings with reference to the table below:

Log File Settings	Guidelines
Log Files	Click **New** to add the custom log files to monitor: • **File**—(Required) Enter the full file name. • **Log Prefix**—(Required) Any prefix to the identify events from this file for better accessibility.

If you cannot collect logs from the specified log file, please check if SELinux is enabled and that the SELinux context configuration for the file is correct. The `var_log_t` type is needed for the log file.

To check for SELinux context, assuming `/testLinuxAgent/testLog.log` is the log file, run the following command:

```
ls -Z /testLinuxAgent/testLog.log
```

The expected result should have `var_log_t` in the output, as shown here:

```
system_u:object_r:var_log_t:s0 /testLinuxAgent/testLog.log
```

If you need to set `var_log_t` type to the log file, run the following commands:

```
chcon -t var_log_t /testLinuxAgent
chcon -t var_log_t /testLinuxAgent/testLog.log
```

FIM tab:

Configure the **FIM** settings with reference to the table below:

FIM Settings	Guidelines
FIM	Click **New** to add the files to monitor: • **Include File/Directory**—Enter the file or directory to monitor. • **Exclude File/Directory**—Enter the file or directory to exclude from monitoring using a semi-colon (`;`) as a separator. • **Action**—Select the actions to monitor when there is an event in the included file or directory: • **All**—All of the following actions will be monitored. • **Open**—One or more of the monitored files or directories has been opened. • **Close**—One or more of the monitored files or directories has been closed. • **Create**—A file or directory has been created in one or more of the monitored files or directories. • **Modify**—One or more of the monitored files or directories has been edited. • **Delete**—One or more of the monitored files or directories has been deleted. • **Attribute Change**—An attribute belonging to one or more of the monitored files or directories has been changed. • **On Modify** (appears only if All or Modify is selected): • **Push Files**—Select this if you want Linux Agent to push files to FortiSIEM

FIM Settings	Guidelines
	whenever there is a change. The files are stored in SVN and are accessible from the Supervisor. These files are displayed in **CMDB > Device > File**. Send only important files, as this can fill up disk space. • **Compare Baseline**—Select this if you want to be alerted when the file changes from a baseline. This is common for configuration files that rarely change. If you choose this option, you will be asked to provide a copy of the baseline file. Click **Choose File** and upload the file from your workstation. The Supervisor will compute the MD5 checksum and distribute the checksum to the agents for comparison.

4. Click **Save**

Associate Linux Agents to Templates

After defining the monitoring templates, associate the hosts to templates. To scale to large number of Hosts, this is done via Policies. A Policy is a mapping from Organization and Host to Templates and Collectors. Policies are evaluated in order (lower order or rank is higher priority) and the policy that matches first is selected. Therefore, define the exceptions first followed by broad policies. Hosts can be defined in terms of CMDB Device Groups or Business Services. Multiple templates can be used in one Policy and the system detects conflicts, if any.

Complete these steps to associate a Host to Template:

1. Click **New** under the section **Host To Template Associations**.
2. In the **Host To Template Associations** dialog box, enter the information below.

Settings	Guidelines
Name	Name of the Host to Template Association.
Organization	Select the organization.
Host	Use the drop-down list to browse the folders and select the items.
Template	Select one or more monitoring templates from the list or select **All Templates** to select all. You can also use the search bar to find a specific template.
Collector	Select the Collector from the list or select **All Collectors** to select all. Agents forward events to Collectors via HTTP(S). A Collector is chosen at random and if that Collector is not available or non-responsive, then another Collector in the list is chosen.

3. Click **Save** and **Apply**.
   A **Rank** number is automatically assigned to the association.

You can use the **Edit** button to modify or **Delete** button to remove any template association.

Viewing Agent Status

Complete these steps to view the Agent status for any specific device:

1. Go to **CMDB** > **Devices** and select the device.
   The following fields displays the information related to the Agent:
   - Agent Status: status of the Agent running on the device.
   - Agent Policy: agent policy.
   - Monitor Status: status of monitoring.

   The **Agent Status** indicates the following:

Status	Description
Registered	Agent has completed registration but has not received the monitoring template.
Running Active	Agent has received a monitoring template and it is performing properly.
Running Inactive	Agent is running but does not have a monitoring template – the reasons can be (a) no license or (b) incomplete definition - no Collector or Template is defined for that host.
Stopped	Agent is stopped on the Linux Server.
Disconnected	Supervisor did not receive any status from the Agent for the last 10 minutes.

Enabling or Disabling an Agent

Complete these steps to enable or disable Linux Agent for a specific device:

1. Go to **CMDB** > **Devices** and select the required device.
2. Select the **Action** drop-down menu and click **Enable Agent** to enable or **Disable Agent** to disable Agent monitoring for the selected device.

Viewing Files in FortiSIEM

If the FortiSIEM Agent is running on a Server and a FIM policy is enabled with **Push Files On Modify**, then the FortiSIEM Agent will send the files to FortiSIEM when a change is detected. FortiSIEM stores the files in SVN on the Supervisor.

1. Go to the **CMDB** page. Make sure that **AGENT** is one of the **Methods**.
2. Search for the device in CMDB by name.
   Use the host name that you used to install the Linux Agent.
3. Click **File** beneath the device table.
   You will see all of the files that were changed since the monitoring template was applied.
4. Select a file.
   If you need to search for a file, set the **From** and **To** dates. The files which changed between those dates will be displayed.
5. Click the file name on the left and its contents will be displayed in the right hand window.
   Each file has a header containing file meta data followed by the actual file content.
   - **OWNER**: The name of the file owner
   - **GROUP**: User group for specifying file permissions.

  - **PERMISSION=USER: “OWNER”, PERMIT: "..."**: The file owner’s permissions.
  - **PERMISSION=GROUP: “MEMBER”, PERMIT: "..."**:: The group member’s file permissions.
  - **PERMISSION=GROUP: “OTHER”, PERMIT: "..."**:: Other group file permissions.
  - **FILEPATH:** The full file name, including the path.
  - **HASHCODE:** The file hash.
  - **HASHALGO:** The algorithm used to compute file hash.
  - **MODIFIED_TIME:** The time when the file was last modified.

6. To see the differences between two files, select two files on left and click **Diff**.

File Integrity Monitoring Logs

The following sections describe various use cases that can be detected by File Integrity Monitoring Logs.

- Use Case 1: File Created
- Use Case 2: File Deleted
- Use Case 3: File Attributes Changed
- Use Case 4: File Modified
- Use Case 5: File Modified and Upload is Selected
- Use Case 6: File Baseline Changed
- Use Case 7: File Renamed
- Use Case 8: File Accessed
- Use Case 9: File Opened
- Use Case 10: File Closed
- Agent Troubleshooting Notes

Use Case 1: File Created

Event Type

`FSM_LINUX_FILE_CREATE`

Important Event Attributes

- `targetOsObjType`: The type of object that was created: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file.
- `hashAlgo`: The algorithm used to create the file.

Reports

`Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity`

Rules

`Agent FIM - Linux File or Directory Created`

Sample Log

```
Fri Mar 27 09:39:25 2020 centos7: [FSM_LINUX_FILE_CREATE]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=CREATE,[targetObjType]=File,
[targetObjName]="/mlm/a.log",[hashCode]="d41d8cd98f00b204e9800998ecf8427e",[hashAl-
go]="MD5",[user]=root
```

Use Case 2: File Deleted

Event Type

`FSM_LINUX_FILE_DELETE`

Important Event Attributes

- `targetOsObjType`: The type of object that was created: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.

Reports

`Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity`

Rules

`Agent FIM - Linux File or Directory Deleted`

Sample Log

```
Fri Mar 27 09:43:11 2020 centos7: [FSM_LINUX_FILE_DELETE]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=DELETE,[targetObjType]=File,[tar-
getObjName]="/mlm/k.log",[user]=root
```

Use Case 3: File Attributes Changed

Event Type

FSM_LINUX_FILE_ATTRIB_CHANGE

Important Event Attributes

- `targetOsObjType`: The type of object: `File` or `Directory`.
- `targetOsObjName`: The name of the file or directory.
- `user`: The name of the user who made the change.
- `fileOwner`: The name of the owner of the file or directory.
- `userGrp`: The name of the user group for the file or directory.
- `userPerm`: The permission granted to the owner.
- `groupPerm`: The permission granted to the user group.
- `otherPerm`: Other permissions.

Reports

`Agent FIM: Linux File/Directory Ownership or Permission Changes`

Rules

- `Agent FIM - Linux Directory Ownership or Permission changed`
- `Agent FIM - Linux File Ownership or Permission Changed`

Sample Log

```
Fri Mar 27 09:45:27 2020 centos7: [FSM_LINUX_FILE_ATTRIB_CHANGE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=ATTRIBUTE_CHANGE,[targetObjType]=File,
[targetObjName]="/mlm/mlm.txt",[fileOwner]="root",[groupName]="mlm",[user-
Perm]="READ,WRITE,EXEC",[groupPerm]="READ,EXEC",[otherPerm]="READ,EXEC",[user]=root
```

Use Case 4: File Modified

Event Type

`FSM_LINUX_FILE_MODIFY`

Important Event Attributes

- `targetOsObjName`: The name of the file.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file.
- `hashAlgo`: The algorithm used to create the file.

Reports

`Agent FIM: Linux File Content Modified`

Rules

`Agent FIM - Linux File Content Modified`

Sample Log

```
Fri Mar 27 09:47:06 2020 centos7: [FSM_LINUX_FILE_MODIFY]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MODIFY,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[hashCode]=5d71f074cf9a75e0324f210160d4b9cb,[hashAlgo]=md5,
[user]=root
```

Use Case 5: File Modified and Upload is Selected

Event Type

`PH_DEV_MON_FILE_CONTENT_CHANGE`

Important Event Attributes

- `userId`: The ID of the user who modified the file.
- `domain`: The user’s domain for a Domain computer.
- `fileName`: The name of the file that was modified.
- `procName`: The Windows process that was used to modify the file.

- `hashCode, hashAlgo`: The file hash after modification and the algorithm used to calculate the hash.
- `oldSVNVersion`: The SVN revision number of the file before change.
- `newSVNVersion`: The SVN revision number of the file after change.
- `addedItem`: The lines that were added to the file.
- `deletedItem`: The lines that were removed from the file.

Reports

`Agent FIM: Linux File Content Modified in SVN`

Rules

`Audited file or directory content modified in SVN`

Sample Log

```
<14>Mar 27 09:51:30 sp3 phPerfMonitor[6340]: [PH_DEV_MON_FILE_CONTENT_CHANGE]:
[eventSeverity]=PHL_INFO,[procName]=phPerfMonitor,[fileName]=phSvnUpdate.cpp,[lineNumber]=306,[phCustId]=2000,[hostName]=centos7,[hostIpAddr]=10.30.3.39,[fileName]=/mlm/mlm.txt,[hashCode]=ac399331afa9d1f13618c9eff36ed51c,[oldSVNVersion]=53,
[newSVNVersion]=54,[deletedItem]=(none),[addedItem]=retest;,[user]=root,[hashAlgo]=MD5,[phLogDetail]=
```

Use Case 6: File Baseline Changed

Event Type

`FSM_LINUX_FILE_CHANGE_BASELINE`

Important Event Attributes

- `targetOsObjName`: The name of the baseline file.
- `user`: The name of the user who made the change.
- `hashCode`: The hash code of the file after modification.
- `hashAlgo`: The algorithm used to create the file hash.
- `targetHashCode`: The hash code of the baseline file.

Reports

`Agent FIM: Linux File Change from Baseline`

Rules

`Agent FIM - Linux File Changed From Baseline`

Sample Log

```
Fri Mar 27 09:51:23 2020 centos7: [FSM_LINUX_FILE_CHANGE_BASELINE]: [fileName]=/mlm/mlm.txt,[targetHashCode]="aa63e826654915e0e2e1da385e6d14f8",[hashCode]="ac399331afa9d1f13618c9eff36ed51c",[hashAlgo]="MD5",[user]=root
```

Use Case 7: File Renamed

Event Types

- FSM_LINUX_FILE_MOVED_TO
- FSM_LINUX_FILE_MOVED_FROM

Important Event Attributes

- targetOsObjType: The file type: File or Directory.
- targetOsObjName: The file or directory name.
- user: The name of the user who renamed the file.

Reports

Agent FIM: Linux File/Directory Creation/Deletion/Movement/Unmount Activity

Rules

None

Sample Logs

```
Fri Mar 27 09:57:42 2020 centos7: [FSM_LINUX_FILE_MOVED_FROM]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MOVED_FROM,[targetObjType]=File,[tar-
getObjName]="/mlm/bb.log",[user]=root


Fri Mar 27 09:57:42 2020 centos7: [FSM_LINUX_FILE_MOVED_TO]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=MOVED_TO,[targetObjType]=File,[tar-
getObjName]="/mlm/cc.log",[user]=root
```

Use Case 8: File Accessed

Event Type

FSM_LINUX_FILE_ACCESS

Important Event Attributes

- targetOsObjType: The file type: File or Directory.
- targetOsObjName: The file or directory name.
- user: The name of the user who accessed the file.

Reports

None

Rules

None

Sample Log

```
Fri Mar 27 10:05:28 2020 centos7: [FSM_LINUX_FILE_ACCESS]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=ACCESS,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[user]=root
```

Use Case 9: File Opened

Event Type

`FSM_LINUX_FILE_OPEN`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who opened the file.

Reports

None

Rules

None

Sample Log

```
Fri Mar 27 09:57:40 2020 centos7: [FSM_LINUX_FILE_OPEN]: [objectType]=Directory,
[objectName]=/mlm,[objectAction]=OPEN,[targetObjType]=Directory,[tar-
getObjName]="/mlm",[user]=root
```

Use Case 10: File Closed

Event Types

- `FSM_LINUX_FILE_CLOSE_WRITE`
- `FSM_LINUX_FILE_CLOSE_NOWRITE`

Important Event Attributes

- `targetOsObjType`: The file type: `File` or `Directory`.
- `targetOsObjName`: The file or directory name.
- `user`: The name of the user who closed the file.

Reports

None

Rules

None

Sample Logs

```
Fri Mar 27 09:57:36 2020 centos7: [FSM_LINUX_FILE_CLOSE_WRITE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=CLOSE_WRITE,[targetObjType]=File,[tar-
getObjName]="/mlm/bb.log",[user]=root


Fri Mar 27 10:05:28 2020 centos7: [FSM_LINUX_FILE_CLOSE_NOWRITE]: [objectType]-
]=Directory,[objectName]=/mlm,[objectAction]=CLOSE_NOWRITE,[targetObjType]=File,[tar-
getObjName]="/mlm/mlm.txt",[user]=root
```

Agent Troubleshooting Notes

A Linux Agent can be in following states (shown in CMDB):

- Registered
- Running Inactive
- Running Active
- Disabled
- Disconnected

When an Agent is installed and registered, then it is in Registered state. The following audit event is generated: `PH_AUDIT_AGENT_INSTALLED`.

When a monitoring template is assigned to the device, then the state moves to Running Inactive. When the agent receives the template and starts monitoring, then the state moves to Running Active. In both cases, the following audit event is generated: `PH_AUDIT_AGENT_RUNNING`.

Agent periodically sends heartbeat messages. When a heartbeat not received for 10 minutes, the state moves to Disconnected and the audit event `PH_AUDIT_AGENT_NOTRESPONDING` is generated. Status is checked every 1 hour. At that time, if we heard from the Agent in the last 15 minutes, the state moves back to Running Inactive and a `PH_AUDIT_AGENT_RUNNING` audit event is generated.

If the Agent is disabled from the GUI, the state moves to Disabled and `PH_AUDIT_AGENT_DISABLED` audit event is generated.

If the Agent is uninstalled or the service is stopped, then the state moves to Disconnected and the audit event `PH_AUDIT_AGENT_NOTRESPONDING` is generated.

Audit events are generated at state transitions, however, the event `PH_AUDIT_AGENT_NOTRESPONDING` is generated every hour to identify all agents that are currently disconnected. A nested query can be run to detect Agents that did not report in the last N hours. Note that `PH_AUDIT` events must be queried with `System Event Category = 2`. Rules do not need this condition.

Device Support

The following sections provide procedures to configure device support:

Working with Devices or Applications

You can create a device/application if it is not available in the list for creating a parser or monitoring under **ADMIN** > **Device Support** > **Devices/Apps**.

This section provides the procedure to configure devices or applications.

- Adding a Device or Application
- Modifying a Device or Application

Adding a Device or Application

Complete these steps to add a new device or application:

1. Go to **ADMIN** > **Device Support** > **Devices/Apps** tab.
2. Click **New**.
3. In the **Device/Application Type Definition** dialog box, enter the information below.

Settings	Guidelines
Category	[Required] Select the **Device** or **Application** from the drop-down list.
Vendor	[Required] Vendor of the device or application.
Model	[Required] Device or application model.
Version	[Required] Version number of the device or application.
Device/App Group	[Required] Select the group where you want to add this new device/application
Biz Service Group	Select the Biz Service group.
Access Protocol	Select the Access Protocol from the drop-down.
App Package Group	This setting is applicable only for 'Application' category. Enter the app package group here.
Description	Description about the device or application.

4. Click **Save**.
   The new device(s)/application(s) appears in the list.
5. Select the device(s)/application(s) from the list and click **Apply**.

You can clone an existing device/application by clicking **Clone** and modify as necessary.

Modifying a Device or Application

Complete these steps to modify a device or application:

1. Select one or more device(s)/application(s) to edit from the list.
2. Click the required option:
   - **Edit** to modify any device/application setting.
   - **Delete** to remove any device /application.
3. Click **Save**.

Working with Event Attributes

Event attributes are used to capture parsed information from events. Create a new attribute if the one you want to use for your custom parser or monitor is not listed in **ADMIN** > **Device Support** > **Event Attributes**.

This section provides the procedure to create event attributes.

- Adding an Event Attribute
- Modifying an Event Attribute

Adding an Event Attribute

Complete these steps to add a new event attribute:

1. Go to **ADMIN** > **Device Support** > **Event Attributes** tab.
2. Click **New**.
3. In the **Add Event Attribute Type Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Event attribute name
Display Name	[Required] Display name of the event attribute
Value Type	[Required] Select the value type from the drop-down to associate with the event attribute type.
Display Format	Units in which the event attribute has to be displayed
Description	Description of the event attribute

4. Click **Save**.
   The new event attribute appears in the list.
5. Select the event attribute(s) from the list and click **Apply**.

You can clone an existing event attribute type to use as the basis for a new one. Select the event attribute type you want to use, click **Clone** and modify as necessary.

Modifying an Event Attribute

Complete these steps to modify an event attribute setting:

1. Select one or more event attribute(s) to edit from the list.
2. Click the required option:
   - **Edit** to modify the settings of an event attribute(s).
   - **Delete** to remove an event attribute(s).
3. Click **Save**.

Working with Event Types

After parsing an event or log, FortiSIEM assigns a unique event type to that event/log. When you create a new custom parser for device logs, you have to add a new event type to FortiSIEM so the log events can be identified.

This section provides the procedure to create event types.

- Adding an Event Type
- Modifying an Event Type

Adding an Event Type

Complete these steps to add an event:

1. Go to **ADMIN** > **Device Support**> **Event Types** tab.
2. Click **New**.
3. In the **Event Definition** dialog box, enter the information below.

Settings	Guidelines
Name	[Required] Event type name - must begin with `PH_DEV_MON_CUST_`.
Device Type	[Required] Select a device from the drop-down list.
Event Type Group	[Required] Select the type of group for the event.
Severity	[Required] Severity (0 - lowest) to 10 (highest).
Description	Description of the event type.

4. Click **Save**.
   The new event appears in the table.
5. Select the event(s) from the list and click **Apply**.

You can also use the **Clone** option to duplicate and modify an existing event type.

Modifying an Event Type

Complete these steps to modify an event type:

1. Select one or more event attribute(s) to edit from the list.
2. Click the required option from the following table.
   - **Edit** - To modify the settings of a selected event(s).
   - **Delete** - To delete an event type.
3. Click **Save**.

Working with Parsers

Creating a custom parser for device logs involves writing an XML specification for the parser and using a test event to make sure the logs are parsed correctly.

Prerequisites

You should have:

- examples of the logs that you want to parse.
- created any new device/application types, event attribute types, or event types that you want to use in your XML specification.
- already written the XML specification for your parser.
- prepared a test event that you can use to validate the parser.

Parsers are applied in the order they are listed in **ADMIN** > **Device Support** > **Parsers**, so it is important to add your custom parser to the list in relation to any other parsers that may be applied to your device logs. If you click **Fix Order**, this will arrange the parsers with system-defined parsers at the top of the list in their original order, and user-defined parsers at the bottom. Be sure to click **Apply** to ensure the change in order is picked up by the back-end module.

After making a parser change, you must click **Apply** for the parser modules on all nodes to pick up the change. This is by design. If this does not occur, then SSH to the node where you expect the event to arrive first, and restart the phParser module.

The following sections provide information about working with parsers:

- Event Parser XML Specification
- Creating a Custom Parser
- Deleting or Disabling a Parser
- Ingesting JSON Formatted Events Received via HTTP(S) POST
- Parser Inbuilt Functions
- Parser Examples

Event Parser Specification

- Custom Parser XML Specification Template
- Parser File
- Device or Application Type Specification
- Event Format Recognizer Specification
- Pattern Definition Specification
- Parsing Instructions Specification

Custom Parser XML Specification Template

The basic template for a custom parser XML specification includes five sections. Click the name of any section for more information.

Section	Description
Parser File	Adding, editing, or cloning a parser file.
Device or Application Type Specification	The type of device or application associated with the parser.
Event Format Recognizer Specification	Patterns that determine whether an event will be parsed by this parser.
Pattern Definition Specification	Defines the parsing patterns that are iterated over by the parsing instructions.
Parsing Instructions Specification	Instructions on how to parse events that match the format recognizer patterns.

Custom Parser XML Specification Template

```
<patternDefinitions> </patternDefinitions>
<eventFormatRecognizer> </eventFormatRecognizer>
<parsingInstructions> </parsingInstructions>
```

Parser File

This section provides steps to create, edit, or clone a parser file.

- Create a Parser File
- Edit a Parser File
- Clone a Parser File

Create a Parser File

To create a parser, take the following steps:

1. Navigate to **ADMIN > Device Support > Parsers**.
2. Click **New**.
3. From the **Add Event Parser Definition** window, take the following steps:
    a. In the **Name** field, enter the name of the parser.
    b. In the **Device Type** drop-down list, select the appropriate device.
    c. In the main field, provide your parser XML.

d. The following options are also available:

Parser XML Button	Description
Validate	Click to check your XML code syntax.
Test	Click to test your XML code.
Reformat	Click to format your XML code.
Enable	Click the Enable checkbox to enable the parser/XML code.
Clear XML	Click to remove the existing XML code.
Previous	Click to go to the prior XML code page.
Next	Click to go to the next XML code page.

e. When done, click **Save**.

Edit a Parser File

You are only allowed to edit a custom parser file. To edit an existing custom parser, take the following steps:

1. From **ADMIN > Device Support > Parsers**, select a custom parser.
2. Click **Edit**.
3. From the **Edit Event Parser Definition** window, you can make changes to the following fields:
   a. In the **Name** field, make any changes to the name of the parser.
   b. In the **Device Type** drop-down list, make any changes to the device type.
   c. In the main field, make any changes to your parser XML.
   See the table in Create a Parser for available options.
4. When done, click **Save**.

Clone a Parser File

To clone an existing parser, take the following steps:

1. From **ADMIN > Device Support > Parsers**, select a parser.
2. Click **Clone**.
3. From the **Add Event Parser Definition** window, you can make changes to the following fields:
   a. In the **Name** field, make any changes to the name of the parser.
   b. In the **Device Type** drop-down list, make any changes to the device type.
   c. In the main field, make any changes to your parser XML.
   See the table in Create a Parser for available options.
4. When done, click **Save**.

Device or Application Type Specification

This section specifies the device or the application to which this parser applies. The device and application definitions enable FortiSIEM to detect the device and application type for a host from the received events. This is called **log-based discovery** in FortiSIEM. Once a received event is successfully parsed by this file, a CMDB entry is created with the device and application set from this file. FortiSIEM discovery may further refine the device.

There are two separate subsections for device and application. In each section, vendor, model and version can be specified, but version is not typically needed.

Set Version to Any

In the examples in this topic, `<Version>` is set to `ANY` because events are generally not tied to a particular version of a device or software. You could of course set this to a specific version number if you only wanted this parser to apply to a specific version of an application or device.

Vendor and Model Must Match the FortiSIEM Version

`<Vendor>` and `<Model>` entries must match the spelling and capitalization in the CMDB.

Examples of Specifications for Types of Device and Applications

Hardware Appliances

In this case, the type of event being parsed specifies the device type, for example Cisco IOS, Cisco ASA, etc.

To add a device type, see Adding a Device or Application.

Software Operating Systems that Specify the Device Type

In this case, the type of events being parsed specifies the device type, for example Microsoft Windows etc. In this case the device type section looks like:

```
<deviceType>
  <Vendor>Microsoft</Vendor>
  <Model>Windows</Model>
  <Version>ANY</Version>
</deviceType>
```

Applications that Specify Both Device Type and Application

In this case, the events being parsed specify the device and application types because Microsoft SQL Server can only run on Microsoft Windows OS.

```
<deviceType>
  <Vendor>Microsoft</Vendor>
  <Model>Windows</Model>
  <Version>ANY</Version>
</deviceType>
<appType>
  <Vendor>Microsoft</Vendor>
```

```
    <Model>SQL Server</Model>
    <Version>ANY</Version>
    <Name> Microsoft SQL Server</Name>
  </appType>
```

Applications that Specify the Application Type but Not the Device Type

Consider the example of an Oracle database server, which can run on both Windows and Linux operating systems. In this case, the device type is set to **Generic** but the application is specific. FortiSIEM depends on discovery to identify the device type.

```
  <deviceType>
    <Vendor>Generic</Vendor>
    <Model>Generic</Model>
    <Version>ANY</Version>
  </deviceType>
  <appType>
    <Vendor>Oracle</Vendor>
    <Model>Database Server</Model>
    <Version>ANY</Version>
    <Name>Oracle Database Server</Name>
  </appType>
```

Format Recognizer Specification

In many cases, events associated with a device or application will contain a unique pattern. You can enter a regular expression in the Format Recognizer section of the parser XML file to search for this pattern, which if found, will then parse the events according to the parser instructions. After the first match, the event source IP to parser file map is cached, and only that parser file is used for all events from that source IP. A notable exception is when events from disparate sources are received via a syslog server, but that case is handled differently.

While not a required part of the parser specification, a format recognizer can speed up event parsing, especially when one parsing pattern file among many pattern files must be chosen. Only one pattern check can determine whether the parsing file must be used or not. The other less efficient option would be to examine patterns in every file. At the same time, the format recognizer must be carefully chosen so that it is not so broad to misclassify events into wrong files, and at the same time, not so narrow that it fails at classifying the right file.

Order in Which Parsers are Used

FortiSIEM parser processes the files in the specific order listed in the file `parserOrder.csv`.

Format Recognizer Syntax

The specification for the format recognizer section is:

```
  <eventFormatRecognizer><!\[CDATA\[regexpattern\]\]></eventFormatRecognizer>
```

In the `regexpattern` block, a pattern can be directly specified using regex or a previously defined pattern (in the pattern definition section in this file or in the `GeneralPatternDefinitions.xml` file) can be referenced.

Example Format Recognizers

Cisco IOS

All Cisco IOS events have a `%module name` pattern.

```
<patternDefinitions>
  <pattern name="patCiscoIOSMod" list="begin"><!\[CDATA\[FW|SEC|SEC_
LOGIN|SYS|SNMP|\]\]></pattern>
  <pattern name="patCiscoIOSMod" list="continue"><!\[CDATA\
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|\]\]></pattern>
  <pattern name="patCiscoIOSMod" list="end"><!\[CDATA\[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP\]\]></pattern>
</patternDefinitions>
<eventFormatRecognizer><!\[CDATA\[:%<:patCiscoIOSMod>-<:gPatInt>-<:patStrEndCo-
lon>:\]\]></eventFormatRecogniz
er>
```

Cisco ASA

All Cisco ASA events have the pattern `ASA-severity-id` pattern, for example `ASA-5-12345`.

```
<eventFormatRecognizer><!\[CDATA\[ASA-\\d-\\d+\]\]></eventFormatRecognizer>
```

Palo Alto Networks Log Parser

In this case, there is no unique keyword, so the entire message structure from the beginning to a specific point in the log must be considered.

Event

```
<14>May 6 15:51:04 1,2010/05/06 15:51:04,0006C101167,TRAFFIC,start,1,2010/05/06
15:50:58,192.168.28.21,172.16.255.78,::172.16.255.78,172.16.255.78,rule3,,,icm-
p,vsys1,untrust,untrust,ethernet1/1,ethernet1/1,syslog-172.16.20.152,2010/05/06
15:51:04,600,2,0,0,0,0,0x40,icmp,allow,196,196,196,2,2010/05/06 15:50:58,0,any,0
```

```
<eventFormatRecognizer><!\[CDATA\[<:gPatTime>,\\w+,
(?:TRAFFIC|THREAT|CONFIG|SYSTEM)\]\]></eventFormatRecognizer>
```

Pattern Definition Specification

In this section of the parser XML specification, you set the regular expression patterns that that FortiSIEM will iterate through to parse the device logs.

Reusing Pattern Definitions in Multiple Parser Specifications

If you want to use a pattern definition in multiple parser specifications, you must define it in the `GeneralPatternDefinitions.xml` file. The patterns in the file must have a `g` prefix, and can be referenced as shown in this example:

```
<generalPatternDefinitions>
<pattern name="gPatSyslogPRI"><!\[CDATA\[<\\d+>\]\]></pattern>
  <pattern name="gPatMesgBody"><!\[CDATA\[.*\]\]></pattern>
  <pattern name="gPatMonNum"><!\[CDATA\[\\d{1,2}\]\]></pattern>
  <pattern name="gPatDay"><!\[CDATA\[\\d{1,2}\]\]></pattern>
  <pattern name="gPatTime"><!\[CDATA\[\\d{1,2}:\\d{1,2}:\\d{1,2}\]\]></pattern>
  <pattern name="gPatYear"><!\[CDATA\[\\d{2,4}\]\]></pattern>
</generalPatternDefinitions>
```

Each pattern has a name and the regular expression pattern within the CDATA section. This the basic syntax:

```
<pattern name="patternName"><!\[CDATA\[pattern\]\]></pattern>
```

This is an example of a pattern definition:

```
<patternDefinitions>
  <pattern name="patIpV4Dot"><!\[CDATA\[\\d{1,3}.\\d{1,3}.\\d{1,3}.\\d{1,3}\]\]></pattern>
  <pattern name="patComm"><!\[CDATA\[\[^,\]+\]\]></pattern>
  <pattern name="patUpDown"><!\[CDATA\[up|down\]\]></pattern>
  <pattern name="patStrEndColon"><!\[CDATA\[\[^:\]*\]\]></pattern>
</patternDefinitions>
```

You can also write a long pattern definition in multiple lines and indicate their order as shown in this example. The value of the `list` attribute should be `begin` in first line and `end` in last line. If there are more than two lines, the attribute should be set to `continue` for the other lines.

```
<pattern name="patSolarisMod" list="begin"><!\[CDATA\[sshd|login|\]\]></pattern>
<pattern name="patSolarisMod" list="continue"><!\[CDATA\[inetd|lpstat|\]\]></pattern>
<pattern name="patSolarisMod" list="end"><!\[CDATA\[su|sudo\]\]></pattern>
```

Parsing Instructions Specification

This section is the heart of the parser, which attempts to recognize patterns in a log message and populate parsed event attributes.

In most cases, parsing involves applying a regular expression to the log, picking up values, and setting them to event attributes. Sometimes the processing is more involved, for example when attributes must be stored as local variables and compared before populating the event attributes. There are three key components that are used in parsing instructions: Event attributes and variables, inbuilt functions that perform operations on event attributes and variables, and `switch` and `choose` branching constructs for logical operations. Values can be collected from both unstructured and structured strings in log messages.

- Event Attributes and Variables
- Inbuilt Functions
- Branching Constructs

- Collecting Fields from Structured Strings
- Collecting Values from Unstructured Strings

Event Attributes and Variables

The dictionary of event attributes are defined in FortiSIEM database and any member not belonging to that list is considered a local variable. For readability, local variables should begin with an underscore (_), although this is not enforced.

Setting an Event Attribute to a Constant

```
<setEventAttribute attr="eventSeverity">1</setEventAttribute>
```

Setting an Event Attribute from Another Variable

The `$` symbol is used to specify the content of a variable. In the example below, attribute `hostMACAddr` gets the value stored in the local variable `_mac`.

```
<setEventAttribute attr="hostMACAddr">$_mac</setEventAttribute>
```

Inbuilt Functions

Combining Two or More Strings to Produce a Final String

Use the `combineMsgId` function to do this. Here `_evIdPrefix` is the prefix, `_evIdSuffix` is the suffix, and the output will be `string1-_evIdPrefix-_evIdSuffix`.

```
<setEventAttribute attr="eventType">combineMsgId("string1", $_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
```

Strings can only be wrapped by double quotes `"` but not single quotes `'`.

Normalize MAC Address

Use the `normalizeMAC` function to do this. The output will be six groups of two nibbles separated by a colon, for example `AA:BB:CC:DD:EE:FF`.

```
<setEventAttribute attr="hostMACAddr">normalizeMAC($_mac)</setEventAttribute>
```

Compare Interface Security Level

Use the `compIntfSecVal` function to do this. This primarily applies to Cisco ASA and PIX firewalls. The results returned are:

- `LESS` if `srcIntf` has strictly lower security level than `destIntf`
- `GREATER` if `srcIntf` has strictly higher security level than `destIntf`
- `EQUAL` if `srcIntf` and `destIntf` have identical security levels

```
<setEventAttribute attr="_result">compIntfSecVal($srcIntf, $destInt-
f)</setEventAttribute>
```

Convert Hex Number to Decimal Number

Use the `convertHexStrToInt` function to do this.

```
<setEventAttribute attr="ipConnId">convertHexStrToInt($_ipConnId)</setEventAttribute>
```

Convert TCP/UDP Protocol String to Port Number

Use the `convertStrToIntIpPort` function to do this.

```
<setEventAttribute attr="destIpPort">convertStrToIntIpPort($_dport)</-
setEventAttribute>
```

Convert Protocol String to Number

Use the `convertStrToIntIpProto` function to do this.

```
<setEventAttribute attr="ipProto">convertStrToIntIpProto($_proStr)</setEventAttribute>
```

Convert Decimal IP to String

Use the `converIpDecimalToStr` function to do this.

```
<setEventAttribute attr="srcIpAddr">convertIpDecimalToStr($_srcIpAd-
dr)</setEventAttribute>
```

Convert Host Name to IP

Use the `convertHostNameToIp` function to do this.

```
<setEventAttribute attr="srcIpAddr">convertHostNameToIp($_saddr)</setEventAttribute>
```

Add Two Numbers

Use the `add` function to do this.

```
<setEventAttribute attr="totBytes">add($sentBytes, $recvBytes)</setEventAttribute>
```

Divide Two Numbers

Use the `divide` function to do this.

```
<setEventAttribute attr="memUtil">divide($\_usedMem, $\_totalMem)</setEventAttribute>
```

Scale Function

Use the `scale` function to do this.

```
<setEventAttribute attr="durationMSec">scale($_durationSec, 1000)</setEventAttribute>
```

Calculate Micro Seconds

Use the `calculateMSec` function to do this.

```
<setEventAttribute attr="durationMSec">calculateMSec($_duration)</setEventAttribute>

_duration: 00:00:15
durationMSec: 15000
```

Extract Host from Fully Qualified Domain Name

Use the **extractHostFromFQDN** function to do this. If `_fqdn` contains a period (`.`), get the string before the first period. If it does not contain a period, get the entire string.

```
<setEventAttribute attr="hostName">extractHostFromFQDN($_fqdn)</setEventAttribute>
```

Replace a String Using a Regular Expression

Use the `replaceStringByRegex` function to do this.

```
<setEventAttribute attr="computer">replaceStrInStr($_computer, "\\\", "")</-
setEventAttribute>
```

Replace String in String

Use the `replaceStrInStr` function to do this.

```
<setEventAttribute attr="computer">replaceStrInStr($_computer, "\\\", "")</-
setEventAttribute>
```

Resolve DNS Name

Use the `resolveDNSName` function to do this. This function converts the DNS name to an IP address.

```
<setEventAttribute attr="destIpAddr">resolveDNSName($destName)</setEventAttribute>
```

Shift Time Seconds

Use the `shiftTimeSec` function to do this.

```
<setEventAttribute attr="logonTime">shiftTimeSec($_mon, $_day, $_year, $_time, $_dur-
ationSec)</setEventAttribute>

_mon: 1
_day: 1
_year: 2000
_time: 01:00:10
_durationSec: 10
logonTime: 01:00:00 01/01/2000
```

Convert to UNIX Time

Use the `toDateTime` function to do this.

```
<setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_year, $_time)</-
setEventAttribute><setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_
time)</setEventAttribute>
```

Trim Attribute

Use the `trimAttribute` function to do this. In this example, it is used to trim the leading and trailing dots in `destName`.

```
<setEventAttribute attr="destName">trimAttribute($destName, ".")</setEventAttribute>
```

Get Severity from Syslog Priority

Use the `getEventSeverityFromSyslogPriority` function to do this.

Set severity by syslog priority. The bottom 3 bits of the priority indicates the severity. Refer to

https://en.wikipedia.org/wiki/Syslog#Severity_level

```
<setEventAttribute attr="eventSeverity">getEventSeverityFromSyslogPriority($_pri)</-
setEventAttribute>
_pri: 52
eventSeverity: 5
```

Convert to UNIX Time (with Timezone)

Use the `toUnixTime` function to do this.

```
<setEventAttribute attr="deviceTime">toUnixTime($_deviceTime)</setEventAttribute>
_deviceTime: 20130509073221.932817-000
```

Decode Base64

Use the `decodeBase64` function to do this.

```
<setEventAttribute attr="httpFullRequest">decodeBase64($_msg)</setEventAttribute>
```

Calculate Latency

Use the `calculateLatency` function to do this.

Calculate the latency. If `_evtRecvTime` is later than `deviceTime`, return the latency in seconds. Otherwise, return 0.

```
<setEventAttribute attr="_latency">calculateLatency($_evtRecvTime, $deviceTime)</-
setEventAttribute>
```

Decode URL

Use the `URLDecode` function to do this.

```
<setEventAttribute attr="infoURL">URLDecode($_url)</setEventAttribute>
```

Branching Constructs

- **Choose**
  The format is:

```
<choose>
  <when test="$AttributeOrVariable1 operator Value1">
    ...
  </when>
  <when test="$AttributeOrVariable2 operator Value2">
    ...
  </when>
  <otherwise>
    ...
  </otherwise>
</choose>
```

- **Switch**
  The format is:

```
<switch>
  <case>
    ...
  </case>
  <case>
    ...
  </case>
</switch>
```

Collecting Values from using prebuilt functions for Structured and Unstructured Logs

Summary: Functions used to simplify data extraction from certain sections of a log event. The usual first step is to separate the log header from the log message body. Identify the event type (usually by message ID if possible), and parse specific attributes based on event type.

Collecting Fields from Structured Strings

Summary: Logs that contain a structured mapping / format such as the below.

There are usually two types of structured strings in device logs:

- Key=value structured
- Value list structured

Common parse methods:

collectAndSetAttrByByJSON

collectAndSetAttrByByKeyValuePair

Collecting Fields from Unstructured Strings

Summary: Logs that contain variable / non consistent formatting of data structure depending on log type. Use a combination of regex parsing, <switch><case></case></switch> or <choose><when></when></choose> statements to break down and parse logs based on a particular format.

Example vendors with unstructured logs: Cisco ASA / Firepower

Common parse methods:

collectAndSetAttrByRegex - Evaluates and maps match groups to variables based on regex inserted given an argument containing a string log message.

Function List:

- collectAndSetAttrByJSON
- collectAndSetAttrByJsonArray
- collectAndSetAttrByJsonSymbol
- collectAndSetAttrByKeyValuePair
- collectAndSetAttrByKeyValuePairMultiValue
- collectAndSetAttrByPos
- collectAndSetAttrByPosWithNestedSep
- collectAndSetAttrByPosWithQuotes
- collectAndSetAttrByRegex
- collectAndSetAttrBySymbol
- collectAndSetAttrByXPath
- collectAndSetAttrFromAnotherEvent
- collectFieldsByCsvFile
- collectFieldsByKeyValuePair
- collectFieldsByRegex
- collectFieldsBySNMPTrap

collectAndSetAttrByJSON

Summary: Used to extract key value pairs from a json variable, in our example $_body is the variable containing a json object.

Note one example to access sub elements where a json key value contains a json array of objects.

```
<collectAndSetAttrByJSON src="$_body">
  <attrKeyMap attr="domain" key="domain"/>
  <attrKeyMap attr="_eventTime" key="ts"/>
  <attrKeyMap attr="ipConnId" key="uid"/>
  <attrKeyMap attr="hostIpAddr" key="assigned_ip"/>
  <attrKeyMap attr="durationMSec" key="lease_time"/>
  <attrKeyMap attr="seqNum" key="trans_id"/>
  <!-- access json key network_addresses that contains a json array, access first element's ip key, return value -->
  <attrKeyMap attr="hostIpAddr" key="network_addresses[0].ip"/>
</collectAndSetAttrByJSON>
```

collectAndSetAttrByJsonArray

Summary: Another method to gather data from JSON Arrays, iterate through an array of objects. If an object key matches one type, gather the value of another key.

Example: You have a json array where the key Type can be one of 3 values. Only map attribute x if Type=`someValue`

Sample event parsable by this function:

```
"Resources":[{"Type":"AwsAccount","Id":"AWS::::Account:600000000000","Partition":"aws","Region":"us-west-2"}],"Compliance":{"Status":"WARNING"},"WorkflowState":"NEW","RecordState":"ACTIVE"}]]

<collectAndSetAttrByJsonArray src="$_resource" sep=" ">
  <attrKeyMap attr="ec2InstanceId" key="entries.find(Type='AwsEc2Instance', Id)"/>
  <attrKeyMap attr="_ec2IP" key="entries.find(Type='AwsEc2Instance', Details.AwsEc2Instance.IpV4Addresses[0])"/>
  <attrKeyMap attr="user" key="entries.find(Type='AwsIamAccessKey', Details.AwsIamAccessKey.UserName)"/>
</collectAndSetAttrByJsonArray>
```

collectAndSetAttrByJsonSymbol

Summary: Seen only in GenericJSONParser so far, I believe the purpose of this was to auto map the keys of a json object into temp variables.

```
<collectAndSetAttrByJsonSymbol src="$_rawmsg">
  <!-- Auto maps to key into a tmp var? -->
</collectAndSetAttrByJsonSymbol>
```

collectAndSetAttrByKeyValuePair

Certain logs, such as SNMP traps, are structured as `Key1 = value1 <separator> Key2 = value2`,.... These can be parsed using the `collectAndSetAttrByKeyValuePair` XML attribute tag with this syntax.

```
<collectAndSetAttrByKeyValuePair sep="separatorString"src="$inputString">
  <attrKeyMap attr="variableOrEventAttribute1" key="key1"/>
  <attrKeyMap attr="variableOrEventAttribute2" key="key2"/>
</collectAndSetAttrByKeyValuePair>
```

When a `key1` match is found, the entire string following `key1` up to the `separatorString` is parsed out and stored in the attribute `variableOrEventAttribute1`.

For example, consider this log fragment:

```
\_body =
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.60 = Hex-STRING: 07 D8 06 0B 13 15 00 00 2D
07 00   SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.11.0 = Hex-STRING: 00 16 B6 DB 12 22
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.12.0 = Hex-STRING: 00 21 55 4D 66 B0
SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.13.0 = INTEGER: 36   SNMPv2-SMI::en-
terprises.14823.2.3.1.11.1.1.1.0 = Hex-STRING: 00 1A 1E C0 60 7A        SNMPv2-SMI::en-
terprises.14823.2.3.1.11.1.1.56.0 = INTEGER: 2  SNMPv2-
SMI::enterprises.14823.2.3.1.11.1.1.17.0 = STRING: "00:1a:1e:c0:60:7a"
```

The corresponding parser fragment is:

```
<collectAndSetAttrByKeyValuePair sep="\\t\\\| SNMP" src="$_body">
  <attrKeyMap attr="srcMACAddr" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.11.0 =
Hex-STRING: "/>
  <attrKeyMap attr="_destMACAddr" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.12.0
= Hex-STRING: "/>
  <attrKeyMap attr="wlanSSID" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.6.0 =
STRING: "/>
  <attrKeyMap attr="wlanRadioId" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.56.0
= INTEGER: "/>
  <attrKeyMap attr="apMac" key="SNMPv2-SMI::enterprises.14823.2.3.1.11.1.1.17.0 =
STRING: "/>
</collectAndSetAttrByKeyValuePair>
```

After parsing, the attribute values are set:

Value	Attribute
00 16 B6 DB 12 22	`srcMACAddr`
00 21 55 4D 66 B0	`destMacAddr`
2	`wlanRadioId`
00:1a:1e:c0:60:7a	`apMac`

collectAndSetAttrByKeyValuePairMultiValue

Summary: Seen only in CiscoACSParserPlus.xml so far, designed when a key is repeated multiple times, each with distinct values. Notice Step= is repeated many times.

Each value should be concatenated into a parsable var. --untested

```
 <181>May 16 08:18:13 dotacs12 CSCOacs_Passed_Authentications 0001575987 3 0 2012-05-16 08:18:13.572 -05:00 0025628800 5201 NOTICE Passed-Authentication: Authentication succeeded, ACSVersion=acs-5.3.0.40-B.839, ConfigVersionId=21, Device IP Address=10.15.1.248, UserName=abc, Protocol=Tacacs, RequestLatency=13, NetworkDeviceName=Default Network Device, Type=Authentication, Action=Login, PrivilegeLevel=1, Authen-Type=ASCII, Service=Login, User=joeUser, Port=tty1, Remote-Address=10.16.13.251, UserName=joeUser, AcsSessionID=dotacs12/126121712/1427032, AuthenticationIdentityStore=Internal Users, AuthenticationMethod=PAP_ASCII, SelectedAccessService=TACACS Administration, SelectedShellProfile=NetworkAdmins, IdentityGroup=IdentityGroup:All Groups:Network Administrators, Step=13020 , Step=13013 , Step=15008 , Step=15004 , Step=15012 , Step=15041 , Step=15004 , Step=15013 , Step=24210 , Step=24212 , Step=13045 , Step=13015 , Step=13020 , Step=13014 , Step=15037 , Step=15041 , Step=15004 , Step=15013 ,
```

Example:

```
<collectAndSetAttrByKeyValuePairMultiValue src="$_body" sep=",">
  <attrKeyMap attr="_step" key="Step="/>
  <attrKeyMap attr="_deviceadmin" key="Device-Administration: "/>
</collectAndSetAttrByKeyValuePairMultiValue>
```

collectAndSetAttrByPos

<a id="Value"></a>Value List Structured Data

Certain application logs, such as those from Microsoft IIS, are structured as a list of values with a separator. These can be parsed using the `collectAndSetAttrByPos` XML attribute tag following this syntax.

```
<collectAndSetAttrByPos sep="separatorString" src="$inputString">
  <attrPosMap attr="variableOrEventAttribute1" pos="offset1"/>
  <attrPosMap attr="variableOrEventAttribute2" pos="offset2"/>
</collectAndSetAttrByPos>
```

When the position `offset1` is encountered, the subsequent values up to the `separatorString` is stored in `variableOrEventAttribute1`.

For example, consider this log fragment:

```
\_body =
W3SVC1 ADS-PRI 192.168.0.10 GET /Document/ACE/index.htm - 80 -
192.168.20.55 HTTP/1.1
Mozilla/5.0+(Windows;+U;+Windows+NT+5.1;+en-US;+rv:1.8.1.11)+Gecko/20071
127+Firefox/2.0.0.11 \[http://wwwin/Document/\] wwwin 200 0 0 5750 445 15
```

The parser fragment is:

```
<collectAndSetAttrByPos src="$_body" sep="  ">
  <attrPosMap attr="srvInstName" pos="1"/>
```

```
 <attrPosMap attr="destName" pos="2"/>
 <attrPosMap attr="relayDevIpAddr" pos="2">
 <attrPosMap attr="destIpAddr" pos="3"/>
 <attrPosMap attr="httpMethod" pos="4"/>
 <attrPosMap attr="uriStem" pos="5"/>
 <attrPosMap attr="uriQuery" pos="6"/>
 <attrPosMap attr="destIpPort" pos="7"/>
 <attrPosMap attr="user" pos="8"/>
 <attrPosMap attr="srcIpAddr" pos="9"/>
 <attrPosMap attr="httpVersion" pos="10"/>
 <attrPosMap attr="httpUserAgent" pos="11"/>
 <attrPosMap attr="httpReferrer" pos="13"/>
 <attrPosMap attr="httpStatusCode" pos="15"/>
 <attrPosMap attr="httpSubStatusCode" pos="16"/>
 <attrPosMap attr="httpWin32Status" pos="17"/>
 <attrPosMap attr="recvBytes" pos="18"/>
 <attrPosMap attr="sentBytes" pos="19"/>
 <attrPosMap attr="durationMSec" pos="20"/>
</collectAndSetAttrByPos>
```

For structured strings, techniques in this section are more efficient than in the previous section because the expression is simpler and ONE tag can be used to parse regardless of the order in which the keys or values appear in the string.

collectAndSetAttrByPosWithNestedSep

Summary: Some events will be position separated, and have position separators, or nested separators. In logs that have space separators, but the values themselves contain spaces, they use nested delimiters to treat the value of each position as a literal.

Example Log:

```
<166>Sep 25 17:39:43 hog (squid-1): 192.168.0.171 33763 example.net 192.168.0.86 3128
204 - - - - [25/Sep/2015:17:39:43 +0100] GET "http://example.net/ping?" HTTP/1.1 200
356 921 "http://example.com/news/england" "Mozilla/5.0 (X11; Linux x86_64) AppleWe-
bKit/537.36 (KHTML, like Gecko) Chrome/44.0.2403.157 Safari/537.36" TCP_MISS:HIER_
DIRECT
```

In the above log, values are space separated, but use quotes to signify the start and end of the value of that position. User Agent is position 9, contains several spaces, which is okay since they are in the nested separator values "user agent data". L2Sep also takes a comma separated list of multiple separator types.

Position 1 (Device Time), uses the option for [] for inner separator

Position 9 (User Agent), uses the option for "" for inner separator

```
<collectAndSetAttrByPosWithNestedSep src="$_body" L1Sep=" " L2Sep="&quot;&quot;, []">
  <attrPosMap attr="_devTime" pos="1"/>
  <attrPosMap attr="httpMethod" pos="2"/>
  <attrPosMap attr="uriStem" pos="3"/>
  <attrPosMap attr="httpVersion" pos="4"/>
  <attrPosMap attr="httpStatusCode" pos="5"/>
  <attrPosMap attr="recvBytes64" pos="6"/>
  <attrPosMap attr="sentBytes64" pos="7"/>
  <attrPosMap attr="httpReferrer" pos="8"/>
  <attrPosMap attr="httpUserAgent" pos="9"/>
</collectAndSetAttrByPosWithNestedSep>
```

collectAndSetAttrByPosWithQuotes

Summary: Used to specify an inner separator in addition to outer separator by position. The difference between this and collectAndSetAttrByPosWithNestedSep is that Nested Separator can supply a list of inner separators.

`collectAndSetAttrByPosWithNestedSep src="$_body" L1Sep=" " L2Sep="&quot;&quot;,[]"` - This allows key="value" or key=[value].

`collectAndSetAttrByPosWithQuotes` - This can only provide a single argument for the inner separator.

Seen in JuniperSteelBeltAAAParser.xml and a few others.

Example log: CSV separated, with quotes for nested separator

```
<45>Jul  9 03:20:30 example.com SteelBeltedLog      0       "2008-07-
09","03:20:26","SJ-QA-A-CAT-COR","AbcHacker","NT Domain User","User name or credential
incorrect","","172.16.10.1"
```

```
<collectAndSetAttrByPosWithQuotes src="$_body" sep="," quo="&quot;">
  <attrPosMap attr="_nasNameOrIp" pos="3"/>
  <attrPosMap attr="_user1OrPort" pos="4"/>
  <attrPosMap attr="_user2" pos="5"/>
  <attrPosMap attr="_reasonOrNasIp" pos="6"/>
  <attrPosMap attr="_reasonOrOwnIp" pos="7"/>
  <attrPosMap attr="_someIp" pos="8"/>
</collectAndSetAttrByPosWithQuotes>
```

collectAndSetAttrByRegex

From a string input source, a regex match is applied and variables are set. The variables can be event attributes or local variables. The input will be a local variable or the default raw message variable. The syntax is:

```
<collectAndSetAttrByRegex src="$inputString">
  <regex><!\[CDATA\[regexpattern\]\]></regex>
</collectAndSetAttrByRegex>
```

The regexpattern is specified by a list of variables and sub-patterns embedded within a larger pattern. Each variable and sub-pattern pair are enclosed within angle brackets (<>).

Consider an example in which the local variable _body is set to list 130 permitted eigrp 172.16.34.4 (Serial1) > 172.16.34.3, 1 packet. From this string we must set the values to local variables and event attributes.

Value	Set To	Type
130	_aclName	Local Variable
permitted	_action	Local Variable
eigrp	_proto	Local Variable
172.16.34.4	srcIpAddr	Event Attribute
Serial1	srcIntfName	Event Attribute
172.16.34.3	destIpAddr	Event Attribute
1	totPkts	Event Attribute

This is achieved by using this XML. Note that you can use both the collectAndSetAttrByRegex and collectFieldsByRegex functions to collect values from fields.

```
<collectAndSetAttrByRegex src="$_body">
  <regex><!\[CDATA\[list <\_aclName:gPatStr> <\_action:gPatWord> <_proto:gPatWord>
<srcIpAddr:gPatIpV4Dot>(<:srcIntfName:gPatWord>) -> <destIpAddr:gPatIpV4Dot>, <totPkts:gPatInt> <:gPatMesgBody>\]\]></regex>
</collectAndSetAttrByRegex>
```

collectAndSetAttrBySymbol

Summary: Automatically maps The key between symStart and symEnd as a variable that contains the value. Primarily used with log formats built by phAgentManager pollers, which have key values

that match valid programmatic names of event attributes in FortiSIEM, e.g. sentBytes64 which is the correct FortiSIEM event attribute for Sent Bytes uint64.

Sample Event:

```
Tue Sep 19 18:00:06 2017 AWS_VPC_FLOW_ACCEPT [accountName]=abc@cda.com,[awsRegion]=us-east-2,[groupName]=logGroupName,[streamName]=eni-1780864b-all,[version]=2,[accountId]=658308615768,[srcIntfName]=eni-1780864b,[srcIpPort]=22,[destIpPort]=16931,[ipProto]=6,[sentPkts64]=13,[sentBytes64]=3171,[sentPktsReverse]=14,[sentBytesReverse]=1268,[startTime]=1505808418,[endTime]=1505808460,[status]=OK,[srcAction]=ACCEPT,[destAction]=ACCEPT,[srcIpAddr]=10.0.0.244,[destIpAddr]=10.112.150.78
```

Example: Map [attribName]=Value to variable attribName for each, separated by ',['

```
<collectAndSetAttrBySymbol src="$_body" sep=",[" symStart="[" symEnd="]=">
  <excludeAttr>phLogDetail</excludeAttr>
</collectAndSetAttrBySymbol>
```

Resulting variables:

ipProto == 6

awsRegion == us-east-2

collectAndSetAttrByXPath

Summary: Uses XML XPath notation to place the value of a given XML tag into a variable.

Sample Event:

```
<13>Nov 09 00:55:09 172.30.58.88 <!-- PHBOX RULE ENGINE --><event name-
="phRuleI-
ncid-
ent"><deviceTime>1409271060</deviceTime><firstSeenTime>1409271060</firstSeenTime><-
coun-
t>1</count><durationMSec>900000</durationMSec><ruleId>1491921</ruleId><ruleName>Server
Hardware Critical</ruleName><ruleDescription>Detects a critical server hardware aler-
t.</ruleDescription><eventType>PH_RULE_SERVER_HW_CRITICAL</eventType><eventSever-
ity>9</eventSever-
ity><eventSever-
ityCat>HIGH</eventSever-
ityCat><phEventCat-
egory>1</phEventCat-
egory><phCustId>1</phCustId><incidentSrc></incidentSrc><incidentTarget>hostName:Host-
172.16.22.120, hostIpAddr:172.16.22.120,
</incidentTarget><hostIpAddr>172.16.22.120</hostIpAddr><hostName>Host-
172.16.22.120</hostName><hwComponentName>RAID 0 vol2 Logical Volume 1 on controller 0-
Drives(1e32-?)  - OFFLINE</h-
wCom-
ponentName><hwComponentStatus></hwComponentStatus><incidentDetail>hwComponentName:RAID
0 vol2 Logical Volume 1 on controller 0- Drives(1e32-?)  - OFFLINE, hwCom-
ponentStatus:, </in-
cidentDe-
tail><incidentRptIp>172.16.22.120</incidentRptIp><triggerEventLists><triggerEvents
sub-
patName-
="HwI-
ssueCrit">8264949741156592346</trig-
gerEvents></triggerEventLists><incidentId>14</incidentId></event>
```

Example: place nested xml value of the event tag into the $_body variable.

```
<collectAndSetAttrByXPath src="$_body" xpath="/event/*"/>
```

Documentation: XML path expressions

https://www.w3schools.com/xml/xml_xpath.asp

collectAndSetAttrFromAnotherEvent

Summary: Allows for mapping of correlated events given some variable in each event matches. Example, if two authentication events occur in a chain, and contain a logonID, you can have the SIEM search for the prior event, and retrieve a given attribute from that event to copy into the one you are parsing. This is used for advanced intelligence where a later log event does not contain a needed attribute. Assuming the events have an attribute linking them, e.g. the same user causing the generated audit events.

Sample Log:

```
<13>Dec 12 10:09:00 ADS-Pri.example.com MSWinEventLog    1       Security        1756
  Wed Dec 12 10:08:53 2007        517     Security        SYSTEM  User    Success
Audit   ADS-PRI The audit log was cleared              Client User Name: joeUser
Client Domain: ABC          Client Logon ID: (0x0, 0x158E87)
```

Example: Seen in Windows Event 517 - Audit log cleared. Copy the source IP from Windows event 540 or 528 if the logonIDs match, as event 517 itself does not contain a source IP attribute.

```
<collectAndSetAttrFromAnotherEvent AnotherEventType="Win-Security-540 OR Win-Security-
528">
  <when test="$winLogonId = $AnotherEventType.winLogonId">
    <setEventAttribute attr-
r="srcIpAddr">$AnotherEventType.srcIpAddr</setEventAttribute>
  </when>
</collectAndSetAttrFromAnotherEvent>
```

collectFieldsByCsvFile

Summary: Allows for a search of a key,value CSV file that replaces the target variable with the value of the key in the CSV file. You can specify which column you want to map.

Example CSV for Windows Logon Failure Codes: /opt/phoenix/data-definition/eventAttrDesc/winLogonFailCode2.csv

0XC000005E,Login failed - There are currently no logon servers available to service the logon request.

0XC0000064,Login failed - User logon with misspelled or bad user account

0XC000006A,Login failed - User logon with misspelled or bad password

0XC000006D,Login failed - This is either due to a bad username or authentication information

0XC000006E,Login failed - Unknown user name or bad password.

Structure of CSV File:

col0,col1

Logon Code,Logon Code Description

Example: Take the upper case arg variable $subStatus, if it matches one of the CSV lines, map column 1 to variable description.

```
<when test="exist subStatus">
  <setEventAttribute attr="_subStatus">toUpper($subStatus)</setEventAttribute>
  <collectFieldsByCsvFile file="/opt/phoenix/data-defin-
ition/eventAttrDesc/winLogonFailCode2.csv" key="$_subStatus" reloadInterval="3600">
    <attrKeyMap attr="description" column="1"/>
  </collectFieldsByCsvFile>
</when>
```

collectFieldsByKeyValuePair

Summary: Near duplicate of collectAndSetAttrByKeyValuePair, allows for kvsep so you don't have to include the key value separator in the key mapping.

Sample Event:

```
<134>Jul 24 2008 03:29:15: %ASA-6-113005: AAA user authentication Rejected : reason =
AAA failure : server = 192.168.0.40 : user = joeUser
```

Example: Map body values separated by ' : ' and key value separator of ' = '

```
<collectAndSetAttrByRegex src="$_body">
  <regex><![CDATA[AAA user authentication Rejected :\s*<_detail:gPatMes-
gBody>]]></regex>
</collectAndSetAttrByRegex>

<collectFieldsByKeyValuePair sep=" : " kvsep=" = " src="$_detail">
  <attrKeyMap attr="user" key="user"/>
  <attrKeyMap attr="srcIpAddr" key="user IP"/>
</collectFieldsByKeyValuePair>
```

collectFieldsByRegex

Summary: Seems to be an identical construct to: collectAndSetAttrByRegex

Example: Map each key value pair of <someVariable:someRegexMatchGroup> evaluating regex from left to right of the variable $_rawmsg

```
<collectFieldsByRegex src="$_rawmsg">
  <regex><![CDATA[^<_header:gPatMesgBodyMin>%<_vendor:gPatWord>-<_sev:gPatInt>-<_
evtId:gPatInt>:\s+<_body:gPatMesgBody>]]></regex>
</collectFieldsByRegex>
```

collectFieldsBySNMPTrap

Summary: Currently only seen in FireEyeTrapParser.xml, take an SNMP trap log message, map oid defined under key= to a given FortiSIEM event attribute.

Sample Log: Shortened for brevity

```
2016-05-26 07:50:28 0.0.0.0TRAP2, SNMP v2c, community R-OEnWinLog$            . Cold
Start Trap (0) Uptime: 0:00:00.00            DISMAN-EVENT-MIB::sysUpTimeInstance =
Timeticks: (610853754) 70 days, 16:48:57.54  SNMPv2-MIB::snmpTrapOID.0 = OID: SNMPv2-
SMI::enterprises.25597.3.0.1            SNMPv2-SMI::enterprises.25597.1.1.2.1.2.1116 =
Gauge32: 1116  SNMPv2-SMI::enterprises.25597.1.1.2.1.3.1116 = STRING: "malware-call-
back"         SNMPv2-SMI::enterprises.25597.1.1.2.1.4.1116 = STRING: "2016-05-26"
SNMPv2-SMI::enterprises.25597.1.1.2.1.5.1116 = STRING: "11:46:48+00"  SNMPv2-SMI::en-
terprises.25597.1.1.2.1.6.1116 = Counter64: 0      SNMPv2-SMI::en-
terprises.25597.1.1.2.1.7.1116 = IpAddress: 10.1.201.82              SNMPv2-
SMI::enterprises.25597.1.1.2.1.8.1116 = IpAddress: 1.1.1.1             SNMPv2-SMI::en-
terprises.25597.1.1.2.1.9.1116 = STRING: "70:38:ee:91:cc:80"       SNMPv2-SMI::en-
terprises.25597.1.1.2.1.10.1116 = STRING: "58:49:3b:2d:98:11"    SNMPv2-
SMI::enterprises.25597.1.1.2.1.11.1116 = INTEGER: 80    SNMPv2-SMI::en-
terprises.25597.1.1.2.1.12.1116 = INTEGER: 0                SNMPv2-SMI::en-
terprises.25597.1.1.2.1.13.1116 = STRING: "tcp"
```

Example:

```
<collectFieldsBySNMPTrap src="$_body">
  <attrKeyMap attr="_id" key="SNMPv2-MIB::snmpTrapOID"/>
  <attrKeyMap attr="srcMACAddr" key="SNMPv2-SMI::enterprises.25597.1.1.2.1.9"/>
  <attrKeyMap attr="destMACAddr" key="SNMPv2-SMI::enterprises.25597.1.1.2.1.10"/>
  <attrKeyMap attr="destIpAddr" key="SNMPv2-SMI::enterprises.25597.1.1.2.1.38"/>
</collectFieldsBySNMPTrap>
```

Creating a Custom Parser

You should have:

- examples of the logs that you want to parse.
- created any new device/application types, event attribute types, or event types that you want to use in your XML specification.
- already written the XML specification for your parser.
- prepared a test event that you can use to validate the parser.

Parsers are applied in the order they are listed in **ADMIN > Device Support > Parsers**, so it is important to add your custom parser to the list in relation to any other parsers that may be applied to your device logs. If you click **Fix Order**, this will arrange the parsers with system-defined parsers at the top of the list in their original order, and user-defined parsers at the bottom. Be sure to click **Apply** to ensure the change in order is picked up by the back-end module.

Note: Custom parsers can be created only from the Super/Global account in Service Provider FortiSIEM deployments.

1. Go to **ADMIN** > **Device Support** > **Parsers**.
2. Select a parser that is above the location in the list where you want to add your parser, and click **New**.
3. Enter a **Name** for the parser.
4. Select a **Device Type** from the drop-down list to which the parser should apply.
   If the device type doesn't appear in the menu, you should create a new device type.
5. Enter a **Test** containing an example of an event that you want to use to validate the parser.
6. Enter the **Parser XML**.
7. Click **Validate**.
   This will validate the XML.
8. Click **Test**.
   This will send the test event to the parser to make sure it is parsed correctly, and will also test the parsers above and below yours in the list to make sure they continue to parse logs correctly.
9. If the XML for your parser validates and the test event is correctly parsed, select **Enable**.
   If you must continue working on your parser, you can **Save** it without selecting **Enable**.
10. Add a **Description** of the Parser.
11. Click **Save**.
12. Click **Apply** to have the back-end module pick up your parser and begin applying it to device logs.
    You should now validate that events are being parsed by creating some activity that will cause a log to be generated, and then run a query against the new device IP address and validate the parsed results.

Cloning New Parsers

You can clone an existing parser and then use it as the basis for creating a new one. Select the parser you want to clone, and then click **Clone**. Modify the parser as necessary, and then make sure you use the **Up** and **Down** buttons to place it in the list of parsers at the point at which is should be applied.

Ingesting JSON Formatted Events Received via HTTP(S) POST

FortiSIEM can receive, parse, and store JSON formatted events received via HTTP(S) POST. Follow these steps to implement this.

1. Configure the FortiSIEM node with the HTTPS credential for receiving the HTTP(S) POST event.
   a. Identity the FortiSIEM node receiving the events. Most likely, this will be the Collector.
   b. SSH to the Collector and run the command: `htpasswd -b /etc/httpd/accounts/passwds <user> <password>`
2. Modify the built-in JSON parser to parse event attributes and set the Event Type.
   a. Login to the Supervisor.
   b. Go to **ADMIN > Device Support > Parsers**.
   c. Clone `PHCustomJSONParser.xml` and make the changes so that additional event attributes are parsed.
   d. Validate, Test, and Save the parser.
   e. Click **Apply All** to deploy the parser changes.

3. Make sure the events are being pushed to the FSM node using the credentials in Step 1 via this REST API:
   `https://<FSMNodeName>/rawup-load?vendor=<vendor>&model=<model>&reptIp=<reptIp>&reptName=<reptHost>`

   where `FSNNodeName` is the resolvable host name or FQDN in Step 1. The parameters Reporting Vendor (`vendor`), Reporting Model (`model`), Reporting Device (`reptHost`), and Reporting IP (`reptIP`) are needed to create a CMDB entry and populate events.
4. Query the events by using the Reporting Device Name or IP in Step 3 and Event Type in Step 2c.

Deleting or Disabling a Parser

- Deleting Parsers
- Disabling Parsers

Deleting Parsers

You can only delete user-defined parsers.

1. Go to **ADMIN** > **Device Support** > **Parsers**.
2. Select the parser you want to delete.
3. Click **Delete**.
4. Click **Yes** to confirm.

Disabling Parsers

You can disable both system and user-defined parsers.

1. Go to **ADMIN** > **Device Support** > **Parsers**.
2. Select the parser and deselect the tick mark below **Enabled** column.
3. Click **Yes** to confirm.

Parser Inbuilt Functions

The following parser inbuilt functions are available:

- Combining Two or More Strings to Produce a Final String
- Normalize MAC Address
- Compare Interface Security Level
- Convert Hex Number to Decimal Number
- Convert TCP/UDP Protocol String to Port Number
- Convert Protocol String to Number
- Convert Decimal IP to String
- Convert Host Name to IP
- Add Two Numbers
- Divide Two Numbers

- Scale
- Calculate Micro Seconds
- Extract Host from FQDN
- Replace String by Regular Expression
- Replace String in String
- Resolve DNS Name
- Shift Time Sec
- To DateTime
- Trim Attribute
- Get Severity from Syslog Priority
- To Unix Time (with Time Zone)
- Decode Base64
- Unzip String
- Calculate Latency

Combining Two or More Strings to Produce a Final String

This is accomplished by the **combineMsgId** function.

```
<setEventAttribute attr="eventType">combineMsgId("string-", $_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
_evIdPrefix: prefix
_evIdSuffix: suffix
eventType: string-prefix-suffix
```

Strings can only be wrapped by double quotes " but not single quotes '.

Normalize MAC Address

This is accomplished by the **normalizeMAC** function.

```
<setEventAttribute attr="hostMACAddr">normalizeMAC($_mac)</setEventAttribute>
```

Compare Interface Security Level

This is accomplished by the **compIntfSecVal** function.

```
<setEventAttribute attr="_result">compIntfSecVal($srcIntf, $destInt-
f)</setEventAttribute>
```

Compare the Security Level of `srcIntf` and `destIntf`. The result may be "LESS", "GREATER" or "EQUAL".

Convert Hex Number to Decimal Number

This is accomplished by the **convertHexStrToInt** function.

```
<setEventAttribute attr="ipConnId">convertHexStrToInt($_ipConnId)</setEventAttribute>
```

Convert TCP/UDP Protocol String to Port Number

This is accomplished by the following **convertStrToIntIpPort** function.

```
<setEventAttribute attr="destIpPort">convertStrToIntIpPort($_dport)</setEventAttribute>
```

Convert Protocol String to Number

This is accomplished by the following **convertStrToIntIpProto** function.

```
<setEventAttribute attr="ipProto">convertStrToIntIpProto($_proStr)</setEventAttribute>
```

Convert Decimal IP to String

This is accomplished by the following **convertIpDecimalToStr** function.

```
<setEventAttribute attr="srcIpAddr">convertIpDecimalToStr($_srcIpAddr)</setEventAttribute>
```

Convert Host Name to IP

This is accomplished by the following **convertHostNameToIp** function.

```
<setEventAttribute attr="srcIpAddr">convertHostNameToIp($_saddr)</setEventAttribute>
```

Add Two Numbers

This is accomplished by the following **add** function.

```
<setEventAttribute attr="totBytes">add($sentBytes, $recvBytes)</setEventAttribute>
```

Divide Two Numbers

This is accomplished by the following **divide** function.

```
<setEventAttribute attr="memUtil">divide($_usedMem, $_totalMem)</setEventAttribute>
```

Scale

This is accomplished by the following **scale** function.

```
<setEventAttribute attr="durationMSec">scale($_durationSec, 1000)</setEventAttribute>
```

Calculate Micro Seconds

This is accomplished by the following **calculateMSec** function.

```
<setEventAttribute attr="durationMSec">calculateMSec($_duration)</setEventAttribute>
_duration: 00:00:15
durationMSec: 15000
```

Extract Host from FQDN

This is accomplished by the following **extractHostFromFQDN** function.

```
<setEventAttribute attr="hostName">extractHostFromFQDN($_fqdn)</setEventAttribute>
_fqdn: host.abc.net
hostName: host
```

If `_fqdn` contains dot, get the string before the first dot; otherwise, get the whole string.

Replace String by Regular Expression

This is accomplished by the following **replaceStringByRegex** function.

```
<setEventAttribute attr="eventType">replaceStringByRegex($_eventType, "\s+", "_")</-
setEventAttribute>
_eventType: Event Type
eventType: Event_Type
```

Replace String in String

This is accomplished by the following **replaceStrInStr** function.

```
<setEventAttribute attr="computer">replaceStrInStr($_computer, "\\", "")</-
setEventAttribute>
```

Resolve DNS Name

This is accomplished by the following **resolveDNSName** function.

```
<setEventAttribute attr="destIpAddr">resolveDNSName($destName)</setEventAttribute>
```

Shift Time Sec

This is accomplished by the following **shiftTimeSec** function.

```
<setEventAttribute attr="logonTime">shiftTimeSec($_mon, $_day, $_year, $_time, $_dur-
ationSec)</setEventAttribute>
_mon: 1
_day: 1
_year: 2000
_time: 01:00:10
_durationSec: 10
logonTime: 01:00:00 01/01/2000
```

To DateTime

This is accomplished by the following **toDateTime** function.

```
<setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_year, $_time)</-
setEventAttribute>
<setEventAttribute attr="deviceTime">toDateTime($_mon, $_day, $_time)
</setEventAttribute>
```

Trim Attribute

This is accomplished by the following **trimAttribute** function.

```
<setEventAttribute attr="destName">trimAttribute($destName, ".")
</setEventAttribute>
```

Trim leading and trailing dots in `destName`.

Get Severity from Syslog Priority

This is accomplished by the following **getEventSeverityFromSyslogPriority** function.

```
<setEventAttribute attr="eventSeverity">getEventSeverityFromSyslogPriority($_pri)</-
setEventAttribute>
_pri: 52
eventSeverity: 5
```

Set severity by syslog priority. The bottom 3 bits of the priority indicates the severity.

http://en.wikipedia.org/wiki/Syslog

To Unix Time (with Time Zone)

This is accomplished by the following **toUnixTime** function.

```
<setEventAttribute attr="deviceTime">toUnixTime($_deviceTime)</setEventAttribute>
_deviceTime: 20130509073221.932817-000
```

Decode Base64

This is accomplished by the following **decodeBase64** function.

```
<setEventAttribute attr="httpFullRequest">decodeBase64($_msg)</setEventAttribute>
```

Unzip String

This is accomplished by the following **unzip** function.

```
<setEventAttribute attr="msg">unzip($_msg)</setEventAttribute>
```

Calculate Latency

This is accomplished by the following **calculateLatency** function.

```
<setEventAttribute attr="_latency">calculateLatency($_evtRecvTime, $deviceTime)</-
setEventAttribute>
```

Calculate the latency. If `_evtRecvTime` is later than `deviceTime`, return the latency in seconds. Otherwise, return 0.

Parser Examples

The followng example is based on **Cisco IOS Syslog Parser**. The objective is to parse this syslog message:

```
<190>91809: Jan  9 02:38:47.872: %SEC-6-IPACCESSLOGP: list testlog permitted tcp
192.168.20.33(3438) -> 69.147.86.184(80), 1 packet
```

Complete these steps to create an appropriate parser.

- Add Device Type
- Create the Parser Specification and Add Local Patterns
- Define the Format Recognizer
- Parse the Syslog Header
- Parse the Syslog Body
- Final Parser
- Parsed Output

Add Device Type

Create a `CiscoIOSParser.xml` file with this content:

```
<eventParser name="CiscoIOSParser">
   <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
</eventParser>
```

Create the Parser Specification and Add Local Patterns

Create the parser XML file with this content, and add the pattern definition `patCiscoIOSMod` for detecting IOS modules such as SEC.

```
<eventParser name="CiscoIOSParser">
   <deviceType>
       <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
   <patternDefinitions>
      <pattern name="patCiscoIOSMod" list="begin">  <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
     <pattern name="patCiscoIOSMod" list="continue"><![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
     <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
     <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
     <pattern name="patComm"><![CDATA[[^,]+]]></pattern>
  </patternDefinitions>
</eventParser>
```

Define the Format Recognizer

Add this format recognizer for detecting `%SEC-6-IPACCESSLOGP`, which is a signature of Cisco IOS syslog messages.

```
<eventParser name="CiscoIOSParser">
   <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
   </deviceType>
   <patternDefinitions>
     <pattern name="patCiscoIOSMod" list="begin">  <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
     <pattern name="patCiscoIOSMod" list="continue"><![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
     <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
     <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
     <pattern name="patComm"><![CDATA[[^,]+]]></pattern>
   </patternDefinitions>
   <eventFormatRecognizer>
     <![CDATA[: %<:patCiscoIOSMod>-<:gPatInt>-<:patStrEndColon>:]]>
   </eventFormatRecognizer>
</eventParser>
```

Parse the Syslog Header

A syslog message consists of a syslog header and a body. For better organization, first parse the syslog header and event type. Subsequent code will include event type specific parsing, which is why event type is extracted in this step.

In this example, the header is in boldface.

`<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP:` `list testlog permitted tcp 192.168.20.33(3438) -> 69.147.86.184(80), 1 packet`

The XML code for parsing the header does the following:

1. Matches the pattern `<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP:`
2. Sets the `eventType` attribute to `IOS-SEC- IPACCESSLOGP`.
3. Sets `deviceTime`.
4. Sets event severity (1-7 scale in Cisco IOS, 1=> most severe, to normalized 1-10 scale in FortiSIEM where 10=>most severe)
5. Saves the event `list testlog permitted tcp 192.168.20.33(3438) -> 69.147.86.184 (80), 1 packet` in a temporary variable `_body`.

Note that the patterns `gPatSyslogPRI`, `gPatMon`, `gPatDay`, `gPatTime`, `gPatInt`, and `gPatmesgBody` are global patterns that are defined in the `GeneralPatternDefinitions.xml` file:

```
<generalPatternDefinitions>
 <pattern name="gPatSyslogPRI"><![CDATA[<\d+>]]></pattern>
 <pattern name="gPatMesgBody"><![CDATA[.*]]></pattern>
 <pattern name="gPatMon"> <![CDATA[Jan|Feb|Mar|Apr|May|Jun|Jul|Aug|Sep|Oct|Nov|Dec|\d
{1,2}]]></pattern>
 <pattern name="gPatDay"><![CDATA[\d{1,2}]]></pattern>
 <pattern name="gPatTime"><![CDATA[\d{1,2}:\d{1,2}:\d{1,2}]]></pattern>
 <pattern name="gPatInt"><![CDATA[\d+]]></pattern>
</generalPatternDefinitions>
```

This parser file XML fragment for parsing the example syslog message looks like this:

```
<parsingInstructions>
    <collectFieldsByRegex src="$_rawmsg"><regex><![CDATA[<:gPatSys-
logPRI>?<:gPatMon>\s+<:gPatDay>\s+<:gPatTime> %<evIdPrefix:patCiscoIOSMod>-<_sever-
ity:gPatInt>-<_evIdSuffix:patStrEnd
Colon>: <_body:gPatMesgBody>]]></regex>
    </collectFieldsByRegex>
    <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
    <choose>
        <when test='$_severity IN "6, 7"'>
            <setEventAttribute attr="eventSeverity">1</setEventAttribute>
        </when>
        <when test='$_severity = "1"'>
           <setEventAttribute attr="eventSeverity">10</setEventAttribute>
        </when>
        <when test='$_severity = "2"'>
```

```
           <setEventAttribute attr="eventSeverity">8</setEventAttribute>
        </when>
        <when test='$_severity IN "3, 4"'>
          <setEventAttribute attr="eventSeverity">5</setEventAttribute>
      </when>
      <when test='$_severity = "5"'>
          <setEventAttribute attr="eventSeverity">2</setEventAttribute>
      </when>
    </choose>
<parsingInstructions>
```

Parse the Syslog Body

The parsing is done on an `eventType` by `eventType` basis, because the formats are `eventType`-specific. Parsing the syslog body involves three steps:

1. Parsing the action string. Based on the action staring value (`permit` or `denied`), modify the `eventType` by appending the action string value at the end, and also modify the `eventSeverity` values.
2. Parsing the protocol, source, and destination IP, port, and totalPackets.
3. Converting the protocol string to a protocol integer.

```
<choose>
   <when test='$eventType IN "IOS-SEC-IPACCESSLOGP,IOS-SEC-IPACCESSLOGDP, IOS-SEC-
IPACCESSLOGRP"'>
       <collectAndSetAttrByRegex src="$_body">
       <regex><![CDATA[list <_aclName:gPatStr>\s+<_action:gPatWord>\s+<_pro-
to:gPatWord>\s+<srcIpAddr
:gPatIpV4Dot>\(<srcIpPort:gPatInt>\)<:gPatMesgBody>->\s+<destIpAddr:gPat
IpV4Dot>\(<destIpPort:gPatInt>\),\s+<totPkts:gPatInt> <:gPatMesgBody>]]>
                  </regex>
       </collectAndSetAttrByRegex>
       <choose>
          <when test='$_action = "permitted"'>
              <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-
", $_evIdSuffix, "-PERMITTED")</setEventAttribute>
        <setEventAttribute attr="eventSeverity">1</setEventAttribute>
          </when>
          <when test='$_action = "denied"'>
               <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix,
"-", $_evIdSuffix, "-DENIED")</setEventAttribute>
               <setEventAttribute attr="eventSeverity">3</setEventAttribute>
          </when>
       </choose>
       <setEventAttribute attr="ipProto">convertStrToIntIpProto($_pro-
to)</setEventAttribute>
   </when>
</choose>
```

Final Parser

```
<eventParser name="CiscoIOSParser">
    <deviceType>
      <Vendor>Cisco</Vendor>
      <Model>IOS</Model>
      <Version>ANY</Version>
    </deviceType>
    <patternDefinitions>
        <pattern name="patCiscoIOSMod" list="begin"> <![CDATA[FW|SEC|SEC_
LOGIN|SYS|SNMP|]]></pattern>
        <pattern name="patCiscoIOSMod" list="continue"> <![CDATA
[LINK|SPANTREE|LINEPROTO|DTP|PARSER|]]></pattern>
        <pattern name="patCiscoIOSMod" list="end"><![CDATA[CDP|DHCPD|CONTROLLER|PORT_
SECURITY-SP]]></pattern>
        <pattern name="patStrEndColon"><![CDATA[[^:]*]]></pattern>
        <pattern name="patComm"><![CDATA[[^,]+]]></pattern>

      </patternDefinitions>
    <parsingInstructions>
    <!—parse header -->
    <collectFieldsByRegex src="$_rawmsg"><regex><![CDATA[<:gPatSys-
logPRI>?<:gPatMon>\s+<:gPatDay>\s+<:gPatTime>
%<_evIdPrefix:patCiscoIOSMod>-<_severity:gPatInt>-<_evIdSuffix:patStrEnd
Colon>: <_body:gPatMesgBody>]]></regex>
    </collectFieldsByRegex>
    <setEventAttribute attr="eventType">combineMsgId("IOS-",$_evIdPrefix, "-", $_
evIdSuffix)</setEventAttribute>
    <choose>
        <when test='$_severity IN "6, 7"'>
            <setEventAttribute attr="eventSeverity">1</setEventAttribute>
        </when>
        <when test='$_severity = "1"'>
           <setEventAttribute attr="eventSeverity">10</setEventAttribute>
        </when>
        <when test='$_severity = "2"'>
           <setEventAttribute attr="eventSeverity">8</setEventAttribute>
        </when>
        <when test='$_severity IN "3, 4"'>
          <setEventAttribute attr="eventSeverity">5</setEventAttribute>
      </when>
      <when test='$_severity = "5"'>
          <setEventAttribute attr="eventSeverity">2</setEventAttribute>
      </when>
    </choose>
    <!—parse body -->
    <choose>
      <when test='$eventType IN "IOS-SEC-IPACCESSLOGP,IOS-SEC-IPACCESSLOGDP, IOS-SEC-
IPACCESSLOGRP"'>
          <collectAndSetAttrByRegex src="$_body">
       <regex><![CDATA[list
<_aclName:gPatStr>\s+<_action:gPatWord>\s+<_proto:gPatWord>\s+<srcIpAddr
:gPatIpV4Dot>\(<srcIpPort:gPatInt>\)<:gPatMesgBody>->\s+<destIpAddr:gPat
IpV4Dot>\(<destIpPort:gPatInt>\),\s+<totPkts:gPatInt> <:gPatMesgBody>]]>
                  </regex>
          </collectAndSetAttrByRegex>
          <choose>
              <when test='$_action = "permitted"'>
                 <setEventAttribute attr="eventType">combineMsgId("IOS-", $_evIdPre-
fix, "-", $_evIdSuffix,
"-PERMITTED")</setEventAttribute>
          <setEventAttribute attr="eventSeverity">1</setEventAttribute>
              </when>
              <when test='$_action = "denied"'>
                 <setEventAttributeattr="eventType">combineMsgId("IOS-", $_evIdPrefix,
"-", $_evIdSuffix,
"-DENIED")</setEventAttribute>
                 <setEventAttribute attr="eventSeverity">3</setEventAttribute>
              </when>
          </choose>
          <setEventAttribute attr="ipProto">convertStrToIntIpProto($_pro-
to)</setEventAttribute>

      </when>
    </choose>
<parsingInstructions>
```

Parsed Output

Input syslog:

```
<190>91809: Jan 9 02:38:47.872: %SEC-6-IPACCESSLOGP: list testlog permitted tcp
192.168.20.33(3438) -> 69.147.86.184(80), 1 packet
```

Parsed fields:

1. **phRecvTime**: the time at which the event was received by FortiSIEM
2. **phDeviceTime**: Jan 9 02:38:47 2010
3. **eventType**: SEC-IPACCESSLOGP-PERMITTED
4. **eventSeverity**: 3
5. **eventSeverityCategory**: LOW
6. **aclName**: testlog
7. **ipProto**: 6
8. **srcIpAddr**: 192.168.20.33
9. **destIpAddr**: 69.147.86.184
10. **srcIpPort**: 3438
11. **destIpPort**: 80
12. **totPkts**: 1

Working with Custom Performance Monitors

Creating a custom performance monitor involves creating a performance object that specifies the monitoring access protocol to use, maps event attributes available for that protocol to FortiSIEM event attribute types, and then associates those attributes to an event type. You can use system or user-defined device types, event attribute types, and event types when creating the performance object. The following sections provide information about working with Performance Monitors:

- Creating a Custom Performance Monitor
- Monitoring Protocol Configuration Settings
- Mapping Monitoring Protocol Objects to Event Attributes
- Managing Monitoring of System and Application Metrics for Devices
- Examples of Custom Performance Monitors

Creating a Custom Performance Monitor

You can create Custom Performance Monitors by defining the performance object that you want to monitor, including the relationship between the performance object and FortiSIEM events and event attributes, and then associating the performance object to a device type.

In Service Provider FortiSIEM deployments, custom performance performance have to be created by the Super-/Global account, and apply to all organizations. In enterprise deployments, custom performance monitors can be created by any user who has access to the **ADMIN** tab.

Prerequisites

- You should review the configuration settings for the monitoring protocols that you will use in your monitor, and be ready to provide the appropriate OIDs, classes, or database table attributes for the access protocol.
- You should have created any new device/application types, event attributes, or event types that you want to use in your Performance Monitor.
- You should have the IP address and access credentials for a device that you can use to test the monitor.

Creating the Performance Object and Applying it to a Device

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Click **New**.
3. Enter a **Name** for the Performance Monitor.
4. For **Type**, select either **System** or **Application**.
5. For **Method**, select the monitoring protocol for the performance monitor.
   See the topics under Monitoring Protocol Configuration Settings for more information about the configuration settings for each type of monitoring protocol.
6. Click **New** next to **List of Attributes**, and create the mapping between the performance object and FortiSIEM event attributes.
   Note that the Method you select will determine the name of this mapping and the configuration options that are available. See Mapping Monitoring Protocol Objects to Event Attributes for more information.
7. Select the **Event Type** that will be monitored.
8. Enter the **Polling Frequency** for the monitor.
9. Enter a **Description**.
10. Click **Save**.
11. Under **Enter Device Type to Performance Object Association** section, click **New**.
12. Enter a **Name** for the mapping.
13. Select the **Device Type** from the drop-down for which you want to apply the monitor.
    Whenever a device belonging to the selected device type is discovered, FortiSIEM will attempt to apply the performance monitor to it.
14. Click **Perf Objects** drop-down to select or search the Performance Objects.
15. Click **Save**.

Testing the Performance Monitor

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Select the Performance Monitor.
3. Click **Test**.
4. For **IP**, enter the IP address of the device that you want to use to test the monitor.
   Testing for Multi-Tenant Deployments: If you have a Service Provider FortiSIEM, select the Supervisor or Collector where the device is monitored.
5. Click **Test**.If the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

After you have successfully tested and applied the performance monitor, you should initiate discovery of the device that it will monitor, and then make sure that the new monitor is enabled as described in Managing Monitoring of System and Application Metrics for Devices.

Monitoring Protocol Configuration Settings

These topics describe the configuration settings for monitoring Protocols such as SNMP, WMI, and JDBC that are used for creating custom Performance Monitors.

- JDBC Configuration Settings
- JMX Configuration Settings
- SNMP Configuration Settings for Custom Performance Monitors
- WMI Configuration Settings for Custom Performance Monitors
- Login Configuration Settings for Custom Performance Monitors

JDBC Configuration Settings

Use these settings when configuring JDBC as the access protocol for a custom performance monitor. You might want to review the topic Custom JDBC Performance Monitor for a Custom Table as an example of how to set up a custom performance monitor using JDBC.

Field	Setting/Notes
Method	JDBC
Database Type	Select the type of database to connect to
SQL Query	The SQL Query to execute when connecting
List of Columns	This creates the mapping between columns in the database and FortiSIEM event attributes. See Mapping Monitoring Protocol Objects to Event Attributes for more information.
Where Clause	This indicates whether the database table being queried has a fixed set of rows, or whether it is growing over time. An example of this would be a table containing logs, in which case FortiSIEM would keep track of the last entry and only pull the new ones. There are three options here: 1. There is a fixed set of rows and all rows are needed. Leave all options cleared. 2. There is a fixed set of rows and a fixed number of rows are needed. Select **Fixed records** and enter the number of required rows. 3. The table is growing and only new values are needed. Select **Retrieve all new values since last retrieve time of column**, and enter the name of the column that represents time in the database. FortiSIEM will keep track of the largest value in this column and only pull entries greater than that value during the next polling interval.
Event Type	Select the **Event Type** from the drop-down for which you want to apply the monitor. Whenever a event belonging to the selected method is discovered, FortiSIEM will attempt to apply the performance monitor to it.
Polling Frequency	Enter the **Polling Frequency** for the monitor.

JMX Configuration Settings

When configuring JMX as the monitoring protocol for a custom performance monitor, use these settings. You may also want to review the topic Custom JMX Monitor for IBM Websphere as an example of creating a custom JMX performance monitor.

Field	Setting/Notes
Method	JMX
MBean	Enter the MBean interface that you want to monitor, or click the downward arrow to browse the JMX tree and select it. Note that the option you select here will determine the objects that are available when you select an **Object Attribute** for the **List of Attributes**. See the next section in this topic for information on how to find MBeans
Event Type	Select the **Event Type** from the drop-down for which you want to apply the monitor. Whenever a event belonging to the selected method is discovered, FortiSIEM will attempt to apply the performance monitor to it.
Polling Frequency	Enter the **Polling Frequency** for the monitor.

Identifying MBean Names and Attributes for Custom Applications

This section discusses how to get MBean names and attributes for custom J2EE based applications.

1. Launch JConsole on your workstation and connect to the application.
2. Select the **MBeans** tab.
3. Browse to the application you want to monitor, and select it.
4. In the right pane, you will see the `MBeanInfo`. Note the `ObjectName`, while the attributes for the application will be listed in the tree view.

SNMP Configuration Settings for Custom Performance Monitors

When configuring SNMP as the access protocol for a custom performance monitor, use these settings. You may also want to review the topics Custom SNMP Monitor for D-Link Interface Network Statistics and Custom SNMP Monitor for D-Link HostName and SysUpTime as example of how to set up a custom performance monitor using SNMP.

Field	Settings/Notes
Method	SNMP
Parent OID	The parent Object Identifier (OID) is used to optimize the number of SNMP GETs required for pulling the various individual OIDs. You can enter this directly, or click the downward arrow to select it from an MIB file. Several different MIB files are available to select from, see Importing OID Definitions from a MIB File for more information.
Parent ID is table	Select **is table** if the OIDs you want to monitor are in a table with at least one row. An example would be interface metrics, such as `ifInOctets` and `ifOutOctets`, since there is an interface metric for each interface.

Field	Settings/Notes
List of OIDs	The OIDs you want to monitor mapped to FortiSIEM event attributes. The selection you make for **Parent OID** determines the options available in the **OID** menu when you select **New**.

Importing OID Definitions from a MIB File

Many devices include MIB files that you can then use to create a custom performance monitor for the device. This involves creating a configuration file based on information in the MIB file, using that file as input for the `mib2xml` executable, and then placing the resulting output file in the `/data/mibXml` directory of your Supervisor. Once placed in this directory, you can select the file from the **MIB File List** menu to select the parent OID, which will then also affect which OIDs you can select for the OID to event attribute mapping.

Procedure

1. Collect the device OID files you want to use and place them in a directory where the mib2XML resides.
2. Create the input config file with these fields, and name it with the `.cfg` file extension.
   See the attached alcatel.cfg file for an example. (**Note:** the link is available only in the HTML version of the User Guide.)

Field	Description
`group`	This is the number of MIB file group. MIB files must be analyzed as a group because of cross-references within them. The group attribute specifies an ID for each group and needs to be unique for every group.
`mibFile`	The name of the MIB file being analyzed. There can be multiple entries. Be sure to specify the path to the MIB files.
`vendor`	The name of the device vendor for the MIB file.
`model`	The model name or number for the device.
`evtPrefix`	As SNMP trap notification definitions in the MIB file are parsed, an event file is generated for each SNMP trap. This field specifies the event type prefix.
`enterpriseId`	The enterprise ID number for this vendor, which is used for generating the SNMP trap parser.

3. Run `mib2XML <filename>.cfg`.
4. Move the resulting `.mib.xml` file to the `/data/mibXml` directory of your Supervisor.

Example

In this example, a set of MIB files from an Alcatel 7x50 device are used to generate the XML output file. (**Note:** the following links are available only in the HTML version of the User Guide.)

1. Sample MIB files:
   TIMETRA-CHASSIS-MIB.mib
   TIMETRA-GLOBAL-MIB.mib
   TIMETRA-SYSTEM-MIB.mib

TIMETRA-TC-MIB.mib

2. Information in these files, and the paths to them, are then used to create this config file.
   alcatel.cfg
3. Running `mib2xml alcatel.cfg` generates both an output and an mib2XML file.
   alcatel.out
   TIMETRA-TC-MIB.mib.xml

WMI Configuration Settings for Custom Performance Monitors

When configuring WMI as the monitoring protocol for a custom performance monitor, use these settings. You may also want to review the topic Custom WMI Monitor for Windows Domain and Physical Registry as example of how to set up a custom performance monitor using WMI.

Field	Settings
Method	WMI
Parent Class	WMI metrics are defined in the form of a parent class having multiple attributes. For example, the parent class `Win32_ComputerSystem` has the attributes `Domain` and `TotalPhysicalMemory`.
Is Table	If the parent WMI class is a table with one or more rows, select this option.

LOGIN Configuration Settings for Custom Performance Monitors

From the **Used For** drop-down list, choose **File Monitor**, **Target File**, **Command Output Monitoring**, or **Configuration Monitoring**.

Used For: File Monitor

Field	Settings
File Path	This setting is pre-populated with the **Parent OID/Class/File Path** value.

Used For: Target File

Field	Settings
File Path	This setting is pre-populated with the **Parent OID/Class/File Path** value.
Upload Target File	Click **Upload** and browse to the file you want to upload.

Used For: Command Output Monitoring

Field	Settings
Command	
Regular Expression	Enter a regex expression.
Matched Attribute Count	
Apply Regular Expression to	Select Single Line or Multiple Lines.
List of Attributes	Click **Edit** to edit an existing attribute or **New** to create a new attribute. See Adding Attributes for Command Output Monitoring.

Used For : Configuration Monitoring

Field	Settings
Upload Expect Script	Click **Upload** to browse for the script you want to use.

Adding Attributes for Command Output Monitoring

Click **New** to add a new attribute or **Edit** to modify an existing attribute.

Field	Settings
Matched Position	
Format	Select either **INTEGER**, **DOUBLE**, or **STRING** from the drop-down list.
Type	Select **Counter** or **Raw Value** from the drop-down list.
Event Attribute	Click the drop-down list and select an event attribute from the table.
Transform	For information on adding transforms, see Creating Transforms.

Mapping Monitoring Protocol Objects to Event Attributes

When you select a monitoring protocol for your custom performance monitor, you must also establish the relationship between the objects used by that protocol and event attributes in FortiSIEM. For example, creating a performance monitor that uses SNMP to monitor a device requires that you create a mapping between the SNMP OIDs that you want to monitor, and set of event attributes. This topic describes the configuration settings that you will use to create these object-to-event attribute relationships.

1. When creating your custom performance monitor, after you have selected the **Method**, click **New** next to **List of Attributes**.
   Depending on the monitoring protocol that you select, this table may be named **List of Oids** (SNMP), or **List of Columns** (JDBC).
2. In the first field, enter or select the monitoring protocol object that you want to map to FortiSIEM event attribute. Your options depend on the monitoring protocol you selected for Method.

Monitoring Protocol	Field name	Settings/Notes
SNMP	**OID**	Select an MIB file from the **MIB File List**, and then select the OID that you want to create the mapping for.You must enter an **Event Type** and a **Polling Frequency**.
WMI	**Attributes**	Enter an attribute of the WMI class you entered for **Parent Class**. You must enter an **Event Type** and a **Polling Frequency**.
JMX	**Object Attribute**	The **MBean** you select determines the attributes you can select. You must enter an **Event Type** and a **Polling Frequency**. You will also have to enter a **Name** and **Private Key** for the MBean attribute.
JDBC	**Column Name**	Select the **Database Type**, the **SQL Query** and specify the list of columns. You must enter an **Event Type** and a **Polling Frequency**.
WINEXE	**Matched Position**	Enter the Matched Position. You must enter an **Event Type** and a **Polling Frequency**.
LOGIN	**Used For**	Select **File Monitor**, **Target File**, **Command Output Monitoring**, or **Configuration Monitoring** from the drop-down list.

3. Select the **Format** for the object attribute.
   Your options will depend on the monitoring protocol you selected for Method.
4. For **Type**, select **Raw Value** or **Counter**.
5. For **Event Attribute**, select the FortiSIEM event attribute that the monitoring protocol object should map to.
   If you must create a new event attribute, see Adding an Event Attribute.
6. Create any **Transforms** of the values returned for the monitoring protocol object.
   See the next section for more information how to configure transforms.
7. Click **Save** when you are done creating the mappings, and complete the configuration of your custom performance monitor.

Creating Transforms

You can use a transform to convert the value returned for your monitoring project object into a more physically meaningful or usable metric. You an create multiple transforms, and they will be evaluated in the order shown in the table. Multiple transforms can be selected – they are evaluated in sequential order as shown in the display table.

1. Next to **Transforms**, click **New**.
2. For **Type**, select **system** or **custom**.

3. For **Formula**, either select a system-defined transformation formula from the menu if you selected **System** for **Type**, or enter a formula if you selected **custom**.
4. Click **Save**.

You can use the **Edit**, **Delete** or **Clone** buttons to modify, remove or clone a Transform respectively.

Managing Monitoring of System and Application Metrics for Devices

When FortiSIEM discovers devices, it also discovers the system and application metics that can be monitored for each device, and displays these in the **Monitor Performance** tab of **ADMIN** > **Setup**. Here you can also disable the monitoring of specific metrics for devices, disable devices from being monitored, and change the polling interval for specific metrics. See Checking status of event pulling jobs for checking the status.

1. Go to **ADMIN > Setup > Monitor Performance**.
2. Click **Refresh** icon to make sure you have the latest list of devices.
3. To disable monitoring for a device, clear the **Enable** option for it.
4. To enable or disable monitoring of a specific metrics for a device, click a device to select it, then click **More** and select **Edit System Monitors** or **Edit App Monitors**to view the list of metrics associated with that monitor and device. You can also enable or disable the metrics for a device's monitor type by clicking on the **Edit System Monitoring** or **Edit Application Monitoring** section for the device.
5. To change the polling interval for a metric, in the **More** menu, select **Edit Intervals**. Select the **Monitor Type** and **Device**, and then set the interval.
6. When you are done making changes, click **Save**.

Examples of Custom Performance Monitors

- Custom JDBC Performance Monitor for a Custom Table
- Custom SNMP Monitor for D-Link Interface Network Statistics
- Custom JMX Monitor for IBM Websphere
- Custom SNMP Monitor for D-Link HostName and SysUpTime
- Custom WMI Monitor for Windows Domain and Physical Registry

Custom JDBC Performance Monitor for a Custom Table

- Planning
- Adding New JDBC Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Examining the Table Structure

For this example, consider two custom Oracle tables that you want to monitor.

1. A table called `HEALTH_STATIC_DEMO` that does not have time stamp as a column. The table does not grow with time, and the `HEALTH` column is updated by the application.

```
create table HEALTH_STATIC_DEMO
{
   ID        VARCHAR2 (200) not null,
   HOST_NAME NVARCHAR2 (200) not null,
   HEALTH    NVARCHAR2 (50)
}
```

2. A table called HEALTH_DYNAMIC_DEMO that has a time-stamp in the column create_time. Only records with a more recent time-stamp than previous ones have to be pulled in, and every time a new record is written, it includes a time stamp.

```
create table HEALTH_DYNAMIC_DEMO
{
   ID          VARCHAR2 (200) not null,
   HOST_NAME   NVARCHAR2 (200) not null,
   HEALTH      NVARCHAR2 (50),
   CREATE_TIME DATE not null
}
```

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **Admin > Device Support**, and select the appropriate tab(s) to start.

In this case, you only need to create two new event types to handle the contents of the two tables.

Naming Custom Event Types

All custom event types must begin with the prefix P H_DEV_MON_CUST_ .

Event Types

Name	Device Type	Priority
PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC	Generic	Low
PH_DEV_MON_CUST_JDBC_PERFORMANCE_DYNAMIC	Generic	Low

Adding New JDBC Performance Objects

Each table requires its own performance object for monitoring.

Performance Object Configuration for Static Table HEALTH_STATIC_DEMO

Field	Setting
Name	jdbc_static_perfObj
Type	Application
Method	JDBC

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Database Type</b></td><td>Oracle Database Server</td></tr>
<tr><td><b>SQL Query</b></td><td><code>select * from health_static_demo</code></td></tr>
<tr><td><b>List of Columns</b></td><td><table>
<tr><th>Column Name</th><th>Name</th><th>Format</th><th>Event Attribute</th></tr>
<tr><td>host_name</td><td></td><td>STRING</td><td>hostName</td></tr>
<tr><td>health</td><td></td><td>STRING</td><td>health</td></tr>
</table></td></tr>
<tr><td><b>Where Clauses</b></td><td>Not applicable, since the table doesn't grow over time</td></tr>
<tr><td><b>Event Type</b></td><td><code>PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC</code></td></tr>
<tr><td><b>Polling Frequency</b></td><td>180 seconds</td></tr>
</table>

Performance Object Configuration for Dynamic Table HEALTH_DYNAMIC_DEMO

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Name</b></td><td><code>jdbc_dynamic_perfObj</code></td></tr>
<tr><td><b>Type</b></td><td>Application</td></tr>
<tr><td><b>Method</b></td><td>JDBC</td></tr>
<tr><td><b>Database Type</b></td><td>Oracle Database Server</td></tr>
<tr><td><b>SQL Query</b></td><td><code>select * from health_dynamic_demo</code></td></tr>
<tr><td><b>List of Columns</b></td><td><table>
<tr><th>Column Name</th><th>Name</th><th>Format</th><th>Event Attribute</th></tr>
<tr><td>host_name</td><td></td><td>STRING</td><td>hostName</td></tr>
<tr><td>cpu_util</td><td></td><td>DOUBLE</td><td>cpuUtil</td></tr>
<tr><td>mem_util</td><td></td><td>DOUBLE</td><td>memUtil</td></tr>
<tr><td>create_time</td><td></td><td>STRING</td><td>createTime</td></tr>
</table></td></tr>
<tr><td><b>Where Clauses</b></td><td>retrieve all new values since last retrieve time of column create_time</td></tr>
<tr><td><b>Event Type</b></td><td><code>PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC</code></td></tr>
<tr><td><b>Polling Frequency</b></td><td>180 seconds</td></tr>
</table>

Associating Device Types to Performance Objects

In this example, the Oracle database runs on Microsoft Windows, so you must associate Microsoft Windows device types to the two performance objects. Because the discovered device type has to exactly match one of device types in this association for the discovery module to initiate monitoring, you must add other device types, such as Linux, if you also want to monitor Oracle databases over JDBC on those devices.

Edit Device to Performance Object

Field	Settings
Name	windows_oracle_perf_association
Device Types	• Microsoft Windows • Microsoft Windows 7 • Microsoft Windows 98 • Microsoft Windows ME • Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• jdbc_static_perfObj(JDBC) - Default Interval:3mins • jdbc_dynamic_perfObj(JDBC) - Default Interval:3mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the database server, created the IP address to credentials mapping, and tested connectivity to the server.

1. Go to **ADMIN** > **Device Support** > **Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.
3. For **IP**, enter the address of the Oracle database server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.

   You should see `succeed` under **Result**, and a parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

1. Create a structured historical search, and in the **Filter Criteria**, enter `Event Type = "PH_DEV_MON_CUST_JDBC_PERFORMANCE_STATIC"; Group by:` [None]
   This should show the entries in the `HEALTH_STATIC_DEMO` table
2. Create a structured historical search, and in the **Filter Criteria**, enter `Event Type = "PH_DEV_MON_CUST_JDBC_PERFORMANCE_SDynamic"; Group by:` [None]
   This should show the entries in the `HEALTH_DYNAMIC_DEMO` table .

Custom SNMP Monitor for D-Link Interface Network Statistics

This example shows how to create a custom performance monitor for network interface statistics for D-link switches. In this case, the result is a table, with one set of metrics for each interface.

- Planning
- Adding the D-Link SNMP Performance Object
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Matching SNMP OIDs to FortiSIEM Event Attribute Types

If you run the command `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1` against the D-Link switch, you should see an output similar to this:

```
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifIndex.2 = INTEGER: 2
IF-MIB::ifIndex.3 = INTEGER: 3
IF-MIB::ifIndex.4 = INTEGER: 4
IF-MIB::ifIndex.5 = INTEGER: 5
...
```

To get the interface index, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.1`:

```
IF-MIB::ifIndex.1 = INTEGER: 1
IF-MIB::ifIndex.2 = INTEGER: 2
IF-MIB::ifIndex.3 = INTEGER: 3
IF-MIB::ifIndex.4 = INTEGER: 4
IF-MIB::ifIndex.5 = INTEGER: 5
...
```

To get interface queue length (the `outQLen` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.21`:

```
    IF-MIB::ifOutQLen.1 = Gauge32: 0
    IF-MIB::ifOutQLen.2 = Gauge32: 0
    IF-MIB::ifOutQLen.3 = Gauge32: 0
    IF-MIB::ifOutQLen.4 = Gauge32: 0
    IF-MIB::ifOutQLen.5 = Gauge32: 0
    ...
```

To get interface speed, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.5`:

```
    IF-MIB::ifSpeed.1 = Gauge32: 1000000000
    IF-MIB::ifSpeed.2 = Gauge32: 1000000000
    IF-MIB::ifSpeed.3 = Gauge32: 1000000000
    IF-MIB::ifSpeed.4 = Gauge32: 1000000000
    IF-MIB::ifSpeed.5 = Gauge32: 1000000000
    ...
```

To get received bytes (the `recvBitsPerSec` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.10`:

```
    IF-MIB::ifInOctets.1 = Counter32: 0
    IF-MIB::ifInOctets.2 = Counter32: 1247940872
    IF-MIB::ifInOctets.3 = Counter32: 0
    IF-MIB::ifInOctets.4 = Counter32: 0
    IF-MIB::ifInOctets.5 = Counter32: 0
    ...
```

Finall,y to get sent bytes (the `sentBitsPerSec` event attribute in FortiSIEM), you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.2.2.1.16`:

```
    IF-MIB::ifOutOctets.1 = Counter32: 0
    IF-MIB::ifOutOctets.2 = Counter32: 1271371281
    IF-MIB::ifOutOctets.3 = Counter32: 0
    IF-MIB::ifOutOctets.4 = Counter32: 0
    IF-MIB::ifOutOctets.5 = Counter32: 0
    ...
```

From these outputs you can see that if you want to create a performance monitor for D-Link switch uptime, you must:

1. Create a new device type, since D-Link switches are not supported in this release.
2. Create an event type, `PH_DEV_MON_CUST_DLINK_INTF_STAT`, that will contain the event attribute types `outQLen ,  recvBitsPerSec`, and `sentBitsPerSec`, which are already part of the FortiSIEM event attribute library, and `hostNameSnmpIndx` and `intfSpeed`, which you must create.
3. Create the mapping between the SNMP OIDs and the event attributes:
    1. OID `.1.3.6.1.2.1.2.2.1.1` and `hostNameSnmpIndx`
    2. OID `.1.3.6.1.2.1.2.2.1.5` and `intfSpeed`
    3. OID `.1.3.6.1.2.1.2.2.1.21` and `outQLen`

4. OID `.1.3.6.1.2.1.2.2.1.10` and `recvBitsPerSec`
5. OID .1.3.6.1.2.1.2.2.1.16 and `sentBitsPerSec`

Creating New Device Types, Event Attributes, and Event Types

To create these items, go to **ADMIN > Device Support**, and select the appropriate tab(s) to start.

Device Type

Create a new device type with these attributes:

Field	Setting
Vendor	D-Link
Model	DGS
Version	Any
Device/App Group	**Devices > Network Devices > Router Switch**
Biz Service Group	<no selection>
Description	D-Link Switch

Event Attribute Types

Create these event attribute types:

Name	Display Name	Value Type	Display Format Type
hostSnmpIndex	Host Interface SNMP Index	INT64	<left blank>
intfSpeed	Interface Speed in bits/sec	INT64	<left blank>

Event Types

Naming Custom Event Types: All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Create this event type:

Name	Device Type	Severity
`PH_DEV_MON_CUST_INTF_STAT`	D-Link DGS	Low

Adding the D-Link SNMP Performance Object

In this case, you will create one performance object that will map the SNMP OIDs to the FortiSIEM event attribute types, and then associate them with the `PH_DEV_MON_CUST_INTF_STAT` event type. When you create the `recvBitsPerSec` and `sentBitsPerSec` mapping you will also add a sequential transform to convert the cumulative metric to a rate, and then convert bytes per second to bits per second. .

Performance Object Configuration for Event Type PH_DEV_MON_CUST_INTF_STAT

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Name</b></td><td>D-LinkIntStat</td></tr>
<tr><td><b>Type</b></td><td>System</td></tr>
<tr><td><b>Method</b></td><td>SNMP</td></tr>
<tr><td><b>Parent OID</b></td><td>.1.3.6.1.2.1.2.2.1</td></tr>
<tr><td><b>Parent OID is Table</b></td><td>Selected</td></tr>
<tr><td><b>List of OIDs</b></td><td>
<table>
<tr><th>Object Attribute</th><th>Name</th><th>Format</th><th>Type</th><th>Event Attribute</th></tr>
<tr><td>.1.3.6.1.1.2.1.2.2.1.1</td><td>IntfIndex</td><td>INTEGER</td><td>RawValue</td><td>hostSnmpIndex</td></tr>
<tr><td>.1.3.6.1.1.2.1.1.2.1.5</td><td>intfSpeed</td><td>Gauge32</td><td>RawValue</td><td>intfSpeed</td></tr>
<tr><td>.1.3.6.1.1.2.1.1.2.1.10</td><td>recvBitsPerSec</td><td>Counter32</td><td>Counter</td><td>recvBitsPerSec</td></tr>
<tr><td>.1.3.6.1.1.2.1.1.2.1.16</td><td>sentBitsPerSect</td><td>Counter32</td><td>Counter</td><td>sentBitsPerSect</td></tr>
<tr><td>.1.3.6.1.1.2.1.1.2.1.21</td><td>outInftQ</td><td>Gauge32</td><td>RawValue</td><td>OutQLen</td></tr>
</table>
</td></tr>
<tr><td><b>Event Type</b></td><td>PH_DEV_MON_CUST_INTF_STAT</td></tr>
<tr><td><b>Polling Frequency</b></td><td>60 seconds</td></tr>
</table>

Transform Formula for recvBitsPerSec and sentBitsPerSec Event Attributes

Type	Formula
system	toRate
system	BytesPerSecToBitsPerSec

Associating Device Types to Performance Objects

In this case you would only need to make one association with the D-Link DGS device you created.

Field	Settings
Name	`D-LinkPerfObj`
Device Types	• D-Link DGS
Perf Objects	• D-LinkIntfStat(SNMP) - Default Interval:1mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the D-Link device, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select the performance monitor you created, and then click **Test**.
3. For **IP**, enter the address of the device, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
Structured `Reporting IP IN <IP Range> AND Event Type =" PH_DEV_MON_CUST_INTF_STAT"; Group by: Host Name, Host Interface`	Host Name,Host Interface SNMP Index,MAX(Out Intf Queue), AVG (Intf Speed), AVG(Sent Bit Rate), AVG(Received Bit Rate)	Last 10 Minutes	All

Custom JMX Monitor for IBM Websphere

- Planning
- Adding New IBM WebSphere Performance Objects
- Associating Device Types to Performance Objects

- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

This example illustrates how to write a custom performance monitor for retrieving IBM Websphere thread, heap memory, and non-heap memory metrics.

Planning

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **ADMIN > Device Support**, and select the appropriate tab(s) to start.

In this case, the IBM Websphere device type is already supported by FortiSIEM, but you must create new event attributes and event types for the metrics you want to retrieve.

Event Attribute Types

Name	Display Name	Value Type	Display Format Type
websphere_heapPCT	WebSphere HeapPct	INT64	
websphere_numThreads	WebSphere NumThreads	INT64	
websphere_maxThreads	WebSphere MaxThreads	INT64	
websphere_threadPct	WebSphere ThreadPct	INT64	
websphere_numClass	WebSphere NumClass	INT64	
websphere_heapUsed	WebSphere HeapUsed	INT64	Bytes
websphere_heapMax	WebSphere HeapMax	INT64	Bytes
websphere_heapCommitted	WebSphere HeapCommitted	INT64	Bytes
websphere_nonHeapUsed	WebSphere NonHeapUsed	INT64	Bytes
websphere_nonHeapMax	WebSphere NonHeapMax	INT64	Bytes
websphere_nonHeapCommitted	WebSphere NonHeapCommitted	INT64	Bytes

Event Types

Naming Custom Event Types: All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity
PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY	IBM WebSphere App Server	Low
PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY	IBM WebSphere App Server	Low
PH_DEV_MON_CUST_WEBSPHERE_THREAD	IBM WebSphere App Server	Low

Adding New IBM WebSphere Performance Objects

Each of the event types requires creating a performance object for monitoring.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Name</b></td><td>websphere_heapMemory_perfObj</td></tr>
<tr><td><b>Type</b></td><td>Application</td></tr>
<tr><td><b>Method</b></td><td>JMX</td></tr>
<tr><td><b>MBean</b></td><td>java.lang:type=Memory</td></tr>
<tr><td><b>List of Attributes</b></td><td>
<table>
<tr><th>Object Attribute</th><th>Private Key</th><th>Name</th><th>Format</th><th>Event Attribute</th></tr>
<tr><td>HeapMemoryUsage</td><td>committed</td><td>committed</td><td>Long</td><td>websphere_heapCommitted</td></tr>
<tr><td>HeapMemoryUsage</td><td>used</td><td>used</td><td>Long</td><td>websphere_heapUsed</td></tr>
<tr><td>HeapMemoryUsage</td><td>max</td><td>max</td><td>Long</td><td>websphere_heapMax</td></tr>
<tr><td></td><td></td><td></td><td>Long</td><td>websphere_heapPCT</td></tr>
</table>
</td></tr>
<tr><td><b>Event Type</b></td><td>PH_DEV_MON_CUST_WEBSPHERE_HEAPMEMORY</td></tr>
<tr><td><b>Polling Frequency</b></td><td>180 seconds</td></tr>
</table>

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_THREAD

For the webSphere_threadPct**Event Attribute**, you will enter a transform as shown in the second table.

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Name</b></td><td><code>websphere_thread_perfObj</code></td></tr>
<tr><td><b>Type</b></td><td>Application</td></tr>
<tr><td><b>Method</b></td><td>JMX</td></tr>
<tr><td><b>MBean</b></td><td><code>java.lang:type=Threading</code></td></tr>
<tr><td><b>List of Attributes</b></td><td>
<table>
<tr><th>Object Attribute</th><th>Private Key</th><th>Name</th><th>Format</th><th>Event Attribute</th></tr>
<tr><td>ThreadCount</td><td></td><td>ThreadCount</td><td>Long</td><td><code>websphere_numThreads</code></td></tr>
<tr><td>PeakThreadCount</td><td></td><td>PeakThreadCount</td><td>Long</td><td><code>websphere_maxThreads</code></td></tr>
<tr><td></td><td></td><td></td><td>Long</td><td><code>websphere_threadPCT</code></td></tr>
</table>
</td></tr>
<tr><td><b>Event Type</b></td><td><code>PH_DEV_MON_CUST_WEBSPHERE_THREAD</code></td></tr>
<tr><td><b>Polling Frequency</b></td><td>180 seconds</td></tr>
</table>

Transform Formula for websphere_threadPCT Event Attribute

Click **New** next to **Transforms** in the dialog to enter the formula.

<table>
<tr><th>Field</th><th>Settings</th></tr>
<tr><td><b>Object Attribute</b></td><td>&lt;blank&gt;</td></tr>
<tr><td><b>Name</b></td><td>&lt;blank&gt;</td></tr>
<tr><td><b>Private Key</b></td><td>&lt;blank&gt;</td></tr>
<tr><td><b>Format</b></td><td>Long</td></tr>
<tr><td><b>Event Attribute</b></td><td>websphere_threadPct</td></tr>
<tr><td><b>Transforms</b></td><td>
<table>
<tr><th>Type</th><th>Formula</th></tr>
<tr><td>custom</td><td>ThreadCount*100/PeakThreadcount</td></tr>
</table>
</td></tr>
</table>

Performance Object Configuration for Event Type PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Name</b></td><td>websphere_nonHeapMemory_perfObj</td></tr>
<tr><td><b>Type</b></td><td>Application</td></tr>
<tr><td><b>Method</b></td><td>JMX</td></tr>
<tr><td><b>MBean</b></td><td>java.lang:type=Memory</td></tr>
<tr><td><b>List of Attributes</b></td><td>
<table>
<tr><th>Object Attribute</th><th>Private Key</th><th>Name</th><th>Format</th><th>Event Attribute</th></tr>
<tr><td>NonHeapMemoryUsage</td><td>used</td><td></td><td>Long</td><td>websphere_nonHeapUsed</td></tr>
<tr><td>NonHeapMemoryUsage</td><td>committed</td><td></td><td>Long</td><td>websphere_nonHeapCommitted</td></tr>
<tr><td>NonHeapMemoryUsage</td><td>max</td><td></td><td>Long</td><td>websphere_nonHeapMax</td></tr>
</table>
</td></tr>
<tr><td><b>Event Type</b></td><td>PH_DEV_MON_CUST_WEBSPHERE_NON_HEAPMEMORY</td></tr>
<tr><td><b>Polling Frequency</b></td><td>180 seconds</td></tr>
</table>

Associating Device Types to Performance Objects

In this example, IBM WebSphere runs on Microsoft Windows, so you must associate Microsoft Windows device types to the three performance objects. Because the discovered device type has to exactly match one of device types in this association for the discovery module to initiate these monitors, you must add other device types, such as Linux, if you also wanted to monitor IBM Websphere over JMX on those devices.

Edit Device to Performance Object

Field	Settings
Name	windows_oracle_perf_association
Device Types	• Microsoft Windows • Microsoft Windows 7 • Microsoft Windows 98 • Microsoft Windows ME

Field	Settings
	• Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• websphere_thread_perfObj(JMX) - Default Interval:3mins • websphere_thread_perfObj(JMX) - Default Interval:3mins • websphere_nonHeapMemory_perfObj (JMX) - Default Interval:3mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the server, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.
3. For **IP**, enter the address of the Oracle database server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test** .
   You should see `succeed` under **Result** , and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations

Structured
`Reporting IP IN <IP Range> AND Event Type CONTAIN "ph_dev_mon_cust_web";`
`Group by: [None]`
	Event Receive Time,Reporting IP, Event	Last 60 Minutes	All

Custom SNMP Monitor for D-Link HostName and SysUpTime

Although D-link switches and routers are not supported in this release of FortiSIEM, you can still use the custom monitor feature to create a system uptime event that will collect basic performance metrics like `hostName` and `SysUpTime`.

- Planning
- Adding New IBM WebSphere Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Mapping SNMP OIDs to FortiSIEM Event Attribute Types

If you run the command `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1` against the D-Link switch, you should see an output similar to this:

```
SNMPv2-MIB::sysDescr.0 = STRING: DGS-1210-48          2.00.011
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.171.10.76.11
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (157556100) 18 days, 5:39:21.00
SNMPv2-MIB::sysContact.0 = STRING:
SNMPv2-MIB::sysName.0 = STRING: SJ-Test-Lab-D-Link
SNMPv2-MIB::sysLocation.0 = STRING: San Jose
SNMPv2-MIB::sysServices.0 = INTEGER: 72
SNMPv2-MIB::sysORLastChange.0 = Timeticks: (157555949) 18 days, 5:39:19.49
```

To get sysU`ptime`, you would run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1.3`:

```
DISMAN-EVENT-MIB::sysUpTimeInstance = Timeticks: (157577770) 18 days, 5:42:57.70
```

To get `hostname`, you run `snmpwalk -v 1 -c <community> <ip> .1.3.6.1.2.1.1.5`:

```
SNMPv2-MIB::sysName.0 = STRING: SJ-Test-Lab-D-Link
```

From these outputs you can see that if you want to create a performance monitor for D-Link switch uptime, you must:

1. Create a new device type, since D-Link switches are not supported in this release
2. Create an event type, `PH_DEV_MON_CUST_DLINK_UPTIME`, that will contain the event attribute types `hostName` and `SysUpTime`, which are already part of the FortiSIEM event attribute type library.
3. Create the mapping between the SNMP OIDs and the event attributes:
   - OID `.1.3.6.1.2.1.1.5` and `hostName`.
   - OID `.1.3.6.1.2.1.1.5` and `SysUpTime`.

Creating New Device Types, Event Attribute Types, and Event Types

To create these items, go to **ADMIN > Device Support**, and select the appropriate tab(s) to start.

Device Type:

Create a new device type with these attributes:

Field	Setting
Vendor	D-Link
Model	DGS
Version	Any
Device/App Group	**Devices > Network Devices > Router Switch**
Biz Service Group	<no selection>
Description	D-Link Switch

Event Attribute Types and Event Types

Both `sysUptime` and `hostName` are included in the **Event Attribute Types**, so you only need to create a new event type, `PH_DEV_MON_CUST_DLINK_UPTIME`, that will contain them.

Naming Custom Event Types

All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity	Description
`PH_DEV_MON_CUST_DLINK_UPTIME`	D-Link DGS	0 - Low	D-Link Uptime

Adding the D-Link SNMP Performance Object

In this case, you will create one performance object that will map the SNMP OIDs to the FortiSIEM event attribute types `hostName` and `SysUptime`, and then associate them with the `PH_DEV_MON_CUST_DLINK_UPTIME` event type. When you create the `SysUpTime` mapping you will also add a transform to convert system time to centiseconds to seconds as shown in the second table.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_DLINK_UPTIME

Field	Setting
Name	D-LinkUptime
Type	System
Method	SNMP
Parent OID	.1.3.6.1.1.2.1.1

<table>
<tr><th>Field</th><th>Setting</th></tr>
<tr><td><b>Parent OID is Table</b></td><td>&lt;left cleared&gt;</td></tr>
<tr><td><b>List of OIDs</b></td><td><table>
<tr><th>Object Attribute</th><th>Name</th><th>Format</th><th>Type</th><th>Event Attribute</th></tr>
<tr><td>.1.3.6.1.1.2.1.1.5</td><td>Host Name</td><td>String</td><td>RawValue</td><td><code>hostName</code></td></tr>
<tr><td>.1.3.6.1.1.2.1.1.3</td><td>Uptime</td><td>Timeticks</td><td>RawValue</td><td><code>SysUpTime</code></td></tr>
</table></td></tr>
<tr><td><b>Event Type</b></td><td><code>PH_DEV_MON_CUST_DLINK_UPTIME</code></td></tr>
<tr><td><b>Polling Frequency</b></td><td>10 seconds</td></tr>
</table>

Transform Formula for SysUptime Event Attribute

Type	Formula
custom	uptime/100

Associating Device Types to Performance Objects

In this case you would only need to make one association with the D-Link DGS device you created.

Field	Settings
Name	`D-LinkPerfObj`
Device Types	D-Link DGS
Perf Objects	D-LinkUptime(SNMP) - Default Interval:0.17mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the D-Link device, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Performance Monitoring**.
2. Select the performance monitor you created, and then click **Test**.
3. For **IP**, enter the address of the device, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
Structured `Reporting IP IN <IP Range> AND Event Type = "PH_DEV_MON_CUST_DLINK_UPTIME"; Group by: [None]`	Event	Last 10 Minutes	All

Custom WMI Monitor for Windows Domain and Physical Registry

- Planning
- Adding New IBM WebSphere Performance Objects
- Associating Device Types to Performance Objects
- Testing the Performance Monitor
- Enabling the Performance Monitor
- Writing Queries for the Performance Metrics

Planning

Mapping Windows WMI Classes to FortiSIEM Event Attribute Types

If you run the command `wmic -U <domain>/<user>%<pwd> //<ip> "select * from Win32_ComputerSystem` against a Windows server, you will see an output similar to this:

```
CLASS: Win32_ComputerSystem
AdminPass-
wordStatus::SEP::Auto-
mat-
icMan-
agedPage-
file::SEP::Auto-
mat-
icRe-
setBootOp-
tion::SEP::Auto-
```

```
maticResetCapability::SEP::BootOptionOnLimit::SEP::BootOptionOnWatchDog::SEP::BootROMSupported::SEP::BootupState::SEP::Caption::SEP::ChassisBootupState::SEP::CreationClassName::SEP::CurrentTimeZone::SEP::DaylightInEffect::SEP::Description::SEP::DNSHostName::SEP::Domain::SEP::DomainRole::SEP::EnableDaylightSavingsTime::SEP::FrontPanelResetStatus::SEP::InfraredSupported::SEP::InitialLoadInfo::SEP::InstallDate::SEP::KeyboardPasswordStatus::SEP::LastLoadInfo::SEP::Manufacturer::SEP::Model::SEP::Name::SEP::NameFormat::SEP::NetworkServerModeEnabled::SEP::Num-
```

berOfLogicalProcessors::SEP::NumberOfProcessors::SEP::OEMLogoBitmap::SEP::OEMStringArray::SEP::PartOfDomain::SEP::PauseAfterReset::SEP::PCSystemType::SEP::PowerManagementCapabilities::SEP::PowerManagementSupported::SEP::PowerOnPasswordStatus::SEP::PowerState::SEP::PowerSupplyState::SEP::PrimaryOwnerContact::SEP::PrimaryOwnerName::SEP::ResetCapability::SEP::ResetCount::SEP::ResetLim-

```
it::SEP::Roles::SEP::Status::SEP::Sup-
portContactDe-
scrip-
tion::SEP::Sys-
temStar-
tupDelay::SEP::Sys-
temStar-
tupOp-
tion-
s::SEP::Sys-
temStar-
tupSet-
ting::SEP::Sys-
temType::SEP::ThermalState::SEP::TotalPhys-
icalMemory::SEP::UserName::SEP::WakeUpType::SEP::Workgroup

1::SEP::True::SEP::True::SEP::True::SEP::3::SEP::3::SEP::True::SEP::Normal
boot::SEP::WIN2008-ADS::SEP::3::SEP::Win32_ComputerSystem::SEP::-
420::SEP::True::SEP::AT/AT COMPATIBLE::SEP::WIN2008-
ADS::SEP::FortiSIEM.net::SEP::5::SEP::True::SEP::3::SEP::False::SEP::NULL::SEP::
(null)::SEP::3::SEP::(null)::SEP::VMware, Inc.::SEP::VMware Virtual Plat-
form::SEP::WIN2008-ADS::SEP::(null)::SEP::True::SEP::1::SEP::1::SEP::NULL::SEP::([MS_
VM_CERT/SHA1/27d66596a61c48dd3dc7216fd715126e33f59ae7],Welcome to the Virtual
Machine)::SEP::True::SEP::3932100000::SEP::0::SEP::NULL::SEP::False::SEP::0::SEP::0::S-
EP::3::SEP::(null)::SEP::Windows User::SEP::1::SEP::-1::SEP::-1::SEP::(LM_Work-
station,LM_Server,Primary_Domain_
Con-
troller,Timesource,NT,DFS)::SEP::OK::SEP::NULL::SEP::0::SEP::NULL::SEP::0::SEP::X86-
based PC::SEP::3::SEP::4293496832::SEP::FortiSIEM\Administrator::SEP::6::SEP::(null)
```

From this output you can see that the `Win32_ComputerSystem` WMI class has two attributes:

- `Domain`
- `TotalPhysicalMemory`

From these outputs you can see that if you want to create a performance monitor for Windows Domain and Physical Registry, you must:

1. Create an event type, `PH_DEV_MON_CUST_WIN_MEM`, that will contain the event attribute types `Domain` and `memTotalMB`, both of which are already contained in the FortiSIEM event attribute types library.

2. Create the mapping between the WMI class attributes and the FortiSIEM event attribute types:
   - WMI class attribute `Domain` and `Domain`.
   - WMI class attribute `TotalPhysicalMemory` (Bytes) and `memTotalMB` (type INT64). Because `TotalPhysicalMemory` returns in bytes, and `memTotalMB` is in `INT64`, a transform will be required to convert the metrics.

Creating New Device Types, Event Attributes, and Event Types

To create these items, go to **ADMIN > Device Support**, and select the appropriate tab(s) to start.

- **Device Type**
  Since Microsoft Windows is supported by FortiSIEM, you don't need to create a new device type.

- **Event Attribute Types and Event Types**
  Both `Domain` and `memTotalMB` are included in the FortiSIEM event attribute type library, so you only need to create a new event type, `PH_DEV_MON_CUST_WIN_MEM`, that will contain them.

- **Naming Custom Event Types**
  All custom event types must begin with the prefix `PH_DEV_MON_CUST_` .

Name	Device Type	Severity	Description
`PH_DEV_MON_CUST_WIN_MEM`	Microsoft Windows	0 - Low	Windows Domain and Memory

Adding the Microsoft Windows WMI Performance Object

In this case, you will create one performance object that will map the WMI Class attributes to the FortiSIEM event attribute types `Domain` and `memTotalMB`, and then associate them with the `PH_DEV_MON_CUST_WIN_MEM` event type. When you create the `memTotalMB` mapping you will also add a transform to convert bytes to INT64 as shown in the second table.

Performance Object Configuration for Event Type PH_DEV_MON_CUST_DLINK_UPTIME

Field	Setting
Name	WinMem
Type	System
Method	WMI
Parent Class	Win32_ComputerSystem
Parent Class is Table	<left cleared>

Field	Setting
List of Attributes	**Attribute** / **Format** / **Type** / **Event Attribute** Domain / String / RawValue / `domain` TotalPhysicalMemory / Integer / RawValue / `memTotalMB`
Event Type	`PH_DEV_MON_CUST_WIN_MEM`
Polling Frequency	20 seconds

Transform Formula for TotalPhysicalMemory Event Attribute Type

Type	Formula
custom	TotalPhysicalMemory/1024/1024

Associating Device Types to Performance Objects

In this example, you must associate Microsoft Windows device types to the performance object.

Edit Device to Performance Object

Field	Settings
Name	WinMisc
Device Types	• Microsoft Windows • Microsoft Windows NT • Microsoft Windows Server 2000 • Microsoft Windows Server 2003 • Microsoft Windows Server 2008 • Microsoft Windows Vista • Microsoft Windows XP
Perf Objects	• WinMem(WMI) - DefaultInterval:0.33mins

Testing the Performance Monitor

Before testing the monitor, make sure you have defined the access credentials for the server, created the IP address to credentials mapping, and tested connectivity.

1. Go to **ADMIN > Device Support > Monitoring**.
2. Select one of the performance monitors you created, and then click **Test**.

3. For **IP**, enter the address of the Microsoft Windows server, and select either the Supervisor or Collector node that will retrieve the information for this monitor.
4. Click **Test**.
   You should see `succeed` under **Result**, and the parsed event attributes in the test result pane.
5. When the test succeeds, click **Close**, and then click **Apply** to register the new monitor with the back-end module.

Enabling the Performance Monitor

1. Discover or re-discover the device you want to monitor.
2. Once the device is successfully discovered, make sure that the monitor is enabled and pulling metrics.

Writing Queries for the Performance Metrics

You can now use a simple query to make sure that that the metrics are pulled correctly. The search results should display the metrics for the event attributes you defined.

Create a structured historical search with these settings:

Filter Criteria	Display Columns	Time	For Organizations
`Host IP = <IP> AND Event Type = " PH_DEV_MON_CUST_WIN_MEM";`**`Group by:`**`[None]`	Event Receive Time,Reporting IP,Domain,Total Memory (MB)	Last 10 Minutes	All

Working with Custom Properties

FortiSIEM includes over 30+ pre-defined global threshold properties that you can edit and use in rules, but you can also create custom threshold properties.

This section provides the procedure to configure Custom Properties.

- Adding a Custom Property
- Modifying a Custom Property

Adding a Custom Property

Complete these steps to add a custom property:

1. Go to **ADMIN** > **Device Support** > **Custom Properties**.
2. Click **New**.
3. Enter a **Name** and **Display Name** for the new property.
4. Enter the **Default Value** for the threshold.
5. Select the **Value Type** of threshold value.
   For most global threshold values, select **Double**. For **Map** thresholds, which apply to disks and interfaces, select the **Item Type** for the threshold value, and select the **Component Type** to which it applies.
6. Click **Save**.

Modifying a Custom Property

Complete these steps to modify a custom property:

1. Select one or more property from the list.
2. Click the required option:
   - **Edit** to modify a property setting.
   - **Delete** to remove a property.
3. Click **Save**.

Analyzing Custom Log Files

Custom CSV formatted log files can be uploaded from the FortiSIEM GUI for detailed analysis. For this, a mapping has to be defined from the CSV file columns to the event attributes. This generates a FortiSIEM event that can be searched, similar to an externally received event.

Complete these steps to upload a custom log file for analysis:

1. Set up a Parsing template:
   a. Go to **ADMIN** > **Device Support** > **Upload File**.
   b. Click **New**.
   c. Upload the log file under **Step 1: CSV file**:
      i. Browse to select the **Sample File** to upload.
      ii. Enter the **Separator** used in the CSV file.
      iii. To include the header, select **Header**.
      iv. Click **Next**.

    d. Map the CSV file columns to the event attributes under **Step 2: Attribute Mapping**:
        i. Select the event attributes to map to the CSV file columns.
        ii. Click **Next**.
    e. Set the template details under **Step 3: Template Details**:
        i. Enter a **Name** for the Template.
        ii. The **Event Type** is automatically updated based on the name.
        iii. Enter any **Description** about the Template.
        iv. Click **Save**.
2. Upload the file.
3. Run Reports.

Creating SNMP System Object Identifiers for Devices

If a new device has to be identified using SNMP System Object Identifiers (OIDs) during discovery, you can create a device type and add the SNMP System OID or this device from the FortiSIEM UI.

Complete these steps to create SNMP Object Identifiers for device discovery:

1. Go to **ADMIN** > **Device Support** > **SNMP SysObjectId**.
2. Click **New**.
3. Select the **Device Type** from the drop-down which lists all the devices added in the system under **Device Support** > **Device/Apps**.
4. Enter the **Hardware Model** of the device.
5. Enter an **SNMP SysObjectId** for the device.
6. Click **Save**.

Configuring Local Syslog File Ingestion from a Directory

Currently, FortiSIEM handles logs either (a) sent to it via Protocols such as Syslog, SNMP trap and so on or (b) pulled from devices via Protocols such as WMI, Checkpoint LEA and so on.

FortiSIEM can process log files copied to a directory on one of the FortiSIEM nodes:

- Copy the files to a specific directory named by the reporting device IP. For Service Provider installations, create this directory on the Collector of the Organization to which these log files belong. The attribute `event_sftp_directory` in `phoenix_config.txt` defines the path. For example, to handle logs from a device with IP: `1.2.3.4`, create log files in `<event_sftp_directory>/1.2.3.4`. A typical example is `opt/phoenix/cache/syslog/1.2.3.4`.
- Each log in the files should be formatted exactly in the same way as sent by the device. If this is a new log source, a new parser may need to be defined.
- Each file should have a distinct time stamp to prevent files from being overwritten.
- Set `event_eps_limit_controls in phoenix_config.txt` to control the EPS burst.
    - If `event_eps_limit_controls` is set to '10', FortiSIEM will process 30 events from this file in 3 seconds.
    - If `event_eps_limit_controls` is set to '0', FortiSIEM will process as many log files as possible and this may inhibit the overall EPS license usage.
    - If you change a `phoenix_config.txt` parameter, then reload the parser on that node.

Note the following:

- The log file is deleted once it has been read. Keep a separate backup if required.
- The system requires write access to the log file directory in order to delete the log file once read. This is important because if the log file cannot be deleted, it is repeatedly read and consumed by FortiSIEM resulting in many duplicate events and extra EPS consumption.

Configuring Local PCAP File Ingestion from a Directory

The configure local PCAP file ingestion from a directory, take the following steps:

Update the phoenix_config file.

1. Go to `/opt/phoenix/config/`.
2. Edit the `/opt/phoenix/config/phoenix_config.txt` file as follows:

   Change:

   ```
   # FSM upgrade preserves customer changes to parameter value
   pcap_file_directory= #/opt/phoenix/cache/PCAP
   ```

   to

   ```
   # FSM upgrade preserves customer changes to parameter value
   pcap_file_directory=/opt/phoenix/cache/PCAP
   ```
3. Save the file.
4. Create and chown the directory by running the following commands.

```
[root@fortisiem ~]# mkdir /opt/phoenix/cache/PCAP
[root@fortisiem ~]# chown admin:admin /opt/phoenix/cache/PCAP
```

5. Restart the application processes to read the configuration changes using the following commands. Note that this will cause a few minutes interruption to event processing, resulting in new events received being lost as the phParser process is restarted.

```
[root@fortisiem PCAP]# phtools --stop phParser
[root@fortisiem PCAP]# phtools --start phParser
```

6. Copy the .pcap file to the directory `/opt/phoenix/cache/PCAP`, using SCP or SFTP to copy the PCAP file to the directory. **Note**: the file will be deleted once ingested, keep another copy if required.
7. Search for the PCAP data by performing an Analytics query for 'Event Type = PH_DEV_MON_PCAP_DATA'. PCAP data is written as JSON formatted events with event type `PH_DEV_MON_PCAP_DATA`. Various attributes are also parsed, and can be used in advanced queries.

Health

The following sections provide procedures to view health information:

Viewing Cloud Health

The **ADMIN** > **Health** > **Cloud Health** page displays the status of the nodes in your deployment and the processes running on them. The top frame displays all of the available clouds and the lower frame provides information about the applications that are contained in the cloud selected in the main frame.

Complete these steps to view the information about Cloud health:

1. Go to **ADMIN** > **Health** > **Cloud Health** tab.
2. Click any node in the first frame to view its process details in the second frame.
   See the FortiSIEM Back-End Processes table for more information about the system role played by each process.

First Frame

Settings	Description
Name	Name of the available clouds
IP Address	IP address of the available clouds
Module Role	Module role, for example, 'Supervisor'
Health	Current health of the cloud
Version	Current version of the cloud
Upgrade Version	Upgrade version number
Build Date	Date when the cloud was created
Cores	Number of cores
Load Average	Average load of the cloud
CPU	Percentage CPU used
Swap Size	Swap size
Swap Used	Swap used

Settings	Description
Memory Size	Maximum memory size
Memory Used	Memory used
Up Time	Total time that the cloud was in 'Up' status
Last Report Sync	Time when the report was synched previously

Second Frame

Settings	Description
Process Name	Name of the process
Status	Status of the process
Up Time	Total up time of the process
CPU	Measure of the CPU that the process is using
Event Rate	Events used each second by the process
Physical Memory	Amount of physical memory used by the process
Virtual Memory	Amount of virtual memory used by the process
SharedStore ID and SharedStore Position	SharedStore ID and position information

FortiSIEM Back-End Processes

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
Apache	Webserver for front-ending http (s) requests to AppSvr or other FortiSIEM nodes	x	x	x
AppSvr	Middleware for handling GUI requests, storing and managing PostgreSQL database and serving REST API requests	x		

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
	from FortiSIEM nodes			
DBSvr	PostgreSQL Database for storing information displayed in FortiSIEM GUI other than events	x		
Node.js-charting	Message			
Node.js-pm2				
phAgentManager	Collects logs and metrics from devices or servers using protocols other than SNMP and WMI.	x	x	x
phCheckpoint	Collects logs from Checkpoint firewalls via LEA			
phDataManager	Stores the parsed events to event store (FortiSIEM EventDB or Elasticsearch)	x	x	
phDataPurger	Archives online event store (FortiSIEM EventDB or Elasticsearch). Implements event retention policy for FortiSIEM EventDB - both online FortiSIEM EventDB and archive.	x		
phDiscover	Discovers devices using various protocols such as SNMP, WMI and SSH	x		x
phEventForwarder	Forwards events from FortiSIEM to external Systems	x	x	x
phIpIdentityMaster	Merges Identity and location audit trails from multiple phIpIdentityWorker modules to produce the final Identity and location audit trail. Stores the trail in PostgreSQL Database.			
phIpIdentityWorker	Produces Identity and location audit trail based on its own view of events	x	x	

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
phMonitor	Monitors the health of FortiSIEM processes. Distributes tasks from AppSvr to various processes on Supervisor and to phMonitor on Worker for further distribution to processes on Worker nodes.			
phParser	Parses raw events and preparses them for storing into event store (FortiSIEM EventDB or Elasticsearch)	x	x	x
phPerfMonitor	Continually collects performance monitoring and configuration change data after discovery completes	x	x	x
phQueryMaster	Handles Adhoc queries from GUI for FortiSIEM EventDB. Paralellizes queries by sending them to phQueryWorkers and merges individual results to produce the final result.	x		
phQueryWorker	Handles individual FortiSIEM EventDB queries from phQueryMaster	x	x	
phReportLoader	Loads Report data into Report Server.	x		
phReportMaster	Handles individual FortiSIEM EventDB inline reports. Produces results every 5 minutes.	x		
phReportWorker	Handles inline event reports FortiSIEM EventDB.Merges individual inline report results multiple phReportMaster modules to produce the final result. Rolls up results from 5 minute intervals to 15 minute intervals and then to 60 minute intervals.	x		
phRuleMaster	Triggers a rule in real time by evaluating rule summaries from individual phRuleWorker mod-	x		

Process	Function	Present in Supervisor	Present in Worker	Present in Collector
	ules			
phRuleWorker	Evaluates a rule in real time based on events seen by the worker and sends a summary to the phRuleMaster module	x	x	
Redis	In-memory distributed database for holding results returned by Elasticsearch and for distributing CMDB objects between Supervisor and Worker nodes.	x	x	
SVNLite	A light weight version of Subversion, this file revision management tool stores the file change history for windows/linux servers, routers/switches and windows/linux agents. **Note**: • Files are stored in `/svn/repos`. • To conserve space, files are automatically deleted when the disk gets full based on thresholds defined in `svnlite.revisions.purge` on the Supervisor.	x		

Viewing Collector Health

If your FortiSIEM deployment includes Collectors, you can monitor the status of the Collectors in the **ADMIN** > **Health** > **Collector Health** page. You can also upgrade Collectors from this page. Select a Collector and click **Show Processes** to see the processes running on that Collector. Click **Tunnels** to open a Tunnels window to view any open tunnels.
Refer to the 'FortiSIEM Back-End Processes' table below for information about the processes that run on Collectors.

The **Action** menu provides the operations you can perform on a Collector:

- **Start** - to start the Collector.
- **Stop** - to start the Collector.
- **Download Image** - to download a Collector image.
- **Install Image** - to install a Collector image.

- **Download Update** - to download a Collector image update.
- **Install Update** - to install a Collector image update.

From the Tunnels window (appears when Tunnels is selected), the following operations are available.

- **Close Tunnel** - Select a tunnel, and click **Close Tunnel** to close the tunnel.
- **Close All** - Click to close all open tunnels.

For information on the table, see Properties associated with Tunnels.

Properties Associated with Collector Health

Collector Property	Description
Organization	Name of the organization to which the Collector belongs.
Name	Name of the Collector.
IP Address	IP address of the Collector.
Status	Status of the Collector as either **Up** or **Down**.
Health	Health of the Collector based on the health of the modules running on it. If Health is **Critical**, it means that one of the modules is not running on the Collector.
Up Time	Total time that the Collector has been up.
Last Status Updated	The time when the collector last reported its status to the cloud.
Last Event Time	The time when the collector last reported events to the cloud.
Last File Received	The time when the collector last reported its performance status to the cloud.
CPU	Overall CPU utilization of the Collector.
Memory	Overall memory utilization of the Collector.
Allocated EPS	The number of events per second (EPS) dynamically allocated by the system to this collector.
Incoming EPS	The EPS that the Collector is currently seeing.
Upgrade Version	If the Collector has been upgraded, the new version.

Collector Property	Description
Build Date	Date on which the version of FortiSIEM the Collector is running on was built.
Install Status	If you upgrade the Collector, the status of the upgrade is shown here as either **Success** or **Failed**.
Download Status	If an image was downloaded to the Collector, the status of the download is shown here as **Success** or **Failed**.
Version	Version of FortiSIEM the Collector is running on.

FortiSIEM Back-End Processes

Process	Function	Used by Supervisor	Used by Worker	Used by Collector
phAgentManager	Execute event pulling job	**X**	**X**	**X**
phCheckpoint	Execute checkpoint monitoring	**X**	**X**	**X**
phDiscover	Pulling basic data from target	**X**		**X**
phEventForwarder	Responsible for forwarding events and incidents from FortiSIEM to external systems	**X**	**X**	**X**
phEventPackage	Uploading event/SVN file to Supervisor/Worker			**X**
phMonitorAgent	Monitoring other processes	**X**	**X**	**X**
phParser	Parsing event to shared store (SS)	**X**	**X**	**X**
phPerfMonitor	Execute performance job	**X**	**X**	**X**
rsyslogd	Responsible for forwarding locally generated logs to FortiSIEM	**X**	**X**	**X**

Properties Associated with Tunnels

Collector Property	Description
Host IP	The Host IP address of the tunnel.
Super Port	The supervisor port.
Protocol	The protocol used by the tunnel.
Protocol Port	The port used by the protocol.
Collector	The collector with the open tunnel.
PID	The Process ID.
Opened Time	The amount of time the tunnel is open.

Viewing Agent Health

If your FortiSIEM deployment includes agents, you can monitor the status of your Windows and Linux agents in the **ADMIN** > **Health** > **Agent Health** page.

The **Search...** field allows you to filter agents by name.

The **Columns** drop-down list allows you select what agent properties you want to appear in the table.

You can filter agents by organization that appear in the table by using the drop-down list next to the **Columns** drop-down list.

Properties Associated with Agent Health

Agent Property	Description
Name	The name of the agent device is displayed. Clicking on the name will take you to the **CMDB > Devices** page for that device, where you can edit the device's configuration or view other information.
IP Address	The IP address of the agent is displayed.
Device Type	The operating system running the agent is displayed.

Agent Property	Description
Agent Type	The agent server type is listed.
Agent Version	The version that the agent is running on is displayed.
Agent Status	The agent's current status is displayed.
Event Status	The event status reported by the agent is displayed.
Monitor Status	The monitor status is displayed. This is for performance monitoring.
Agent Policy	The name of the policy configured for the agent is displayed.
Status	The status of an agent's last action is displayed.
Discovered	The date when an agent was discovered is displayed.

Event Receive Status

Displays device receiving event status metric information.

Monitor Status

Monitor Status displays metric information based on your server and protocol configuration. See **What is Discovered and Monitored** for your specific server in the External Systems Configuration Guide for more information.
Note: This table does not appear if there is no monitoring configuration.

Viewing Replication Health

Disaster Recovery involves replicating CMDB (in PostgreSQL database), Configuration (in SVN-lite), Profiles (in SQLite database) and Event data (in FortiSIEM EventDB or Elasticsearch) from Primary to Secondary. This page shows the replication health in terms of delay in synching these databases from Primary to Secondary.

Note: This page is not continuously updated. To manually refresh, click the refresh button on the top right.

Complete these steps to view Replication health details:

1. Go to **ADMIN** > **Health** > **Replication Health** tab.

CMDB Replication	Description
Status	The status can be Critical, Warning, or Normal. **Critical**: If replication paused or delay greater than 30 minutes **Warning**: Delay between 15 minutes and 30 minutes **Normal**: Delay less than 15 minutes

CMDB Replication	Description
Last Synched	The time when PostgreSQL database was last synched.
Delay	Displays how many bytes remained to be synched and the amount of time needed to synch.

Configuration Replication	Description
Status	The status is based on the progress calculated as the ratio of Secondary Bytes and Primary Bytes. **Critical**: Progress less than 10% **Warning**: Progress between 10% and 75% **Normal**: Progress greater than 75%
Last Synched	The time when SVN-lite was last synched.
Delay	Displays how many bytes remained to be synched .

Profile Replication	Description
Status	The status is based on the progress calculated as the ratio of Secondary Bytes and Primary Bytes. **Critical**: Progress less than 10% **Warning**: Progress between 10% and 75% **Normal**: Progress greater than 75%
Last Synched	The time when SQlite was last synched.
Delay	Displays how many bytes remained to be synched .

EventDB Replication	Description
Status	The status is based on the progress calculated as the ratio of Secondary Bytes and Primary Bytes. **Critical**: Progress less than 10% **Warning**: Progress between 10% and 75% **Normal**: Progress greater than 75%
Last Synched	The time when FortiSIEM EventDB was last synched.
Delay	Displays how many bytes remained to be synched .

Elasticsearch Replication	Description
Status	The status is based on the progress calculated as the ratio of Secondary Bytes and Primary Bytes. **Critical**: Progress less than 10% **Warning**: Progress between 10% and 75% **Normal**: Progress greater than 75%
Last Synched	The time when Elasticsearch indices were last synched.
Delay	Displays how many bytes remained to be synched .

License

The following sections provide procedures to view License information:

Viewing License Information

The License displays information associated with your current FortiSIEM license under **ADMIN** > **License** > **General** tab.

The Top Heading shows you the following:

- Serial Number
- Hardware ID
- License Type
- FIPS Mode

The table displays the value and expiry date for each of the following attributes.

- Devices
- Endpoint Devices
- Additional EPS
- Total EPS
- Agents
- UEBA
- IOC Service
- Maintenance and Support

You can use the **Upload** button on the top-right to upload a new License. For more information, refer to FortiSIEM Licensing Guide.

Viewing License Usage

The **Usage** tab displays information on your license usage. Select the desired time period from the top-right drop-down to **Last 1 Hour**, **Last 1 Day**, or **Last 1 Week**.

The current License information is displayed under various tabs:

- **Device Usage** - Organization, Licensed, and Used devices
- **Agent Usage** - Organization, Windows Agents, Linux Agents, and total agents used for an organization
- **EPS Usage** - Total Licensed EPS, Used EPS and Unused Events
- **EPS Usage by Node** - EPS Usage based on each Node
- **EPS Usage by Organization** - EPS Usage based on each Organization

To print the monthly usage report, click the **Print Monthly Usage Report** button on the top-right corner.

Working with Nodes

The **Nodes** tab displays information on your existing nodes. You can refresh this page by clicking on the refresh icon. View, add, edit, or delete nodes from this page.

The Nodes table allows you to view the following information.

Settings	Description
Name	The host name of the node.
IP Address	The IP address of the node.
Mode	Displays what the node is working as - Worker or Supervisor.
DR Role	Disaster Recovery (DR) Role shows what role a node is acting as in Disaster Recovery, either **Primary** or **Secondary**.
Replication Status	Displays the status of the node. For Disaster Recovery, **Active** indicates that the Primary and Secondary nodes are in sync and that Disaster Recovery is working. If the status is **Inactive** in either

Settings	Description
	the Primary or Secondary nodes involved with Disaster Recovery, it means that the Primary and Secondary are NOT in sync, and that Disaster Recovery is not working. For a Supervisor node not in Disaster Recovery or a Worker node, the Replication Status appears as **N/A**.

The **Add** tab allows you to add nodes.

- Adding a Worker
- Adding a Secondary for Disaster Recovery

Adding a Worker

Complete these steps to add a Worker:

1. Go to **ADMIN** > **License** > **Nodes** tab.
2. Click **Add**.
3. From the **Type** drop-down list, select **Worker**.
4. In the **Worker IP Address** field, enter the Worker IP Address.
5. Click **OK**.

Note: If you are doing Real time Archive to HDFS, then remember to go to **ADMIN > Setup > Storage > Archive** and click **Test** and **Save**. This will prepare the newly added worker for real time archive.

The **Edit** tab allows you to edit a specific node.

- Editing a Worker
- Editing Supervisor/Primary
- Editing Secondary (Disaster Recovery)

Editing a Worker

Complete these steps to edit a Worker:

1. Go to **ADMIN** > **License** > **Nodes** tab.
2. Select a Worker.
3. Click **Edit**.
4. Make any changes needed.
5. Click **OK**.

Editing Supervisor/Primary

Complete these steps to edit your Supervisor:

1. Go to **ADMIN** > **License** > **Nodes** tab.
2. Select the Primary.
3. Click **Edit**.
4. Make any changes needed to the **Host Name** field.
5. Click **OK**.

Editing Secondary (Disaster Recovery)

Complete these steps to edit your Disaster Recovery Setup:

1. Go to **ADMIN** > **License** > **Nodes** tab.
2. Select the Secondary.
3. Click **Edit**.
4. Make any changes needed to the Disaster Recovery Setup. See Disaster Recovery Settings for more information.
5. Click **OK**.

The **Delete** tab allows you to delete an existing node.

Note: The Primary Node cannot be deleted.

- Deleting a Worker
- Disabling Disaster Recovery

Deleting a Worker

Complete these steps to delete a Worker:

1. Go to **ADMIN** > **License** > **Nodes** tab.
2. Select a Worker.
3. Click **Delete**.
4. Click **OK**.

Configuring Disaster Recovery

FortiSIEM enables disaster recovery by setting up two identical sites (identical number of Super, Workers, Collectors and identical Event Database - NFS/Elasticsearch) using separate licenses.

The Active site is called 'Primary' while the Passive (disaster recovery) site is called the 'Secondary'. The Passive site receives data from Primary and the system will be ready for use but remains in read only mode while the Primary is running. Once the setup is complete, CMDB (PostGreSQL DB), Config (SVN-lite), Profile data (SQLite DB) and Event DB (NFS based Event DB or Elasticsearch) are synched from the Primary to the Secondary site. Synching can be controlled via a replication frequency update interval.

The following sections provide more information about configuring disaster recovery:

- Disaster Recovery Settings
- Exporting Disaster Recovery Settings
- Importing Disaster Recovery Settings
- Disabling Disaster Recovery

For the operational details about setting up and managing FortiSIEM disaster recovery and failover, see:

- Operationalizing Disaster Recovery and Failover

Disaster Recovery Settings

Settings	Description
Host Info	
Role	Choose the site as: - 'Primary' for the main active site. - 'Secondary' for the disaster recovery site which will receive data from the Primary and the system will be ready for use only when the Primary site is down.
Host	Host name of the Primary/Secondary site.
IP	Public IP of Primary/Secondary Supervisor to communicate with each other.
UUID	Universal Unique Identifier (UUID) for Supervisors to identify the Primary and Secondary site.
Configuration and Profile Replication	
SSH Public Key	SSH Public Key is used for rsynch based data movements (for CMDB, profile database, and SVN-lite configuration).
SSH Private Key Path	Path to the SSH Private Key.
Replication Frequency	
Value	Frequency (in minutes/hours) at which the Primary and Secondary sites data are synchronized.
EventDB Replication	Allows Event Database replication from the Primary to Secondary site. If using Elasticsearch, you do not need to select the EventDB Replication checkbox.

Exporting Disaster Recovery Settings

Disaster Recovery settings can be exported to a JSON file.

Complete these steps to export an existing Disaster Recovery setting:

1. Go to **ADMIN** > **License** > **Nodes**.
2. For an existing Secondary, select the Secondary and click **Edit**.
   To create a new Secondary, click **Add**, and select **Secondary**.
3. Once the Disaster Recovery settings are defined, click **Export**.
4. Save the JSON file to your local system for future use.

Importing Disaster Recovery Settings

To set up the Primary and Secondary sites for Disaster Recovery, you can import the Disaster Recovery settings exported earlier into these sites.

Complete these steps to import Disaster Recovery settings:

1. Go to **ADMIN** > **License** > **Nodes**.
2. Click **Import** to upload the Disaster Recovery settings from a previously saved JSON file.
3. Click **Save** to update the Disaster Recovery settings to the Primary and Secondary sites.

Operationalizing Disaster Recovery and Failover

This section provides details about setting up and managing FortiSIEM disaster recovery and failover.

Prerequisites

It is recommended to use DNS names for the Supervisor to support this operation.

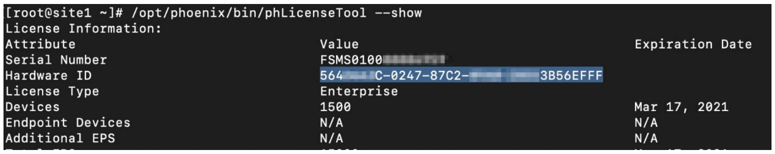
- Two separate FortiSIEM licenses - one for each site.
- The installation at both sites must be identical - workers, storage type, archive setup, hardware resources (CPU, Memory, Disk) of the FortiSIEM nodes.
- DNS Names are used for the Supervisor nodes at the two sites. Make sure that users, collectors, and agents can access both Supervisor nodes by their DNS names.
- DNS Names are used for the Worker upload addresses.
- TCP Ports for HTTPS (TCP/443), SSH (TCP/22) and PostgresSQL (TCP/5432) are open between both sites.

Set Up Disaster Recovery and Failover

Assume there are two sites, Site 1 needs to be set up as Primary, and Site 2 as Secondary.

Step 1. Collect UUID and SSH Public Key from Primary (Site 1)

1. For the UUID, obtain the Hardware ID value through an SSH session by running the following command on Site 1.
   `/opt/phoenix/bin/phLicenseTool --show`
   For example:



```
[root@site1 ~]# /opt/phoenix/bin/phLicenseTool --show
License Information:
Attribute                              Value                                   Expiration Date
Serial Number                          FSMS0100[redacted]
Hardware ID                            564[redacted]C-0247-87C2-[redacted]3B56EFFF
License Type                           Enterprise
Devices                                1500                                    Mar 17, 2021
Endpoint Devices                       N/A                                     N/A
Additional EPS                         N/A                                     N/A
```

2. Enter/paste the Hardward ID into the **UUID** field for the Site 1 FortiSIEM.
3. Under **Configuration and Profile Replication**, generate the **SSH Public Key** and **SSH Private Key Path** by entering the following in your SSH session from Site 1:

```
su – admin
ssh-keygen -t rsa -b 4096
```

   Leave the file location as default, and press enter at the passphrase prompt.
   The output will appear similar to the following:

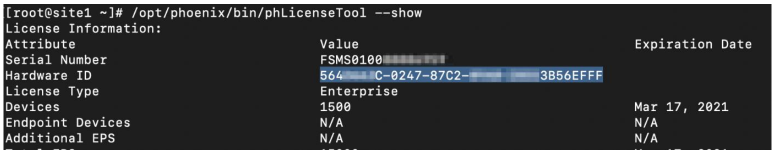
```
Generating public/private rsa key pair.
Enter file in which to save the key (/opt/phoenix/bin/.ssh/id_rsa):
Created directory '/opt/phoenix/bin/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /opt/phoenix/bin/.ssh/id_rsa.
Your public key has been saved in /opt/phoenix/bin/.ssh/id_rsa.pub.
The key fingerprint is:
a9:43:88:d1:ed:b0:99:b5:bb:e7:6d:55:44:dd:3e:48 admin@site1.fsmtesting.com
The key's randomart image is:
+--[ RSA 4096]----+
|       ....|
|       . .     E. o|
```

4. For the **SSH Public Key** enter the following command, and copy **all** of the output.
   `cat /opt/phoenix/bin/.ssh/id_rsa.pub`

Step 2. Collect UUID and SSH Public Key from Secondary (Site 2)

1. On the Site 2 FortiSIEM node, SSH as root.
2. Run the following command to get the **Hardware ID**, also known as the **UUID**. Record this Site 2 Hardware ID, as you will need it later.

```
/opt/phoenix/bin/phLicenseTool --show
```



```
[root@site1 ~]# /opt/phoenix/bin/phLicenseTool --show
License Information:
Attribute                        Value                            Expiration Date
Serial Number                    FSMS0100[redacted]
Hardware ID                      564[redacted]C-0247-87C2-[redacted]3B56EFFF
License Type                     Enterprise
Devices                          1500                             Mar 17, 2021
Endpoint Devices                 N/A                              N/A
Additional EPS                   N/A                              N/A
```

3. Generate a public key for **Site 2** by running the following commands.
   ```
   su - admin
   ssh-keygen -t rsa -b 4096
   ```

   Leave the file location as default, and press enter at the passphrase prompt. Your output will appear similar to the following.

   ```
   Generating public/private rsa key pair.
   Enter file in which to save the key (/opt/phoenix/bin/.ssh/id_rsa):
   Created directory '/opt/phoenix/bin/.ssh'.
   Enter passphrase (empty for no passphrase):
   Enter same passphrase again:
   Your identification has been saved in /opt/phoenix/bin/.ssh/id_rsa.
   Your public key has been saved in /opt/phoenix/bin/.ssh/id_rsa.pub.
   The key fingerprint is:
   a9:43:88:d1:ed:b0:99:b5:bb:e7:6d:55:44:dd:3e:48 admin@site2.fsmtesting.com
   The key's randomart image is:
   +--[ RSA 4096]----+
   |      ....|
   |      . .     E. o|
   ```
4. Enter the following command, and copy **all** of the output.
   ```
   cat /opt/phoenix/bin/.ssh/id_rsa.pub
   ```
   You will use the output as your **SSH Public Key** for Site 2 in later set up.
5. Exit the admin user in the SSH session by entering the following command:
   ```
   exit
   ```

Step 3. Set up Disaster Recovery on Primary (Site 1)

1. Navigate to **ADMIN > License > Nodes**.
2. Click **Add**.
3. On the **Add Node** window, in the **Type** drop-down list, select **Secondary (DR)**.
   The primary (Site 1) node configuration fields appear in the left column, and the secondary (Site 2) node configuration fields appear in the right column.
4. Under the Host Info Role **Primary** column, take the following steps:
   a. In the **Host** field, enter the host name of the Site 1 FortiSIEM.
   b. In the **IP** field, enter the IP of the Site 1 FortiSIEM.
   c. For the **SSH Private Key Path**, enter the following into the field:
      `/opt/phoenix/bin/.ssh/id_rsa`
   d. For **Replication Frequency**, select a value for the Site 1 FortiSIEM.
   e. Select the **EventDB Replication** check box if you would also like the Event Database to be replicated. This is **NOT** required for Elasticsearch.

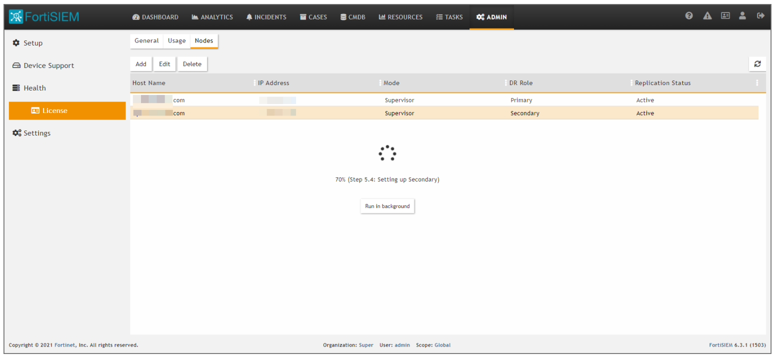
Note 1: For Local/NFS Event DB installs, this value is used for SVN and ProfileDB synchronization.

Note 2: For Local/NFS Event DB installs, `rsync` is used, and this runs continually in the background.

5. Under the Host Info Role **Secondary** column, take the following steps:
   a. In the **Host** field, enter the host name of the Site 2 FortiSIEM.
   b. In the **IP** field, enter the IP address of the Site 2 FortiSIEM.
   c. In the **UUID** field, enter/paste the Hardware ID of the Site 2 FortiSIEM that you obtained earlier.
   d. In the **SSH Public Key** field, enter/paste the SSH Public Key of the Site 2 FortiSIEM that you obtained earlier.
   e. For the **SSH Private Key Path**, enter the following into the field: `/opt/phoenix/bin/.ssh/id_rsa`
   f. Select the **EventDB Replication** check box if you would also like the Event Database to be replicated. If you are running Elasticsearch, then see the Disaster Recovery for Elasticsearch Guide here.

   Click **Export** and download a file named `replicate.json`.
   Note: This file contains all of the Disaster Recovery settings, and can be used as a backup.

6. Click **Save**.
   At this point, the Site 1 (Primary) node will begin configuration and the step and progress of the Disaster Recovery is displayed in the GUI.

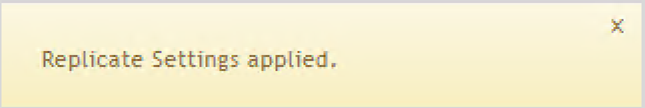


Host Name	IP Address	Mode	DR Role	Replication Status
[redacted]com	[redacted]	Supervisor	Primary	Active
[redacted]com	[redacted]	Supervisor	Secondary	Active

70% (Step 5.4: Setting up Secondary)

Copyright © 2021 Fortinet, Inc. All rights reserved. Organization: Super User: admin Scope: Global FortiSIEM 6.3.1 (1503)

When completed, the message "Replicate Settings applied." will appear.



Replicate Settings applied.

Operating FortiSIEM in Disaster Recovery Replication Mode

When operating in DR Replication mode, there are a few things to bear in mind:

- Both the Primary (Site 1) and Secondary (Site 2) nodes GUI are available for login.
- The Secondary (Site 2) is only available for read-only operations. From Secondary (Site 2), expect the following:
  - Able to view CMDB, Incidents, Cases, Tasks, Resources and all settings in the ADMIN page except the License Usage Page, etc
  - Cannot run any queries on **ANALYTICS** and all widgets on Dashboards and all report related graphs such as the License Usage Page have no data.

- Cannot do any Editing operations on all GUI pages.
- All actions related to update operations do not work.

Viewing Replication Health

Replication progress is available by navigating to **ADMIN > Health > Replication Health**. For details see here.

Handling Disaster

Log on to the Secondary as root and run

```
phsecondary2primary
```

The Secondary becomes Primary, and you can log on to the current Primary to continue your work.
Note: The process should take approximately 10 minutes to complete. Both FortiSIEM Disaster Recovery nodes become independent after running the command.

Collectors will send to the new Primary (Site2.fortisiem.acme.com) as follows:

1. Collectors will first fail to send to old Workers (part of Site1.fortisiem.acme.com).
2. Collectors will request a new Worker list from Super (now Site2.fortisiem.acme.com because of DNS change).
3. Collectors pull a new list of Workers from Site2.fortisiem.acme.com
4. Collectors will start sending events to the new Primary FortiSIEM cluster

Handling Recovery with Prior Primary

If you are able to recover the original failed Primary (Site1.fortisiem.acme.com), you can take the following steps to add it back to establish Disaster Recovery again. In this situation, the original failed Primary will become the Secondary in the Disaster Recovery setup. If you need to switch, follow the instructions in Switching the Primary and Secondary Role Positions **AFTER** completing the steps here.

1. Login to the current Primary FortiSIEM node using the GUI.
2. Navigate to **ADMIN > License > Nodes**.
3. Select the Secondary FortiSIEM node listed and click **Edit**.
4. Review the information to ensure that all the information is correct.
5. When done, click **Save**.
   The Original Primary now becomes the Secondary in your Disaster Recovery configuration.

Handling Recovery with New Hardware

If the original Primary cannot be recovered, you can add a new Secondary to establish Disaster Recovery again by taking the following steps.

1. Login to the current Primary FortiSIEM node using the GUI.
2. Navigate to **ADMIN > License > Nodes**.
3. Select the Secondary FortiSIEM node listed. It should appear with as **Inactive** in the **Status** column.
4. Click **Delete** to remove it from the Disaster Recovery configuration.
5. Click **Add** to add a new secondary.
6. Follow the instructions at Set Up Disaster Recovery and Failover to complete the set up.

Disabling Disaster Recovery

If you do not want to enable the Disaster Recovery feature, you can turn it off by taking the following steps.

1. Login to the current Primary FortiSIEM node using the GUI.
2. Navigate to **ADMIN** > **License** > **Nodes**.
3. Select the Secondary FortiSIEM node listed, and click **Delete**.
4. Click **Yes** to confirm.

Switching the Primary and Secondary Role Positions

If you need to change your Disaster Recovery setup so that the current Primary becomes Secondary and the current Secondary becomes Primary, take the following steps.

1. Login to the current Secondary FortiSIEM node as root, and run the following command:
   `phsecondary2primary`
   When the job is completed, the Secondary is now the Primary.
2. Login to the current Primary UI.
3. Navigate to **ADMIN > License > Nodes**.
4. Select the Secondary FortiSIEM node listed and click **Edit**.
5. Review the information to ensure that all the information is correct.
6. When done, click **Save**.
   The original Secondary is now Primary, and the original Primary is now Secondary in your Disaster Recovery configuration. Remember to change the DNS addresses after this role switch.

Settings

This section contains information on monitoring the health of your FortiSIEM deployment, general system settings such as language, date format, and system logos, and how to add devices to a maintenance calendar.

- System Settings
  - UI Settings
  - Email Settings
  - Collector Image Server Settings
  - Event Worker Settings
  - Query Worker Settings
  - Lookup Settings
  - Kafka Settings
  - Dashboard Slideshow Settings
- Analytics Settings
  - Scheduling Report Alerts
  - Setting Incident SNMP Traps
  - Setting Incident HTTP Notification
  - Setting Remedy Notification
  - Scheduling Report Copy

  - Setting a Subcategory
  - Setting Risk Filters
- Discovery Settings
  - Generic Settings
  - Setting CMDB Device Filter
  - Setting Application Filter
  - Setting Location
  - Setting CMDB Group
- Monitoring Settings
  - Important Processes
  - Important Ports
  - Important Interfaces
  - Excluded Disks
  - Windows WMI Pulling Template
- Event Handling Settings
  - Event Dropping
  - Event Forwarding
  - Event Organization Mapping
  - Multiline Syslog
- Event Database Settings
  - Creating Retention Policy
  - Viewing Online Event Data
  - Viewing Archive Event Data
  - Setting Elasticsearch Retention Threshold
  - Setting HDFS Retention Threshold
  - Validating Event Log Integrity
- Role Settings
  - Mapping AD Groups to Roles
- UEBA Settings
- General Settings
  - External Authentication Settings
  - Incident Notification Settings
  - External System Integration Settings
  - Escalation Settings
  - Configuring SSL Socket Certificates

System Settings

The following section describes the procedures for system settings:

- UI Settings
- Email Settings
- Collector Image Server Settings
- Event Worker Settings

- Query Worker Settings
- Lookup Settings
- Kafka Settings
- Dashboard Slideshow Settings
- Dashboard Ownership
- PAYG Report

UI Settings

There are two locations where you can change UI settings in FortiSIEM. One location is in the user profile. The other is in the administrator settings.

- User Profile UI Settings
- Administrator UI Settings

User Profile UI Settings

The initial view of FortiSIEM UI after login can be configured using the UI settings including dashboard, logos, and theme.

Click the **User Profile** icon (🪪) in the upper right corner of the UI. The dialog box contains three tabs:

Basic - Use the **Basic** tab to change your password into the system.

Contact - Use the **Contact** tab to enter your contact information.

UI Settings - Use the **UI Settings** tab to set the following:

Settings	Guidelines
Home	Select the tab which opens when you log in to the FortiSIEM UI.
Incident Home	Select the Overview, List (by Time, by Device, by Incident), Risk, Explorer, or MITRE ATT&CK (Rule Coverage, Incident Coverage, Incident Explorer) display for the **INCIDENTS** tab.
Dashboard Home	Select the Dashboard to open by default under the **DASHBOARD** tab from this drop-down list.
Dashboard Settings	Select the type of dashboards to be visible/hidden using the left/right arrows. The up/-down arrows can be used to sort the Dashboards.
Language	Specify which language will be used for the UI display. Many UI items have been translated into the languages in the drop-down list, including buttons, labels, top-level headings, and breadcrumbs. Items that are data-driven are not translated.
Theme	Select Dark or Light theme for FortiSIEM UI. Save and refresh the browser to view the

Settings	Guidelines
	change.
Date Format	Select one of the following formats for displaying date and time information. • Local/Simple Date Format - Display the time in AM/PM format. • ISO 8601 - Display the date and time in ISO 8601 format, the International Standards Organization's standard for date and time representation. • UTC - Display the date and time in Coordinated Universal Time (UTC).

When done configuring, click **Save**.

Note: All of the above settings will take effect when you log in again or when you refresh the browser in the same login session.

Administrator UI Settings

Click **ADMIN > Settings > System > UI** to access the administrator UI settings.

Settings	Guidelines
UI Logo	Click the edit icon to enter the path to the image file for the logo that will be used in the UI.
Report Logo	Click the edit icon to enter the path to the image file for the logo that will be used in reports.
Google Maps API Key	Click the edit icon to enter the API key to access Google Maps.
Login Banner	Administrators can choose a login banner to display to users after login. Click the **Enabled** checkbox to display a login banner. In the field below **Login Banner**, enter the text that you want to appear. Some simple BBCode tags are allowed in this message input: “b” - bold “i” - italic “u” - underline “url” - url HTML tags are not allowed. Nested tags are not allowed. When done, click **Save**. In addition to the banner, the user will see the following: • Last login time and IP address location • Changes to the account (if any) since last login. This includes whether the user was assigned a new role for any organization, or if a role definition has changed. Changes appear in the next login. This is a global setting for all users.

Email Settings

The system can be configured to send email as an incident notification action or send scheduled reports. Use these fields to specify outbound email server settings.

Complete these steps to customize email settings:

1. Go to **ADMIN** > **Settings** > **System** > **Email** tab.
2. Enter the following information under **Email Settings**:

Settings	Guidelines
Email Gateway Server	[Required] Holds the gateway server used for email.
Server Account ID	[Required] The account name for the gateway.
Account password	[Required] The password for the account.
Enable S/MIME	Add a check mark to enable Secure/Multipurpose Internet Mail Extensions (S/MIME) to encrypt your emails. To add a S/MIME certificate, go to **CMDB > Users > Ungrouped**, create or edit a user, select **Contact Info**, ensure the **Email** field is filled out, and upload the certificate in the **Certificate** field.
Send Without Key	Enable this option to allow emails to be sent if no S/MIME certificate key is found. If encryption is a requirement, then this option should not be selected.
Server Port	Port used by the gateway server.
Secure Connection (TLS)	Protocol used by the gateway server. This can be Exchange or SMTP.
Admin Email Ids	Email addresses for all of the admins.
Default Email Sender	Default email address of the sender.

3. Click **Test Email** button to test the new email settings.
4. Click **Save**.

Customizing the Incident Email Template

Use the following procedure to customize the incident email template.

1. Click **New** under the section **Incident Email Template**.
2. Enter the **Name** of the template.
3. Select the **Organization** from the list.
4. Enter the **Email Subject**. You can also choose the incident attribute variables from **Insert Content** drop-down as part of Email Subject.

5. Enter the **Email Body** by selecting the attribute variables from **Insert Content** drop-down into your template, rather than typing. If required, enable **Support HTML** for HTML content support.

Incident Attribute	Description
Organization	Organization to which this Incident belongs.
Status	Incident Status – Active (0), Auto Cleared (1), Manually Cleared (2), System Cleared (3)
Host Name	Host Name from Incident Target. If not found then gathered from Incident Source
Incident ID	Incident ID – assigned by FortiSIEM and is unique – this attribute has an URL which takes user to this incident after login
Incident ID Without Link	Incident ID – assigned by FortiSIEM and is unique – this attribute does not have an URL
First Seen Time	First time the incident occurred
Last Seen Time	Last time the incident occurred
Incident Category	Security, Performance, Availability or Change
Incident Severity	A number from 0-10
Incident Severity Category	HIGH (9-10), MEDIUM (5-8) and LOW (1-4)
Incident Count	Number of times the same incident has happened with the same group by parameters
Rule Name	Rule Name
Rule Remediation Note	Remediation note defined for each rule
Rule Description	Rule Description
Incident Source	Source IP, Source Name in an Incident
Incident Target	Destination IP, Destination Host Name, Host IP, Host Name, User in an Incident
Incident Detail	Any group by attribute in an Incident other than those in Incident Source and Incident Target
Affected Business Service	Comma separated list of all business services to which Incident Source, Incident Target or Reporting Device belongs

Incident Attribute	Description
Identity	Identity and Location for Incident Source
Notify Policy ID	Notification Policy ID that triggered this email notification
Triggering Attributes	List of attributes that trigger a rule – found in Rule > Sub pattern > Aggregate
Raw Events	Triggering events in raw format as sent by the device (up to 10)
Incident Cleared Reason	Value set by user when clearing a rule
Device Annotation	Annotation for the device in Incident Target – set in CMDB
Device Description	Description for the device in Incident Target – set in CMDB
Device Location	Location for the device in Incident Target – set in CMDB
Incident Subcategory	Specific for each category – as set in the Rule definition
Incident Resolution	None, True Positive, False Positive

6. Click **Preview** to preview the email template.
7. Click **Save** to apply the changes.

To set an email template as default, select the template in the list, and then click **Set as Default**. When you are creating a notification policy and must select an email template, if you leave the option blank, the default template will be used. For Service Provider deployments, to select a template as default for an Organization, first select the Organization, then set the default email template for that organization.

Collector Image Server Settings

Click **ADMIN > Settings > System > Collector Image Server** to display the location of the image updates. The **Image Download URL** field cannot be edited.

To update the image, see Upgrade Collectors in the Upgrade Guide for more information.

If the **Image Download URL** field is empty, then no image updates have been performed.

Event Worker Settings

Collectors upload events and configurations to Worker nodes. Use this field to specify the Worker host names or IP addresses.

There are three cases:

- Explicit list of Worker IP addresses or host names - Collector forwards to this list in a round robin manner.
- If you are not using Workers and using only a Supervisor and Collector(s) – specify the Supervisor IP addresses or host name. The Collectors will upload directly to the Supervisor node.

- Host name of a load balancer - Collector forwards this to the load balancer which must be configured to distribute events to the workers.

Any Hostnames specified in the Worker Upload must be resolvable by the Collector and similarly, any specified IP addresses must have connectivity from the Collector.

Complete these steps to configure Worker upload settings:

1. Go to **ADMIN** > **Settings** > **System**.
2. Click **Event Worker**.
3. Enter the IP address of the event worker under **Worker Address**.
   You can click '**+**' or '**-**' to add or remove addresses.
4. Click **Save**.

Query Worker Settings

Release 5.3 introduces the concept of a Query Worker to handle only query requests, adhoc queries from GUI, and scheduled reports. This allows more system resources to be dedicated to queries and make them run faster.

By default, all Workers are also Query Workers. If you want only a subset of Workers to be Query Workers, then complete these steps:

1. Go to **ADMIN > Settings > System**.
2. Click **Query Worker**.
3. Select the Workers you want to use from the list.
   Note: Workers will be removed automatically from the Query Worker Settings if they are explicitly listed there. If you used a load balancer or DNS name, then you must manually remove the Query Worker from those configurations.

Lookup Settings

Lookup setting can be used to find any IP or domain by providing the link.

Complete these steps for lookup:

1. Go to **ADMIN** > **Settings** > **System** > **Lookup** tab.
2. Enter the **Name**.
3. Select the **Client Type** to **IP** or **Domain**.
4. Enter the **Link** for look-up.
   You must enter "`<ip>`” in the link. FortiSIEM will replace "`<ip>`” with a proper IP during lookup.

   For example, to lookup the following URL:

   ```
   http://whois.domaintools.com/8.8.8.8
   ```

   Enter the following link in FortiSIEM:

   ```
   http://whois.domaintools.com/<ip>
   ```

5. Click **Save**.

Kafka Settings

FortiSIEM events found in system event database can be exported to an external system via Kafka message bus.

FortiSIEM supports both forwarding events to an external system via Kafka message bus as a 'Producer' and receiving events from a third-party system to FortiSIEM via Kafka message bus as a 'Consumer'.

As a Producer:

- Make sure you have set up a Kafka Cloud (here) with a specific Topic for FortiSIEM events.
- Make sure you have identified a set of Kafka brokers that FortiSIEM is going to send events to.
- Make sure you have configured Kafka receivers which can parse FortiSIEM events and store in a database. An example would be Logstash receiver (see here) that can store in an Elastic Search database.
- Supported Kafka version: 0.8

As a Consumer:

- Make sure you have set up a Kafka Cloud (here) with a specific Topic, Consumer Group and a Consumer for sending third party events to FortiSIEM.
- Make sure you have identified a set of Kafka brokers that FortiSIEM will receive events from.
- Supported Kafka version: 0.8

Setting up Consumer

Complete these steps to configure Kafka for authentication.

Note: Tested with

- kafka_2.11-0.11.0.2.tgz (Kafka 0.11, Scala 2.11)
- kafka_2.13-2.7.0.tgz (Kafka 2.7, Scala 2.13 which is the latest as of March 2021)

1. Download the source code tarball (either one).
   https://archive.apache.org/dist/kafka/0.11.0.2/kafka_2.11-0.11.0.2.tgz

   https://archive.apache.org/dist/kafka/2.7.0/kafka_2.13-2.7.0.tgz
2. Uncompress the files and enter the "config" folder.
3. Modify the configuration files by appending the following to the end of the files:

   ```
   # zookeeper.properties
   authProvider.1=org.apache.zookeeper.server.auth.SASLAuthenticationProvider
   requireClientAuthScheme=sasl
   jaasLoginRenew=3600000

   # zookeeper_jaas.conf
   Server {
   org.apache.zookeeper.server.auth.DigestLoginModule required
      user_super="zookeeper"
      user_alice="alice-secret";
   };
   Notice the last line is user_{username}="{password}"
   If the username is ‘admin’, the line will be
   user_admin="admin-password";


   # server.properties
   ```

```
host.name=192.0.2.0
port=9092
security.inter.broker.protocol=SASL_PLAINTEXT
sasl.mechanism.inter.broker.protocol=SCRAM-SHA-512
sasl.enabled.mechanisms=SCRAM-SHA-512
authorizer.class.name=kafka.security.auth.SimpleAclAuthorizer
allow.everyone.if.no.acl.found=true
auto.create.topics.enable=true
listeners=SASL_PLAINTEXT://192.0.2.10:9092
advertised.listeners=SASL_PLAINTEXT://192.0.2.10:9092
ssl.client.auth=required
Note: Change the IP addresses to actual

# kafka_server_jaas.conf
KafkaServer {
org.apache.kafka.common.security.scram.ScramLoginModule required
username="alice"
password="alice-secret"
user_alice="alice-secret";
};
Client {
org.apache.zookeeper.server.auth.DigestLoginModule required
username="alice"
password="alice-secret";
};

# kafka_client_jaas.conf
KafkaClient {
org.apache.kafka.common.security.scram.ScramLoginModule required
username="alice"
password="alice-secret"
user_alice="alice-secret";
};
Client {
org.apache.zookeeper.server.auth.DigestLoginModule required
username="alice"
password="alice-secret";
};

# consumer.properties
security.protocol=SASL_PLAINTEXT
sasl.mechanism=SCRAM-SHA-512
sasl.jaas.config=org.apache.kafka.common.security.scram.ScramLoginModule
required username="alice" password="alice-secret";
```

4. Start zookeeper.

```
cd ..
export KAFKA_OPTS="-Djava.security.auth.login.config=$(\pwd)/config/zookeeper_
```

```
jaas.conf"
bin/zookeeper-server-start.sh config/zookeeper.properties
(In another shell window)
bin/kafka-configs.sh --zookeeper localhost:2181 --alter --add-config 'SCRAM-SHA-
512=[password=alice-secret]' --entity-type users --entity-name alice
```

5. Start the server (In another shell window)

```
export KAFKA_OPTS="-Djava.security.auth.login.config=$(pwd)/config/kafka_server_
jaas.conf"
bin/kafka-server-start.sh config/server.properties
```

6. Create topic (name=test1) (In another shell window)

```
bin/kafka-topics.sh --create --topic test1 --zookeeper localhost:2181 --par-
titions 3 --replication-factor 1
```

7. Start consumer.

```
export KAFKA_OPTS="-Djava.security.auth.login.config=$(pwd)/config/kafka_client_
jaas.conf"
bin/kafka-console-consumer.sh --topic test1 --bootstrap-server=192.0.2.10:9092 -
-consumer.config=config/consumer.properties
```

   At this point, when FortiSIEM forwards events to this client, contents can be seen in the consumer window.

8. (Optional) Start producer.

```
export KAFKA_OPTS="-Djava.security.auth.login.config=$(pwd)/config/kafka_client_
jaas.conf"
bin/kafka-console-producer.sh --topic test1 --broker-list 192.0.2.10:9092 --pro-
ducer.config config/producer.properties
```

Setting Up FortiSIEM

Complete these steps for configuring Kafka settings in FortiSIEM:

1. Go to **ADMIN** > **Settings** > **System** > **Kafka** tab.
2. Click **New**.
3. Enter the **Name** and **Topic**.
4. Select or search the **Organization** from the drop-down.
5. Add **Brokers** by clicking **+** icon.
   a. Enter IP address or Host name of the broker.
   b. Enter Broker port (default 9092).
6. Click **Save**.
7. Select the **Client Type** to **Producer** or **Consumer**.
8. **I**f the Consumer is selected in step 7, enter the **Consumer Name** and **Group Name** fields.
9. Enable Authentication if you want to apply Kafka authentication by adding a checkmark to the **Authentication** checkbox, then take the following steps:
   a. **Protocol** should be set as **SASL_PLAINTEXT**.
   b. Select your authentication mechanism: **PLAIN**, **SCRAM-SHA-256**, or **SCRAM-SHA-512**.

   c. In the **User Name** field, enter the user name to authenticate for the Kafka servers.
   d. In the **Password** field, enter the password associated with the user name to authenticate for the Kafka servers.
   e. In the **Confirm Password** field, re-enter the password associated with the user name to authenticate for the Kafka servers.

10. Click **Save**.

Dashboard Slideshow Settings

Dashboard Slideshow settings are used to select a set of dashboards and display them in a slideshow mode on big monitors to cover the entire display. This is useful for Network and Security Operation Centers.

Complete these steps to create a Dashboard Slideshow:

1. Go to **ADMIN** > **Settings** > **System** > **Dashboard Slideshow** tab.
2. Click **New** to create a slideshow.
3. Enter a **Name** for the slideshow.
4. Select the **Interval** for switching between dashboards.
5. Select the **Dashboards** from the list and move to the **Selected** list.
   These dashboards will be displayed in a slideshow mode.
6. Click **Save**.

For all the above System settings, use the **Edit** button to modify or **Delete** button to remove any setting from the list.

Dashboard Ownership

Dashboard Ownership settings are used to transfer editing rights from the current owner of a shared dashboard to another person. It requires that the owner to whom the rights are being transferred to, to have the same exact role permissions as the current owner. This feature can be useful if the current owner is no longer available, and another person is required to handle the shared dashboard of that individual.

Complete these steps to transfer Dashboard Ownership:

1. Go to **ADMIN** > **Settings** > **System** > **Dashboard Ownership** tab.
2. Select the Dashboard you wish to transfer ownership of.
3. Click **Transfer**.
4. In the Transfer Ownership window, select the new owner from the **To:** drop-down list.
5. Click **Save**.

You can verify the transfer by looking at the user in the **User** column.

PAYG Report

If applicable, you can generate a daily or monthly Pay as you Go (PAYG) report.

Complete these steps to generate a daily or monthly PAYG report:

1. Go to **ADMIN** > **Settings** > **System** > **PAYG Report** tab.
2. In the **Partner ID** field, enter the Partner ID.

3. Take the following steps to enable Daily Reports.
    a. Check the Daily Report checkbox.
    b. In the **Email** field, enter the email address for a person to whom a daily report should be sent.
    c. Click **+** to add another Email field entry.
    d. Repeat steps b and c to input additional entries.
4. Take the following steps to enable Monthly Reports.
    a. Check the Monthly Report checkbox.
    b. In the **Email** field, enter the email address for a person to whom a monthly report should be sent.
    c. Click **+** to add another Email field entry.
    d. Repeat steps b and c to input additional entries.
5. When done, click **Test** to verify your email address distribution.
6. Click **Save**.
7. To enable Month Reports, click the Monthly Report checkbox. .
8. In the Transfer Ownership window, select the new owner from the **To:** drop-down list.
9. Click **Save** to finish.

Analytics Settings

The following section describes the procedures for Analytics settings:

- Scheduling Report Alerts
- Scheduling Report Copy
- Setting Incident SNMP Traps
- Setting Incident HTTP Notification
- Setting Remedy Notification
- Setting a Subcategory
- Setting Risk Filters
- Tags

Scheduling Report Alerts

You can schedule reports to run and send email notifications to specific individuals. This setting is for default email notifications that will be sent when any scheduled report is generated.

1. Go to **ADMIN** > **Settings** > **Analytics** > **Scheduled Report** tab.
2. Select the required action under **Scheduled Report Alerts** section.
    - **Do not send scheduled emails if report is empty** - Sometimes a report may be empty because there are no matching events. If you don't want to send empty reports to users, select this option. If you are running a multi-tenant deployment, and you select this option while in the Super/Global view, this will apply only to Super/Global reports. If you want to suppress delivery of empty reports to individual Organizations, configure this option in the Organizational view.
3. Enter the email address in **Deliver notification via** filed. Click **+** to add more than one email address, if needed.
4. Click **Save**.
5. To receive email notifications, go to **ADMIN** > **Settings** > **System** > **Email** and configure your mail server.

Scheduling Report Copy

Reports can be copied to a remote location when the scheduler runs any report. Note that this setting only supports copy to Linux remote directory.

1. Go to **ADMIN** > **Settings** > **Analytics** > **Scheduled Report** tab.
2. Enter the following information under **Scheduled Report Copy** section.
3. Enter the **Host** - IP address or name.
4. Enter the **Path** - absolute path, such as `/abc/def`.
5. Enter the **User Name** and **Password**, and enter **Confirm Password** to reconfirm the password.
6. Click **Test** to check the connection.
7. Click **Save**.

Note: For all of the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

Setting Incident SNMP Traps

You can define SNMP traps that will be notified when an event triggers an incident.

1. Go to **ADMIN** > **Settings** > **Analytics** > **Incident Notification** tab.
2. Enter the following information under **Incident SNMP Traps** section.
   a. **SNMP Trap IP Address**
   b. **SNMP Community String** - to authorize sending the trap to the SNMP trap IP address.
3. Select the **SNMP Trap Type** and **SNMP Trap Protocol** options.
4. Click **Test** to check the connection.
5. Click **Save**.

For the SNMP MIB definition, see here.

Setting Incident HTTP Notification

You can configure FortiSIEM to send an XML message over HTTP(s) when an incident is triggered by a rule.

1. Go to **ADMIN** > **Settings** > **Analytics** > **Incident Notification** tab.
2. Enter the following information under **Incident HTTP Notification** section.
3. For **HTTP(S) Server URL**, enter the URL of the remote host where the message should be sent.
4. Enter the **User Name** and **Password** to use when logging in to the remote host, and enter **Confirm Password** to reconfirm the password.
5. Click **Test** to check the connection.
6. Click **Save**.

Incidents are sent out in XML format. For details, see here.

Setting Remedy Notification

You can set up Remedy to accept notifications from FortiSIEM and generate tickets from those notifications.

Configuring Remedy to Accept Tickets from FortiSIEM Incident Notifications

Before configuring Remedy to accept tickets, make sure you have configured the Remedy Notifications in FortiSIEM.

1. In Remedy, create a new form, **FortiSIEM_Incident_Interface**, with the incident attributes listed in the table at the end of this topic as the form fields.
2. When you have defined the fields in the form, right-click the field and select the **Data Type** that corresponds to the incident attribute.
3. After setting the form field data type, click in the form field again to set the **Label** for the field.
4. When you are done creating the form, go to **Servers** > **localhost** > **Web Service** in Remedy, and select **New Web Service**.
5. For **Base Form**, enter **FortiSIEM_Incident_Interface**.
6. Click the **WSDL** tab.
7. For the **WSDL Handler URL**, enter `http://<midtier_server->/arsys/WSDL/public/<servername>/FortiSIEM_Incident_Interface`.
8. Click the **Permissions** tab and select **Public**.
9. Click **Save**.

You can test the configuration by opening a browser window and entering the WSDL handler URL from step 7 above, substituting the Remedy Server IP address for `<midtier_server>` and `localhost` for `<servername>`. If you see an XML page, your configuration was successful.

Incident Attributes for Defining Remedy Forms

Incident Attribute	Data type	Description
biz_service	text	Name of the business services affected by this incident
cleared_events	text	Events which cleared the incident
cleared_reason	text	Reason for clearing the incident if it was cleared
cleared_time	bigint	Time at which the incident was cleared
cleared_user	character varying (255)	User who cleared the incident
comments	text	Comments
cust_org_id	bigint	Organization id to which the incident belongs
first_seen_time	bigint	Time when the incident occurred for the first time
last_seen_time	bigint	Time when the incident occurred for the last time
incident_count	integer	Number of times the incident triggered between the first and last seen times
incident_detail	text	Incident Detail attributes that are not included in incident_

Incident Attribute	Data type	Description
		src and incident_target
incident_et	text	Incident Event type
incident_id	bigint	Incident Id
incident_src	text	Incident Source
incident_status	integer	Incident Status
incident_target	text	Incident Target
notif_recipients	text	Incident Notification recipients
notification_action_status	text	Incident Notification Status
orig_device_ip	text	Originating/Reporting device IP
ph_incident_category	character varying (255)	FortiSIEM defined category to which the incident belongs: Network, Application, Server, Storage, Environmental, Virtualization, Internal, Other
rule_id	bigint	Rule id
severity	integer	Incident Severity 0 (lowest) - 10 (highest)
severity_cat	character varying (255)	LOW (0-4), MEDIUM (5-8), HIGH (9-10)
ticket_id	character varying (2048)	Id of the ticket created in FortiSIEM
ticket_status	integer	Status of ticket created in FortiSIEM
ticket_user	character varying (1024)	Name of the user to which the ticket is assigned to in FortiSIEM
view_status	integer	View status
view_users	text	View users

Complete these steps to set up the routing to your Remedy server.

1. Go to **ADMIN** > **Settings** > **Analytics** > **Incident Notification** tab.
2. Enter the following information under **Remedy Notification** section.
3. For **WSDL**, enter the URL of the Remedy Server.
4. Enter the **User Name** and **Password** associated with your Remedy server, and enter **Confirm Password** to reconfirm the password.
5. Click **Test** to check the connection.
6. Click **Save**.

Setting a Subcategory

FortiSIEM Incidents are grouped into different categories – Availability, Change, Performance, Security and Other. A Category is assigned to every Rule and you can search any Incidents using these Categories. FortiSIEM extends this concept to include Subcategories. A Subcategory is defined for every system-defined rule. You can add a Sub-category for custom rules and also create new Subcategories. Incidents can be searched using both Categories and Subcategories.

Creating a Subcategory

1. Go to **ADMIN > Settings > Analytics > Subcategory**.
2. Select the **Category** from the left-hand panel where you want to create a Subcategory.
3. Click **Add** in the right-hand panel.
4. Enter a name for the new Subcategory.
5. Click the checkmark icon or click **Save All**.

Modifying a Subcategory

You can modify only user-defined Subcategories. You cannot modify system-defined Subcategories.

1. Select the Subcategory you want to modify.
2. Click the edit icon.
3. Modify the name in the **Subcategory** field.
4. Click the checkmark icon or **Save All**.

Deleting a Subcategory

You can delete only user-defined Subcategories. You cannot delete system-defined Subcategories.

1. Select the Subcategory you want to delete.
2. Click the **-** icon.
3. Click **Save All**.

Setting Risk Filters

A Risk Filter allows you to include or exclude certain rules from the Risk Score calculation. For more information on Risk Scores, see Risk View. (Note we also have an Entity Risk Score topic which is empty)

In the SP model, you can create a global Risk Filter or filters for individual organizations. A global Risk Filter can include only system rules, and is available to all organizations. You can create only one Risk Filter for an organization. Multiple filters are not allowed. This Risk Filter includes the filter defined for the organization itself and the global filter if one exists.

The VA model allows only one filter.

The Risk Filter view contains a table with three columns. The **Scope** column lists the organization the filter belongs to. The **Included Rules** column lists the rules that will be included in the calculation of the risk score. The **Excluded Rules** columns lists the rules that will not be included in the calculation of the Risk Score.

Creating a Risk Filter

Follow these steps to create a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Click **New**.
3. In the New Risk Filter dialog box, select **Super/Local** or the name of an organization from the **Add filter for** drop-down list.
4. Click **Next**.
5. In the next dialog box, **Include** is selected by default. Open the **Rules** tree under **Groups** and shuttle the rules you want to include in the filter from the **Rules** column to the **Selection** column.
6. Select **Exclude** and repeat the process described in the previous step to exclude rules from the filter.
7. Click **Save**. Your rule selections will appear in the **Included Rules** and **Excluded Rules** columns of the table.

Editing a Risk Filter

Follow these steps to edit a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Click **Edit**.
3. In the dialog box, **Include** is selected by default. Shuttle the rules you do not want to be included in the Risk Score from the **Selection** column to the **Rules** column.
4. Select **Exclude** and repeat the process described in the previous step to exclude rules from the filter.
5. Click **Save**.

Deleting a Risk Filter

Follow these steps to delete a Risk Filter.

1. Go to **ADMIN > Settings > Analytics > Risk Filter** to open the Risk Filter view.
2. Select the row in the table containing the filter you want to delete.
3. Click **Delete**.

Viewing Risk Filter Results

To see the impact of the filters you defined, go to **INCIDENTS**. Click the Risk icon (📈 Risk) to open the Risk View. For a description of the Risk View, see Risk View.

Tags

Tags allow you to create a keyword or phrase, the "tag", that can be associated with rules that trigger incidents. After creating a tag, you associate it with a rule (See Creating a Rule: Step 3: Define Actions). After this configuration, you can view tags on the Incidents List View page by doing any of the following.

- Add the **Tag** column to view tags that were part of a rule triggered incident.
- Search for tag related incidents by including **Incident Tag** as part of your search.

Creating a Tag

Follow these steps to create a new tag.

1. Navigate to **ADMIN > Settings > Analytics > Tags**.
2. Click **New**.
3. In the **Add New Tag** window, take the following steps:
   a. In the **Tag** field, enter your the name of the tag you wish to create.
   b. In the **Color** field, select a color for the tag: Red, Yellow, or Green.
   c. (Optional) In the **Description** field, add any information you wish to convey about the tag, such as its intent.
   d. When done, click **Save**.

At this point, you tag will be saved, and be available from the Tags drop-down list when creating or editing a Rule.

Editing a Tag

Follow these steps to edit a tag.

1. Navigate to **ADMIN > Settings > Analytics > Tags**.
2. Select the tag you wish to edit, and click **Edit**.
3. In the **Edit Tag: <*Name of Tag*>** window, make any changes to the **Tag**, **Color**, and **Description** fields.
4. When done, click **Save**.

Deleting a Tag

Follow these steps to delete a tag.

1. Navigate to **ADMIN > Settings > Analytics > Tags**.
2. Select the tag you wish to delete.
3. Click **Delete**.

Discovery Settings

The following section describes the procedures for Discovery settings:

- Generic Settings
- Setting CMDB Device Filter
- Setting Application Filter
- Setting Location
- Setting CMDB Group

Generic Settings

Before you initiate discovery, you should configure the Discovery Settings in your Supervisor as required for your deployment.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Generic** tab.
2. Enter the following information under **Generic Settings** section. In a SP deployment, you must define all these

settings for each Organization by logging in to the Organization directly.

Setting	Description
Virtual IPs	Often a common virtual IP address will exist in multiple machines for load balancing and fail-over purposes. When you discover devices, you must have these virtual IP addresses defined within your discovery settings for two reasons: • Listing the virtual IP addresses ensures that two or more devices with the same virtual IP will not be merged into one device during device discovery, so each of the load-balanced devices will maintain their separate identity in the CMDB • The virtual IP will not be used as an access IP during discovery, since the identity of the device when accessed via the virtual IP is unpredictable Enter the **Virtual IP** and click **+** to add more, if required.
Excluded Shared Device IPs	An enterprise often has servers that share credentials, for example mail servers, web proxies, and source code control servers, and a large number of users will authenticate to these servers to access their services. Providing a list of the IP addresses for these servers allows FortiSIEM to exclude these servers from user identity and location calculations in the **Analytics** > **IdentityandLocation** report. For example, suppose user A logs on to server B to retrieve his mail, and server B authenticates user A via Active Directory. If server B is not excluded, the **Analytics > Identity and Location Report** will contain two entries for user A: one for the workstation that A logs into, and also one for server B. You can eliminate this behavior by adding server B to the list of Server IPs with shared credentials. Enter the **Excluded Shared Device IPs** and click **+** to add more, if required.
Virtual Device Hardware Serial Numbers	If two or more devices have identical hardware serial number, specify them here. In general, hardware serial number is used to uniquely identify a device and therefore two devices with identical hardware serial number is merged into a single device in CMDB. If a hardware serial number is present in the Virtual Hardware Serial Numbers list, then it is excluded for merging purposes. Enter the **Virtual Device Hardware Serial Numbers** and click **+** to add more, if required.
Allow Incident Firing on	This setting allows you to control incident firings based on approved device status. If the **Approved Devices Only** option is selected, the following logic

Setting	Description
	is used: (a) If at least one Source, Destination or Host IP is approved, the incident triggers. (b) Else if at least one incident reporting device is approved, the incident triggers. (c) Else the incident does not trigger. **Note:** System devices (Super, Worker, and Collectors) will always be considered to be approved devices. In other words, incidents will fire for these system devices even if **Approved Devices Only** option is selected. Select **All Devices** or **Approved Devices Only** accordingly.

3. Click **Save**.

Setting CMDB Device Filter

This setting allows you to limit the set of devices that the system automatically learns from logs and Netflows. After receiving a log from a device, the system automatically learns that device and adds it to CMDB. When a TCP/UDP service is detected running on a server from Netflow analysis, the server along with the open ports are added to CMDB.

Sometimes, you may not want to add all of these devices to CMDB. You can create filters to exclude a specific set of devices from being added to CMDB. Each filter consists of a required **Excluded IP Range** field and an optional **Except** field.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Device Filter** tab.
2. Click **New**.
3. In the **Range Definition** dialog box, enter the following information:
    a. **Excluded IP Ranges** - A device will not be added to CMDB if it falls in the range defined in the Excluded IP Range field. For example, if you wanted to exclude the `172.16.20.0/24` network from CMDB, add a filter with `172.16.20.0-172.16.20.255` in its **Excluded IP Range** field.
    b. **Except** - This field allows you to specify some exceptions in the excluded range. For example, if you wanted to exclude the `172.16.20.0/24` network without excluding the `172.16.20.0/26` network, add a filter with `172.16.20.0-172.16.20.255` in the **Excluded IP Range** field, and `172.16.20.192-172.16.20.255` in the **Except** field.

    You can add multiple values for these fields by clicking the **+** icon or remove an entry by clicking the **-** icon.
4. Click **Save**.

Setting Application Filter

This setting allows you to limit the set of applications/processes that the system automatically learns from discovery. You may be more interested in discovering and monitoring server processes/daemons, rather than client processes, that run on a server. To exclude client processes from being discovered and listed in the CMDB, enter these applications here. An application/process will not be added to CMDB if it matches one of the entries defined in this table.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Application Filter** tab.
2. Click **New**.

3. In the **Process Definition** dialog box, enter the **Process Name** and any **Parameters** for that process that you want to filter.
   Matching is exact and case-insensitive based on Process Name and Parameter. If **Parameter** is empty, then only **Process Name** is matched.
4. Select the **Organization** from the drop-down list.
5. Click **Save**.

Setting Location

This setting allows you to set location information for devices in CMDB. Location information can be defined for a set of IP addresses. When applied, this information will overwrite the existing Location information in the CMDB. Future discoveries will not overwrite this information. Use this method to update locations of multiple devices with private IP addresses only. It is not necessary to update locations for public address space in this manner, because this information can also be obtained from a separate built-in database location.

1. Go to **ADMIN** > **Settings** > **Discovery** > **Location** tab.
2. Click **New**.
3. In the **Location Definition** dialog box, select or enter the following information:
   - Organization Type
   - IP/IP Range
   - Location
   - Update Manual Devices (This enables the system to overwrite the location information for manually defined devices in CMDB.)
4. Click **Save**.
5. Select the new location from the list and click **Apply**.

Setting CMDB Group

This setting allows you to write rules to add devices in CMDB Device Group and Business Service Groups of your choice. When a device is discovered, the policies defined here are applied and the device is assigned to the group(s) defined in the matching policies. This device grouping does not overwrite the CMDB Device group assigned during discovery. The grouping defined here is in addition to the discovery defined CMDB group.

1. Go to **ADMIN** > **Settings** > **Discovery** > **CMDB Group** tab.
2. Click **New**.
3. In the **CMDB Group Definition** dialog box, select or enter the following information:
   - **Organization** - the organization which this rule applies to
   - **Vendor** - the matching device vendor
   - **Model** - the matching device model
   - **Host Name** - matching device host name via regular expression match
   - **IP Range** - matching device access IP - format is single IP, IP range, CIDR
   - **Custom Properties** - see Grouping Devices by Custom Properties
   - **Groups** - specify the groups which the matching devices will be added to
   - **Biz Services**- specify the business services which the matching devices will be added to
4. Click **Save**.
5. Select the new CMDB group from the list and click **Apply**.

Conditions are matched in ANDed manner: Both the actions are taken, that is, if both a Group and a Business Service is specified, then the device will be added to both the specified Group and Business Service.

To apply one or more CMDB Group policies:

1. Select one or more policies and click **Apply** or click **Apply All** to apply all policies.
2. Once a policy is saved, then next discovery will apply these policies. That means, discovered devices will belong to the groups and business services defined in the policies.

Note: For all the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

Grouping Devices by Custom Properties

FortiSIEM allows you to define device groups based on IP address, host name, or device type. You can also group devices based on custom properties. These steps assume that you have already defined the custom properties you are interested in. See Working with Custom Properties.

To group devices by custom properties:

1. In the **CMDB Group Definition** dialog box, click the edit icon next to **Custom Properties**.
2. Click **+** to add a new group definition based on the custom property.
3. Select a custom property from the **Property** drop-down list.
4. Enter a **Value** for the property. You can add multiple values by clicking the **+** button.
5. Click **Save**, then click **Save** again to return to the **CMDB Group Definition** dialog box.
6. In the **Add To** section of the dialog box, select the group to which the CMDB Group will be added from the **Groups** drop-down list.

Monitoring Settings

The following sections describe the procedures for Monitoring settings:

- Important Processes
- Important Ports
- Important Interfaces
- Excluded Disks
- Windows WMI Filter

Important Processes

This setting allows you to always get process resource utilization reports and UP/DOWN alerts on a set of important processes across all device types.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Processes** tab.
2. Click **Enable**.
   This will stop monitoring all processes.
3. Click **New**.
4. Enter a **Process Name**, **Parameter**, and select an **Organization** from the drop-down.
5. Click **Save**.
6. Select the processes from the table and click **Apply**.

FortiSIEM will start monitoring only the selected processes in this tab.

7. If you want to disable this and return to ALL process monitoring, then click **Disable**.

Important Ports

This setting allows you to get TCP/UDP port UP/DOWN status only for a set of important critical ports. Always reporting UP/DOWN status for every TCP/UDP port on every server can consume a significant amount of resources. A port's UP/DOWN status is reported only if the port belongs to this list defined here.

Matching is exact based on port number and IP protocol.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Ports** tab.
2. Click **New**.
3. Enter the **Port Number** and select the **Port Type** and **Organization** from the drop-down.
4. Click **Save**.
5. Select the new ports from the list and click **Apply**.

Important Interfaces

This setting allows you to always get interface utilization reports on a set of important network interfaces across all device types.

1. Create a list of all Important interfaces.
2. Go to **ADMIN** > **Settings** > **Monitoring** > **Important Interfaces** tab.
3. Click **Enable**.
   This will stop monitoring all interfaces.
4. Click the icon left to search field to select either **Show Device Table** or **Show Interface only**.
5. Click **Select** to add the selected interface to the list. The **Critical** and **Monitor** columns will be automatically checked.
6. Check the WAN box if applicable. If checked, the interface utilization events will have the `isWAN = "yes"` attribute.
   You can use this to run a report for all WAN interfaces.
7. Select the interfaces from the table and click **Apply**.
   FortiSIEM will start monitoring only the selected interfaces in this tab.
8. If you want to disable this and return to ALL process monitoring, click **Disable**.

By default, this feature is disabled regardless of whether it is upgraded or newly installed. If this feature is disabled, FortiSIEM monitors all interface util and up/down events. The `isHostIntfCritical` attribute will be set to false for all interfaces. Only non-critical interface staying down rule may trigger. Critical interface staying down rule will have no chance to trigger. If this feature is enabled, there are two check boxes - monitor and critical. If critical is checked, monitor will be checked automatically. Monitor controls whether we must generate interface util event. We monitor interface utils events for interface whose monitor check box is selected. Critical controls whether we must generate interface up/down events. FortiSIEM monitors interface up/down events for an interface whose critical check box is selected. If one interface is marked as critical, we set the attribute of `isHostIntfCritical` to true in the generated interface util and up/down events. The Rule “critical interface staying down” will trigger on interfaces whose `isHostIntfCritical` is true. Non-critical interface staying down rule will have no chance to trigger.

Excluded Disks

This setting allows you to exclude disks from disk capacity utilization monitoring. Disk capacity utilization events will not be generated for devices matching device name, access IP and disk name. Incidents will not trigger for these events, and the disks will not show up in summary dashboards. Use this list to exclude read only disk volumes or partitions that do not grow in size and are close to full.

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Excluded Disks** tab.
2. Click **New**.
3. From the **Choose Disk** dialog box, select the device from the device group.
4. Click **Select**.
5. Select the device from the table and click **Apply**.

Windows WMI Filter

Windows can produce a very high number of system, application, and security logs. The system provides a default filter, **Get All Logs**, which returns all of the Windows logs detected. By defining a filter, you can obtain only the logs you need.

Step 1: Create the Windows WMI Filter

1. Go to **ADMIN** > **Settings** > **Monitoring** > **Windows WMI Filter** tab.
2. Click **New**.
3. Enter a name and an optional description for the filter in the New WMI Filter dialog box.
4. Click **New** to define a filter for the template:
   a. From the **Type** drop-down list, select **Application**, **Security**, or **System**.
   b. In the **Include** and **Exclude** fields, enter a comma-separated list of the event codes which should be included or excluded from the filter.
   c. Click **Save**.
5. Click **Save** again to save the Windows WMI filter.

Step 2: Apply the Filter in a Credential

1. Go to **ADMIN > Setup > Credentials**.
2. Click **New** in **Step 1: Enter Credentials**.
   a. In the Access Method Definition dialog box, select one of the Microsoft devices from the **Device Type** drop-down list.
   b. From the **Access Protocol** drop-down list, select **WMI**.
   c. From the **WMI Filter** drop-down list, select the filter created in Step 1: Create the Windows WMI Filter.
   d. Enter any other required information for the credential. For more information, see Setting Credentials.
   e. Click **Save**.
3. Click **New** in **Step 2: Enter the IP Range for Credential**.
   a. In the Device Credential Mapping Definition dialog box, enter an IP or IP range.
   b. From the **Credentials** drop-down list, select the filter created in Step 1: Create the Windows WMI Filter.
      For more information, see Associating a credential to IP ranges or hosts.
   c. Click **Save**.

Step 3: Discover Using the WMI Credential in Step 2

Any Windows Server discovery that uses that a WMI credential will only pull the logs specified in the Filter in Step 1.

Event Handling Settings

This section provides the procedures to configure Event Handling.

- Event Dropping
- Event Forwarding
- Event Organization Mapping
- Multiline Syslog

Event Dropping

Some devices and applications generate a significant number of logs, which may be very verbose, contain little valuable information, and consume storage resources. You can configure Event Dropping rules that will drop events just after they have been received by FortiSIEM, preventing these event logs from being collected and processed. Implementing these rules may require some thought to accurately set the event type, reporting device, and event regular expression match, for example. However, dropped events do not count towards licensed Events per Second (EPS), and are not stored in the Event database. Dropped events also do not appear in reports, and do not trigger rules. You can also specify that events should be dropped but stored, so event information will be available for searches and reports, but will not trigger rules. An example of an event type that you might want to store but not have trigger any rules would be an IPS event that is a false positive.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Dropping** tab.
2. Click **New**.
3. Deselect **All** and click the drop-down next to **Reporting Device** and browse the folders to select the device group or individual devices for which you must create a rule.
4. Click **Save**.
5. Deselect **All** and click the drop-down next to **Event Type** and browse the folders to find the group of event types, or a specific event type for which you must create a rule.
6. Click **Save**.
7. Enter **Source IP** or **Destination IP** that you want to filter. The value can be IP range.
8. Select the **Action** that should be taken when the event dropping rule is triggered from the available options.
    - Drop event - Event is dropped and not counted towards licensed EPS.
    - Store event - Event is stored and counted towards licensed EPS
        - Do not trigger rules - this means that FortiSIEM will store events, but will not trigger rules. Events are available for reporting.
        - Drop attributes - to select the attributes to drop, click the edit icon. In the **Event Dropping Rule > Drop Attribute** window, from the left pane, select the attribute(s) you want dropped and click the **>** icon. Dropped attributes appear in the **Selected Attributes** column. When done, click **Save**. Only attributes in the left pane are stored. Stored event attributes are available for reporting.
          Note: You can move dropped attributes so they are stored attributes by selecting them from the **Selected Attributes** column and clicking the **<** icon. When done, click **Save**.
9. For **Regex Filter**, enter any regular expressions you want to use to filter the log files.
   If any matches are made against your regular expression, then the event will be dropped.

10. Enter any **Description** for the rule.
11. Click **Save**.

Notes:

- All matching rules are implemented by FortiSIEM, and inter-rule order is not important. If you create a duplicate of an event dropping rule, the first rule is in effect.
- If you leave a rule definition field blank, then that field is not evaluated. For example, leaving **Event Type** blank is the same as selecting **All Event Types**.
- FortiSIEM drops the event at the first entry point. If your deployment uses Collectors, events are dropped by the Collectors. If your deployment doesn't use Collectors, then the event will be dropped by the Worker or Supervisor where the event is received.
- You can use the report System Event Processing Statistics to view the statistics for dropped events. When you run the report, select AVG(Policy Dropped Event Rate (/sec) as one of the dimensions for Chart to see events that have been dropped to this policy.

Event Forwarding

In systems management, many servers may need access to forward logs, traps and Netflows from network devices and servers, but it is often resource intensive for network devices and servers to forward logs, traps and Netflows to multiple destinations. For example, most Cisco routers can forward Netflow to two locations at most. However, FortiSIEM can forward/relay specific logs, traps and Netflows to one or more destinations. A Super, Worker or Collector can forward events - the one which receives and parses the event forwards it. If you want to send a log to multiple destinations, you can send it to FortiSIEM, which will use an event forwarding rule to send it to the desired locations. If you only want the workers (or super) to forward events, after this configuration, see Event Forwarding by Worker.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Forwarding** tab.
2. Click **New**.
3. Select the **Organization** for which the rule will apply.
4. Click the drop-down next to **Reporting Device** and browse the folders to find the group of devices, or a specific device for which you must create a rule.
5. Click the drop-down next to **Event Type** and browse the folders to find the group of event types, or a specific event type for which you must create a rule.
6. Click **Save**.
7. Select the **Traffic Type** to which the rule should apply.
8. For **Source IP**, enter the IP address of the device that will be sending the logs.
9. For **Destination IP**, enter the IP address of the device to which the logs are sent.
10. For **Severity**, select an operator and enter a severity level that must match for the log to be forwarded.
11. For **Regex Filter**, enter any regular expressions you want to use to filter the log files.
    If any matches are made against your regular expression, then the event will be forwarded.
12. Select the forwarding **Protocol** from the drop-down.
    - **UDP** - If you use this protocol, events may be lost.
    - **TCP** - This method ensures reliability.
    - **TCP over SSL** - This method ensures reliability and security. See Note 3 below.

13. Based on your selection of **Traffic Type**, enter the following information:
    a. Enter the **IP** address in **Forward to** > **IP**.
    b. Select the **Port** number in **Forward to** > **Port** field.
    c. Select a **Forward to** > **Protocol** from the drop-down list.
    d. Select the **Forward to** > **Format**:
       - **Incoming** - outgoing format is same as incoming.
       - **CEF** - outgoing events are CEF formatted. See here for details on CEF formatted logs.
14. Click **Save**.

Notes:

1. If you want the same sender IP to forward events to multiple destinations, create a rule for each destination.
2. FortiSIEM will implement all rules that you create and enable, so if you create a duplicate of an event forwarding rule, two copies of the same log will be sent to the destination IP.
3. If you want to use public CA certificates for TCP over SSL communication, then note the following:
   - FortiSIEM's SSL library can validate an external system’s certificate if it is signed by a public CA.
   - If the external system wants to verify the FortiSIEM node's certificate, then you need to add the following certificate and key to the `phoenix_config.txt` file of the FortiSIEM nodes forwarding the event.

```
[BEGIN phEventForwarder]
tls_certificate_file= #/opt/phoenix/bin/.ssh/my_cert.crt
…
tls_key_file= #/opt/phoenix/bin/.ssh/my_cert.key
[END]
```

Event Forwarding by Worker

There may be situations where you may not want to forward events from collectors to your target device. Fortinet allows you to forward events when workers (or super) receives collector event information. To configure this, go to **ADMIN** > **Settings** > **Event Handling** > **Forwarding** tab, and add a checkmark to the **Forward From Worker** checkbox. If there is more than one collector per org, this feature will forward events by workers for all collectors.

Event Organization Mapping

FortiSIEM can handle multi-tenant reporting devices that already have Organization names in the events they send, for example, VDOM attribute in FortiGate. This section shows how to map Organization names in external events to those in FortiSIEM. FortiSIEM will create a separate reporting device in each Organization and associate the events to the reporting device in the corresponding FortiSIEM Organization.

This feature requires that:

- One or more (multi-tenant) Collectors are created under Super-Local Organization.
- Multi-tenant devices send logs to the multi-tenant Collectors under Super-Local Organization.

Follow the steps below:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping** tab.
2. Click **New**.
3. Select or search the **Device Type** of the sender from the drop-down.
   This has to be a device that FortiSIEM understands and able to parse events.

4. Select or search the **Event Attribute** that contains the external organization name from the drop-down. FortiSIEM will map the value in this field to the FortiSIEM Organization.
5. Select or search the multi-tenant **Collectors** under Super-Local Organization that will receive the events from the drop-down.
   To include all Collectors, select **All Collectors**.
6. Specify the **IP/IP Range** of the multi-tenant devices that are sending events.
   Only a single IP or an IP Range is allowed, for example, 10.1.1.1 or 10.1.1.1-10.1.1.2. Comma-separated values, such as 10.1.1.1,10.1.1.2, are not allowed.
7. Click the edit icon next to **Org Mapping** to map an organization to an event.
   - Click on any **Event Organization** cell in the **Event Organization Mapping** dialog box to edit. Click **Save**.
8. Click **Save**.

Note: Do not define overlapping rules - make sure there are no overlaps in (Collector, Reporting IP/Range, Event Attribute) between multiple rules.

Multiline Syslog

Often applications generate a single syslog in multiple lines. For analysis purposes, the multiple lines must be put together into a single log. This feature enables you to do that. User can write multiple multiline syslog combining rules based on reporting IP and begin and ending patterns. All matching syslog within the begin and ending pattern are combined into a single log.

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Multiline Syslog** tab.
2. Click **New**.
3. Enter or select the following information:
   a. **Organization** - syslog from devices belonging to this Organization will be combined to one line.
   b. **Sender IP** - the source of the syslog. Format is a single IP, IP range, CIDR and a combination of the above separated by comma.
   c. **Protocol** - TCP or UDP since syslog can come via either of these protocols.
   d. **Begin Pattern** - combining syslog starts when the regular expression specified here is encountered.
   e. **End Pattern** - combining syslog stops when the regular expression specified here is encountered.
4. Click **Save**.

Note: For all the above configurations, use the **Edit** button to modify any setting or **Delete** to remove any setting.

The current conception is only for UDP, which is different from TCP. If a single event is sent by multiple UDP packets, you need a multiline rule to combine them. Otherwise, FortiSIEM treats them as multiple events. If a continuous TCP stream contains multiple events, you need a multiline rule to separate them. Otherwise, FortiSIEM treats LF (new line character \n) as the separator.

Event Database Settings

The following sections provide more information about the Event Database settings:

Creating Retention Policy

The life cycle of an event in FortiSIEM begins in the online event database, before moving to the Archive data store. You can set up retention policies to specify which events are retained, and for how long, in the online event database and the archive.

- Creating Online Event Retention Policy
- Creating Offline (Archive) Retention Policy

Creating Online Event Retention Policy

Online event retention policies specify which events are retained, and for how long, in the online event database.

Note: **This is applicable only for NFS and Local Storage.**

1. Go to **ADMIN** > **Settings** > **Database** > **Retention Policy**.
2. Under **Online Retention Policy**, click **New**.
3. Select **Enabled** if the policy has to be enforced immediately.
4. Choose the **Organizations** for which the policy must be applied (for service provider installations). Select **All** if it should apply to all organizations.
5. Choose the **Reporting Devices** to apply this policy using the edit icon and click **Save**.
6. Choose the **Event Type** or event type groups to apply this policy and click **Save**.
7. Enter or select the **Time Period** in days that the event data specified by the conditions (Organizations, Reporting Devices and Event Type) should be held in the online storage before it is moved to archive or purged.
8. Enter any **Description** related to the policy.
9. Click **Save**.

Consider the following when implementing online event retention policies:

- Implementing an online event policy requires selectively deleting specific events from the database and then re-indexing the database for the affected days. This is expensive in terms of time and performance. Therefore, do not define excessively fine-grained retention policies, because this will affect database performance.
- Policies are enforced only at the end of day – this means that events are deleted and re-indexed only at the end of the day. This minimizes the impact on database performance, because the database usage should be low at that time.
- Policies are enforced only from the day the policy is first created. It can be expensive to automatically apply retention policies on potentially large amount of historical events. It is advisable to manually enforce the retention policies by running the command: `EnforceRetentionpolicy <DATES>`, where `DATES` is a comma-separated list of dates or date-range on which to enforce the policy. `DATES` is specified as the number of days since the UNIX epoch began: 1970-01-01. A date-range is the range specified by two dates inclusively separated by "-". For example, run the command `EnforceRetentionpolicy 16230,16233-16235` to imply "enforce retention policies" on the online event database on these dates: 6/8/2014 and from 6/11/2014 to 6/13/2014.
  Note: You must run `EnforceRetentionpolicy` as an admin user.
- FortiSIEM will attempt to retain the events in the online event database according to the policies. However, if the low storage threshold is hit (20GB, by default), then the events from the earliest day are moved to archive.

- If an event has remained in the online event database for the time period in the event retention policy, then the event is moved to the archive at the end of the day.
- If an event does not match any online event retention policy, then it remains in the online event database until the low storage threshold (20GB, by default) is reached. The event is then moved to the archive.
- If the archive mount point is defined, then ALL events are moved from online to archive. Nothing is purged.
- If the archive is not reachable after multiple retries, then FortiSIEM is forced to purge the event because there is nowhere to store the event.

Creating Offline (Archive) Retention Policy

These policies specify which events are retained, and for how long, in the archive.

1. Go to **ADMIN** > **Settings** > **Database** > **Retention Policy**.
2. Under **Offline Retention Policy**, click **New** to create a new policy.
3. Select the **Organization** this policy applies to.
4. Enter the **Time Period** in days for archive retention.
5. Click **Save**.

Consider the following when implementing offline (archive) event retention policies:

- Policies are enforced only at the end of the day.
- FortiSIEM will attempt to retain the events in the archive according to the policies. However, if the low storage threshold is hit (20GB, by default), then the events which occurred earliest in the day are purged.
- Policies are enforced only from the day the policy is written. It can be expensive to automatically apply retention policies on potentially large amounts of historical events. It is advisable to manually enforce the retention policies by running the command: `TestDiskUChecker purge` *`<archive mount point> <orgId> <StartPurgeDateEpoch>`* where *`archive mount point`* is the full path to the location where data is stores, *`orgID`* is the ID of the organization and *`StartPurgeEpoch`* is the number of days since the UNIX epoch began.
- If an event has remained in the archive for the time period in the event retention policy, then the event is purged at the end of the day.
- If an event does not match any archive retention policies, then it stays in the archive until the low storage threshold (20GB, by default) is reached. It is then purged.

Viewing Online Event Data Usage

Online Event Data Usage enables you to see a summarized view of online event data usage. This view enable you to manage storage more effectively by writing appropriate event dropping policies or online event retention policies.

The Online Event Data Usage is displayed in tree view under **ADMIN** > **Settings** > **Database** > **Online Data** grouped by the year and dates for NFS/Local storage. For Elasticsearch-based deployments, if the storage is set per Organization, the usage is displayed specific to each Organization grouped by year and dates. You can drill-down from the year to view the usage for any specific date. You can also click on the **Expand All** checkbox to view all the available storage information.

Viewing Archive Event Data

The event database archived data is displayed in tree view grouped by Organization and archive dates.

Complete these steps to view archived data:

1. Go to **ADMIN** > **Settings** > **Database** > **Archive Data**.
2. Search the **Archived Data** by Organization in the search box and drill-down to find the specific data by specific dates from the tree view.

Setting Native Elasticsearch Retention Threshold (Online Settings)

FortiSIEM offers space based thresholds, or a combination of space based thresholds and index lifecycle management (ILM) thresholds based on time duration limits for Native Elasticsearch. When ILM is available, events are moved from Hot to Warm (Warm age phase) and from Warm to Cold (Cold age phase), based on which policy, space threshold or age threshold, occurs first. Ensure you review the latest What's New section for any Elasticsearch limitations. Configure your Elasticsearch retention threshold by following the appropriate instructions after configuring your Elasticsearch deployment.
Note: AWS Elasticsearch and Cloud Elasticsearch do not have the ability to allow control over Hot/Cold storage configuration. **Online Settings only work for Native Elasticsearch**.

- Configuring Native Elasticsearch Retention Threshold

Configuring Native Elasticsearch Retention Threshold

Complete these steps to configure Native Elasticsearch free space and age retention threshold:

1. Go to **ADMIN > Settings > Database > Online Settings**.
2. Select the low percentage threshold, high percentage threshold, and age under:
   a. **Hot Node - Free Space Threshold** - Events are moved to Warm nodes based on the first occurrence of one of the following:
      - When the Hot node cluster disk free space falls below **Low value**, then events are moved to Warm nodes until the Hot node cluster disk free space reaches **High value**.
      - If the time duration limit set under Hot **Age** (the Warm age phase) is met, all events under this limit are moved to Warm nodes.
        If Warm node policy is not defined, but Cold is defined, then events are moved to Cold.

   b. **Warm Node - Free Space Threshold** - Events are moved to Warm nodes based on the first occurrence of one of the following:
      - When the Warm node cluster disk free space falls below **Low value**, then events are moved to Cold nodes until the Warm node cluster disk free space reaches **High value**.
      - If the time duration limit set under Warm **Age** (the Cold age phase) is met, all events under this limit are moved to Cold nodes.
        Note: In the fsiem_ilm_policy, the cold age phase is reflected as a sum of the warm age phase and cold age phase UI values.

   c. **Cold Node - Free Space Threshold** - When the Cold node cluster disk free space reaches **Low value**, then:
      - If Archive is defined, then events are archived until Cold node cluster disk free space reaches **High value**.
      - If Archive is not defined, events are purged until the Cold node cluster disk free pace reaches **High value**.

   d. **Archive Threshold** - Events are archived. When **Archive Mount Point** disk free space reaches **Low value**, then events are purged until disk free space reaches **High value**.
      Note: Archive must be configured in order for **Archive Threshold** to appear as an option.
3. Click **Save**.

Setting HDFS Retention Threshold

Complete these steps to configure the HDFS retention threshold:

1. Go to **ADMIN > Settings > Database > Archive Data**.
2. Select the low and high percentage thresholds under **Archive Threshold**. If HDFS disk utilization falls below **Low value**, then events are purged until disk utilization reaches **High value**.

Validating Event Log Integrity

Security auditors can validate that archived event data has not been tampered using the **Event Integrity** function of event database management.

Note: This setting is not available for Elasticsearch.

Viewing Event Log Integrity Status

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. Use the following filters to view the event log integrity:
   a. For a specific time using the **From** and **To** fields.
   b. Based on the status of event integrity using the **Status** drop-down:
      - Not Validated - the event integrity has not been validated yet.
      - Successful - the event integrity has been validated and the return was success. This means that the logs in this file were not altered.
      - Failed - the event integrity has been validated and the return was failed. This means that the logs in this file were altered.
      - Archived - the events in this file were archived to offline storage.
      - Purged - the log event is removed from the log.
      - Restored - the event is restored to the log file.

   The event log integrity table is automatically updated with the applied filters.

Columns	Description
Start Time	The earliest time of the messages in this file. The file does not contain messages that were received by FortiSIEM before this time.
End Time	The latest time of the messages in this file. The file does not contain messages that were received by FortiSIEM after this time.
Category	• **Internal**: these messages were generated by FortiSIEM for its own use. This includes FortiSIEM system logs and monitoring events such as the ones that begin with `PH_DEV_MON`.

Columns	Description
	• **External**: these messages were received by FortiSIEM from an external system. • **Incident**: these corresponds to incidents generated by FortiSIEM.
File Name	Name of the log file.
Events	Number of events in the file.
Algorithm	Checksum algorithm used for computing message integrity.
Checksum	Value of the checksum.
Status	Event log integrity validation status.
File Location	File location: • **Local**: Local to Supervisor node. • **External**: means external to Supervisor node, for example, on NFS storage.

Validating Event Log Integrity

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. To validate the event log integrity of:
   a. Single event log - select the event log and click **Validate**.
   b. Multiple event logs - use **Ctrl**/**Command** keys to select the event logs and click **Validate**.
   c. All logs at a time - click **Validate All**.

The validation **Status** of the event log(s) will be updated in the list. The Validation History of any selected event log can be viewed under **Action** > **Validation History**.

Exporting Event Log Integrity Status

1. Go to **ADMIN** > **Settings** > **Database** > **Event Integrity**.
2. To generate and download the file in PDF or CSV format, select the event log from the list and click **Export**. Use **Ctrl**/**Command** keys to select multiple event logs.

UEBA Settings

The integration with FortiInsight brings User Entity Behavior Analysis (UEBA) to FortiSIEM. Previous versions provided the integration via an API, requiring two separate installations. This integration needs only a single installation with no overlapping functionality.

The AI module runs on Super and Worker nodes. All Agent activity is routed to one node in a sticky manner. If a Worker is down, Agent events are routed to another Worker. If a Worker is added, then new Agents are routed to that Worker. Additionally, AI models are now persisted across AI module restarts.

AI alerts can be monitored in the **UEBA** View in the **INCIDENTS** page. See UEBA View.

- Setting UEBA Higher Risk Entities
- Setting UEBA Tags

For more information on FortiInsight, see the FortiInsight Administration Guide.

Setting UEBA Higher Risk Entities

UEBA Higher Risk Entities allow you to prioritize AI alerts that are most relevant to you by increasing the weight of events to High. This weighting will influence the AI model, similar to UEBA Tags. You can identify high-risk or business-critical entities, including file types, file paths, users, and groups.

Follow these steps to specify important entities:

1. Click **ADMIN > Settings > Analytics > UEBA Higher Risk Entities**.
2. The **UEBA Higher Risk Entities** dialog box contains the following fields. All of the fields are optional. In each field, use the **+** and **-** buttons to add or remove entries.
   - **File Types** - Enter the type of file you want to monitor, for example, `.exe`.
   - **File Paths** - Enter the path to the folder you want to monitor.
   - **User Accounts** - Enter the name of the Windows Agent-side user account you want to monitor.
   - **Group Names** - Enter the name of the Windows Agent-side group you want to monitor.
3. Click **Save**.

Setting UEBA Tags

FortiInsight attempts to categorize anomalous events using tags. AI inspects the events for specific characteristics, as defined in the AI tag definitions, and applies the appropriate tags to events that match. Setting tags in FortiSIEM allow you to identify the FortiInsight tags that you want FortiSIEM to monitor.

Follow these steps to set tags:

1. Click **ADMIN > Settings > Analytics > UEBA Tags**.
2. Provide values for the following fields:
   a. **Enabled** - Select this option to allow FortiSIEM to monitor the alert.
   b. **ID** (required) - A user-defined ID. Only these characters are allowed: **a-z**, **A-Z**, **0-9**, and the underbar character (_).
   c. **Name** (required) - The user-defined name for the entity. Only these characters are allowed: **a-z**, **A-Z**, **0-9**, and white space.
   d. **Description** - An optional description of the alert.

   e. **Weight** - Select a value from the drop-down list. The values follow the categories defined for FortiInsight. The values can range from **Never Alert** (-5) to **Always Alert** (+5).
   f. **Rules**
      i. **Field** - Choose a value from the drop-down list. Available values are **Machine ID**, **User**, **Application**, **Activity**, **Resource**, and **Resource Filename**.
      ii. **Relation** - Choose a value from the drop-down list. Available values are **=**, **!=**, **CONTAIN**, **NOT CONTAIN**, **MATCH**, **NOT MATCH**, **START WITH**, **NOT START WITH**, **END WITH**, and **NOT END WITH**.
      iii. **Value** - A comma-separated list of values. These values can be user-defined or you can use values found in the FortiInsight AI alerts.
      iv. Click **+** or **-** to add or delete rows in the **Rules** list.
3. Click **Save**.

PCI Compliance Policy

This screen allows you to view, create, edit, or delete payment card industry (PCI) logging policies.

- Viewing PCI Policies
- Adding a PCI Logging Policy
- Editing a PCI Logging Policy
- Deleting a PCI Logging Policy

Viewing PCI Policies

The PCI table shows the following PCI attribute information.

PCI Logging Attribute	Description
Device Group Name	The name of the device group with a PCI logging policy.
Authentication	Provides information on last authentication event, if enabled.
FIM	Provides information on last file integrity monitoring (FIM) event, if enabled.
Change	Provides information on when the last change occurred, if enabled.

Adding a PCI Logging Policy

You can create a new PCI logging policy by taking the following steps:

1. From **ADMIN > Settings > Compliance > PCI**, click **New**.
2. From the **Device Group Name** drop-down list, select a device group.
3. Enable your preferred options by checking the appropriate checkboxes. When an option is selected, from the drop-down list, select the report you want the information to be generated from.
   a. Need Authentication
   b. Need FIM

c. Need Change

4. Click **Save** when done.

Editing a PCI Logging Policy

You can edit a PCI logging policy by taking the following steps:

1. From **ADMIN > Settings > Compliance > PCI**, select an existing policy and click **Edit**.
2. Make any changes to your existing PCI logging policy, and click **Save** when done.

Deleting a PCI Logging Policy

You can delete a PCI logging policy by taking the following steps:

1. From **ADMIN > Settings > Compliance > PCI**, select an existing policy and click **Delete**.
2. Click **Yes** to confirm.

General Settings

- External Authentication Settings
- Incident Notification Settings
- External System Integration Settings
- Escalation Settings
- Mapping AD Groups to Roles
- Configuring SSL Socket Certificates

External Authentication Settings

This screen allows you to define servers for external user authentication. Once one or more authentication server profiles have been defined, users of the system can be configured to be authenticated locally, or by one or more of these external authentication servers. To configure a user for external authentication, select that user from the **CMDB > Users** screen, and select **External** as the authentication mode. If more than one authentication profile is associated with a user, then the servers will be contacted one by one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.

The following section describes the procedure to configure External Authentication Settings:

- Adding External Authentication Settings
- Modifying External Authentication Settings

Adding External Authentication Settings

Prerequisites

The following sections provide prerequisites steps before setting up external authentication in FortiSIEM.

Note: RADIUS and Okta follow the same authentication set up process.

- Adding Users from Active Directory via LDAP
- Adding Users from Okta
- Configuring FortiSIEM for SAML Overview
- Adding 2-Factor Authentication via Duo Security
- Authenticating Users Against FortiAuthenticator (FAC) via RADIUS

Adding Users from Active Directory via LDAP

If you want to add users to your FortiSIEM deployment from an Active Directory server over LDAP, you must first add the login credentials for your server and associate them to an IP range, and then run the discovery process on the Active Directory server. If the server is discovered successfully, then all the users in that directory will be added to your deployment. You then must set up an authentication profile, which will become an option you can associate with users as described in Adding Users.

- Creating Login Credentials and Associate with an IP Address
- Discovering the Active Directory Server and Users

Creating Login Credentials and Associating with an IP Address

1. Log in to your Supervisor node.
2. Go to **ADMIN** > **Setup** > **Credentials**.
3. Click **New**.
4. Enter a **Name**.
5. For **Device Type**, select **Microsoft Windows**.
6. Select your **Access Protocol.**
   FortiSIEM supports these LDAP protocols:

Protocol	Settings
LDAP	[Required] IP Host - Access IP for LDAP Port - Non-secure version on port 389
LDAPS	[Required] IP Host - Access IP for LDAPS Port - Secure version on port 636
LDAP Start TLS	[Required] IP Host - Access IP for LDAP Start TLS Port - Secure version on port 389

7. For **Used For**, select **Microsoft Active Directory**.
8. For **Base DN**, enter the root of the LDAP user tree.
9. Enter the **NetBIOS/Domain** for your LDAP directory.
10. Enter the **User Name** for your LDAP directory.
    For user discovery from OpenLDAP, specify the full DN as the user name. For Active Directory, use your server login name.
11. Enter and confirm the **Password** for your **User Name**.
12. Click **Save**.
    Your LDAP credentials will be added to the list of **Credentials**.
13. Under **Enter IP Range to Credential Associations**, click **Add**.

14. Select your LDAP credentials from the list of **Credentials**. Click **+** to add more.
15. Enter the **IP/IP Range** or host name for your Active Directory server.
16. Click **Save**.
    Your LDAP credentials will appear in the list of credential/IP address associations.
17. Click **Test** > **Test Connectivity** to make sure you can connect to the Active Directory server.

Discovering the Active Directory Server and Users

1. Go to **ADMIN** > **Setup** > **Discovery**.
2. Click **New**.
3. For **Name**, enter **Active Directory**.
4. For **Include Range**, enter the IP address or host name for your Active Directory server.
5. Leave all the default settings, but clear the **Discover Routes** under **Options**.
6. Click **OK**.
   Active Directory will be added to the list of discoverable devices.
7. Select the Active Directory device and click **Discover**.
8. After discovery completes, go to **CMDB > Users** to view the discovered users.
   You may need to click **Refresh** for the user tree hierarchy to load.

Adding Users from Okta

Follow the procedures below to add users from Okta.

Configuring Okta Authentication

To use Okta authentication for your FortiSIEM deployment, you must set up a SAML 2.0 Application in Okta, and then use the certificate associated with that application when you configure external authentication.

1. Log into Okta.
2. In the **Applications** tab, create a new application using **Template SAML 2.0 App**.
3. Under **Settings**, configure the settings similar to the table below:

Post Back URL	Post Back URL
Application label	FortiSIEM Demo
Force Authentication	Enable
Post Back URL	https://<FortiSIEMIP>/phoenix/okta
Name ID Format	EmailAddress
Recipient	FortiSIEM
Audience Restriction	Super
authnContextClassRef	PasswordProtectedTransport

Post Back URL	Post Back URL
Response	Signed
Assertion	Signed
Request	Uncompressed
Destination	https://<FortiSIEMIP>/phoenix/okta

4. Click **Save**.
5. In the **Sign On** tab, click **View Setup Instructions**.
6. Click **Download Certificate**.
7. Follow the instructions above and enter the downloaded certificate for Okta authentication.

Creating an Okta API Token

1. Log in to Okta using your Okta credentials.
2. Got to **Administration** > **Security** > **API Tokens**.
3. Click **Create Token**.
   You will use this token when you set up the Okta login credentials in the next section. Note that this token will have the same permissions as the person who generated it.

Creating Login Credentials and Associating Them with an IP Address

1. Log in to your Supervisor node.
2. Go to **ADMIN** > **Setup** > **Credentials**.
3. Click **New**.
4. Enter a **Name**.
5. For **Device Type**, select **OKTA.com OKTA**.
6. For **Access Protocol**, select **OKTA API**.
7. Enter the **Pull Interval** in minutes.
8. Enter the **Domain** associated with your Okta account.
   For example, `FortiSIEM.okta.com`.
9. Enter and reconfirm the **Security Token** you created.
10. Enter any related information in **Description**.
11. Click **Save**.
    Your Okta credentials will be added to the list of **Credentials**.
12. Under **Enter IP Range to Credential Associations**, click **New**.
13. Enter the **IP/IP range** or host name for your Okta account.
14. Select your Okta credentials from the list of **Credentials**. Click **+** to add more.
15. Click **Save**.
    Your Okta credentials will appear in the list of credential/IP address associations.
16. Click **Test** > **Test Connectivity** to make sure you can connect to the Okta server.

Discovering Okta Users

If the number of users is less than 200, then Test Connectivity will discover all the users. Okta API has some restrictions that do not allow FortiSIEM to pull more than 200 users. In this case, follow these steps:

1. Log in to **Okta**.
2. Download user list CSV file (OktaPasswordHealth.csv) by visiting **Admin** > **Reports** > **Okta Password Health**.
3. Rename the CSV file to `all_user_list_%s.csv`. (`%s` is the placeholder of token obtained in Create an Okta API Token - Step 3, e.g. `all_user_list_00UbCrgrU9b1Uab0cHCuup-5h-6Hi9I-tokVDH8nRRT.csv`).
4. Log in to **FortiSIEM Supervisor node**:
   1. Upload CSV file `all_user_list_%s.csv` to this directory `/opt/phoenix/config/okta/`
   2. Make sure the permissions are `admin` and `admin` (Run `chown -R admin:admin /opt/phoenix/config/okta/`)
   3. Go to **ADMIN > Setup > Credentials > Enter IP Range to Credential Associations**.
   4. Select the Okta entry and run **Test** > **Test connectivity** to import all users.

Configuring FortiSIEM for SAML Overview

In SAML authentication, there are 3 entities:

- Identity Provider (IDP) - this is where user authentication happens. There are many examples, OKTA, Entrust, etc...
- IDP Portal - this is where you define users and credentials for your IDP and Service Providers.
- Service Provider (SP) - this is where the user logs on after authentication succeeds, e.g. FortiSIEM in this case.

After configuration, the flow is as follows:

1. The user authenticates on to the IDP Portal.
2. The user clicks a FortiSIEM icon on the IDP Portal.
3. IDP sends a SAML response to FortiSIEM containing the User, Org, and Role. User and Org are required, while Role is optional.
4. FortiSIEM trusts the IDP and logs in the User with the right Org and Role (if applicable).

To ensure SAML works correctly, the following must be done.

1. Define URLs and credentials in IDP Portal and FortiSIEM so that they can securely communicate with each other.
2. Map the User, Org, and Role in the IDP Portal to the User, Org, and Role in FortiSIEM. The User must be an exact match, including case-sensitivity. For Org and Role, you can define mappings in FortiSIEM for IDP Org to FortiSIEM Org and IDP Role to FortiSIEM Role.

The following is a detailed example showing the steps required for configuration. This example assumes a FortiSIEM user has already been created in an IDP Portal.

Step 1 - Preparation

A. Configure your IDP for the specific User, Organization, and Role. Collect IDP Portal endpoint and certificate.

B. Study the SAML Response from your IDP and determine where to find the User, Org, and Role. Typically, the User is in the NameIdentifier element of the Subject statement. Org is in the Audience element of AudienceRestriction.

This step is different for every IDP vendor. See the representative examples below for Okta.com and samltest.idp website. In OKTA.com, there is no Role information. However, the samltest.idp website allows you to define a role.

Step 2 - Create External Authentication Profile in FortiSIEM

A. Log on to FortiSIEM as Admin.

B. Go to **ADMIN > Settings > General > External Authentication**.

C. Click **New** to create an External Authentication profile.

   i. (Service Provider Case) Set **Organization** to **System** if any User from any Org can use this profile. Otherwise, set it to the specific Org.

   ii. In the **Protocol** drop-down list, select **SAML**.

   iii. Fill in the **Issuer** and **Certificate** (credentials) fields using the information collected in Step 1A.

   iv. Set **User** to the specific field in the SAML Response containing the User information. (note - match is exact and case-sensitive). This information was gathered in Step 1B. If the User is not in the NameIdentifier element of the Subject Statement, then select **Custom Attribute** and enter the field containing the User information.

   v. Set **Org** to the specific field in the SAML Response containing the Org information. This information was gathered in Step 1B. If Org is not in the Audience element of AudienceRestriction, then select **Custom Attribute** and enter the field containing the Org information. Matching is determined by the Role mapping rules in Step 3.

   vi. If Role is present in the SAML Response from the IDP, then select **Custom Attribute** and enter the field containing the Role information. Otherwise, select **None**. In the later case, you must create the User in CMDB for the specific Org, and assign the right Role. Step 3 is not needed.

Step 3 - Create SAML Role Mappings in FortiSIEM

This step is only needed if Role is present in the SAML Response as in Step 2Cvi. For example, OKTA does not have Role, so this step is not needed.

A. Log on to FortiSIEM as Admin.

B. Go to **ADMIN > Settings > Role > SAML Role**.

C. Click **New**.

D. In the Add SAML Role, enter the following information.

   i. From the **SAML Auth profile**, select the user.

   ii. In the **SAML Role** field, enter the SAML Role.

   iii. In the **SAML Organization** field, enter the SAML Organization.

- iv. From the **Mapped Role** drop-down list, select an existing role.
- v. From the **Mapped Organization** drop-down list, select an organization.
- vi. (Optional) In the **Comments** field, enter any information you may wish to reference at a future date.
- vii. Click **Save**.

Step 4 - Create the User in CMDB

This step is only needed if Role is not present in the SAML Response, as in Step 2Cvi. For example, OKTA does not have Role, so this step is needed.

- A. Log on to FortiSIEM as Admin.
- B. Go to **CMDB > Users**.
- C. If the SAML user is not present, then click **New** to create a new user.
  Note: You may need to navigate to **CMDB > Users > Ungrouped**.
- D. In the **User Name** field, enter the name exactly as that used in Step 2Civ. The name must match exactly, including case-sensitivity.
- E. Click **System Admin** and set the Role.
- F. When done, click **Save**.

This procedure is described in more details in https://help.fortinet.com/fsiem/6.3.3/Online-Help/HTML5_Help/Adding_users.htm.

SAML Login Error Codes

Error Code 1000-2000: Invalid SAML Configuration

Error Code 2000-3000: Invalid SAML Response

Error Code 3000-4000: Invalid username or password or organization

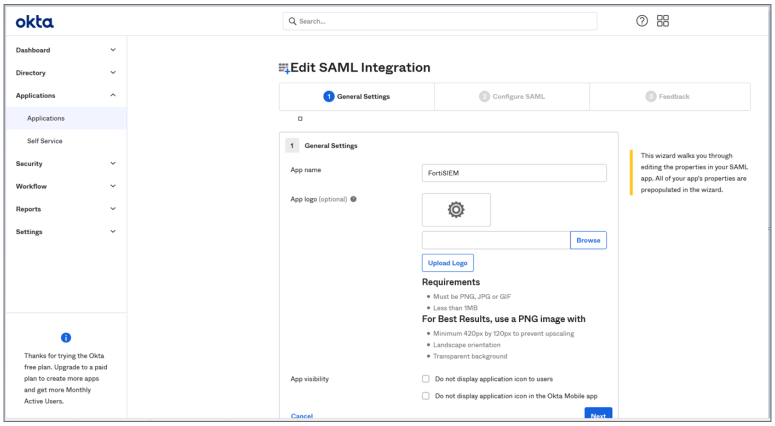
Example 1 - OKTA

1. Using an admin account, log into Okta (https://okta.com/)
2. Click on the **Admin** button.
3. Enter the Okta Verify code.
4. At the **Use single sign on** option, click the **Add App** button.
5. Click on **Create New App**.
6. Select SAML 2.0 and click **Create**.

   In **General Settings**, provide the following:

- App name - FortiSIEM
- App logo (optional)

7. Click **Next**.



This wizard walks you through editing the properties in your SAML app. All of your app's properties are prepopulated in the wizard.

Requirements

- Must be PNG, JPG or GIF
- Less than 1MB

For Best Results, use a PNG image with

- Minimum 420px by 120px to prevent upscaling
- Landscape orientation
- Transparent background

☐ Do not display application icon to users

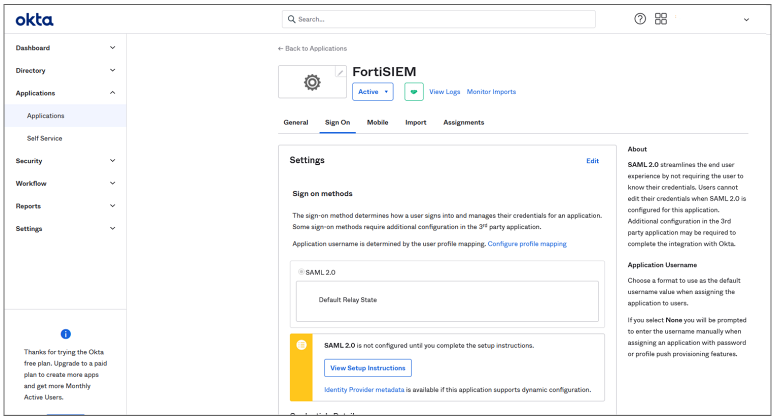
☐ Do not display application icon in the Okta Mobile app

Thanks for trying the Okta free plan. Upgrade to a paid plan to create more apps and get more Monthly Active Users.

8. In **Configure SAML**, provide the following:

- In Single sign on URL, enter https://*super_ip*/phoenix/sso/saml/*ExternalAuthenticationProfileName* super_ip represents the FortiSIEM IP address you want to log into, and ExternalAuthenticationProfileName will need to be configured in FortiSIEM by a full Admin creating an SAML External Authentication Profile via **ADMIN > Settings > General > External Authentication**.
- In the **Audience URI (SP Entity ID)**, enter your organization name, for example "Super".

9. Click **Next**, then **Finish**. The FortiSIEM app is now being created.
10. On the Okta Application page, under Sign On Settings, SAML 2.0, click **View Setup Instructions**.



The sign-on method determines how a user signs into and manages their credentials for an application. Some sign-on methods require additional configuration in the 3rd party application.

Application username is determined by the user profile mapping. Configure profile mapping

SAML 2.0 is not configured until you complete the setup instructions.

Identity Provider metadata is available if this application supports dynamic configuration.

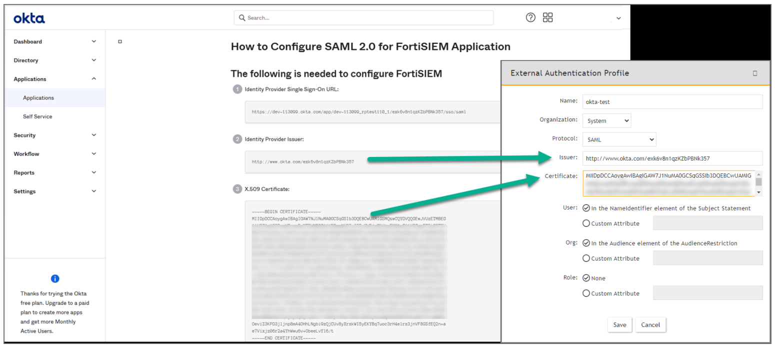
SAML 2.0 streamlines the end user experience by not requiring the user to know their credentials. Users cannot edit their credentials when SAML 2.0 is configured for this application. Additional configuration in the 3rd party application may be required to complete the integration with Okta.

Choose a format to use as the default username value when assigning the application to users.

If you select **None** you will be prompted to enter the username manually when assigning an application with password or profile push provisioning features.

Thanks for trying the Okta free plan. Upgrade to a paid plan to create more apps and get more Monthly Active Users.

11. Copy the **Identify Provider Issuer** and **Certificate** information. When you create your External Authentication Profile in FortiSIEM, the Identify Provider Issuer will go into the **Issuer** field, and the Certificate information will go into the **Certificate** field.


okta
Search...
Dashboard
Directory
Applications
Applications
Self Service
Security
Workflow
Reports
Settings
Thanks for trying the Okta free plan. Upgrade to a paid plan to create more apps and get more Monthly Active Users.

[redacted]

How to Configure SAML 2.0 for FortiSIEM Application

The following is needed to configure FortiSIEM

1. Identity Provider Single Sign-On URL:

```
https://dev-113099.okta.com/app/dev-113099_rptest110_1/exk6v8n1qzKZbPBNk357/sso/saml
```

2. Identity Provider Issuer:

```
http://www.okta.com/exk6v8n1qzKZbPBNk357
```

3. X.509 Certificate:

```
-----BEGIN CERTIFICATE-----
MIIDpDCCAoygAwIBAgIGAW7NJ1NuMA0GCSqGSIb3DQEBCwUAMIGSMQswCQYDVQQGEwJVUzETMBEG
```

[redacted]

```
OeviZ3KPD3j1jnp8mA4OHhLNgbi9zQjCUv8yXrxkWI5yEKYBq7uoc3rH4e1rx3jnVF8GSfEQ2n+a
e7Vixjz06r2a4YhWwu6v+0beeLvY16/t
-----END CERTIFICATE-----
```

External Authentication Profile

Name: okta-test

Organization: System

Protocol: SAML

Issuer: http://www.okta.com/exk6v8n1qzKZbPBNk357

Certificate: MIIDpDCCAoygAwIBAgIGAW7J1NuMA0GCSqGSIb3DQEBCwUAMIG

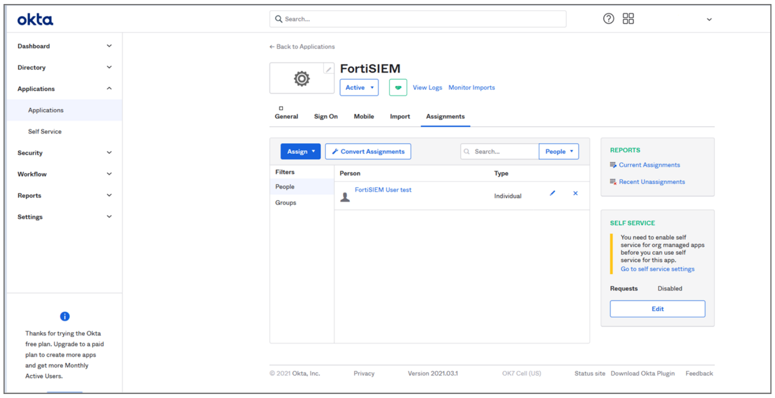
User: ● In the NameIdentifier element of the Subject Statement
○ Custom Attribute

Org: ● In the Audience element of the AudienceRestriction
○ Custom Attribute

Role: ● None
○ Custom Attribute

Save Cancel

12. Assign the OKTA user(s) for FortiSIEM.



FortiSIEM

Person	Type
FortiSIEM User test	Individual

SELF SERVICE

You need to enable self service for org managed apps before you can use self service for this app.
Go to self service settings

Requests Disabled

13. Log on to FortiSIEM as a full Admin.

14. Go to **ADMIN > Settings > General > External Authentication**.

15. Click **New** to create an External Authentication Profile.

16. From External Authentication Profile, take the following steps:

    a. In the **Name** field, enter your ExternalAuthenticationProfileName.

    b. From the **Organization** drop-down list, select the org.

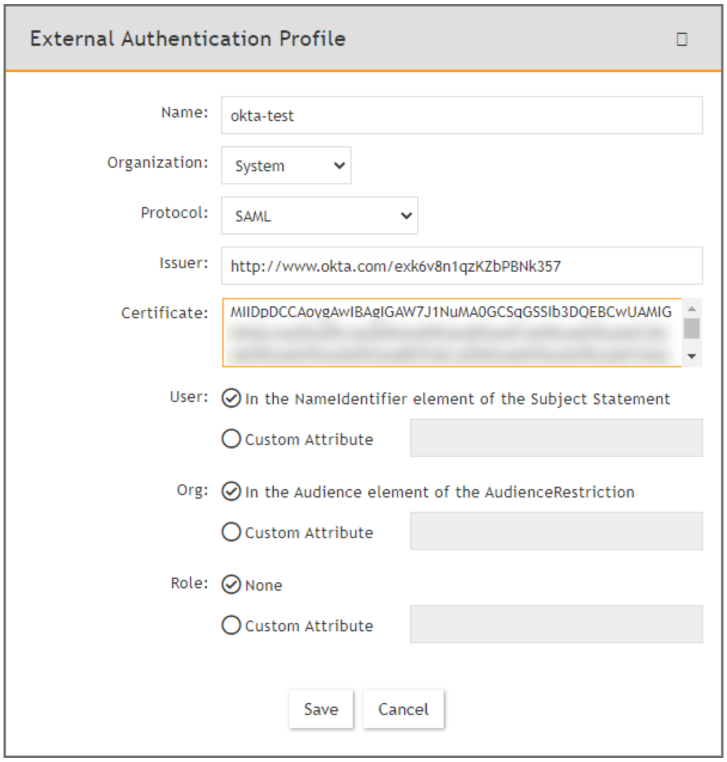
    c. From the **Protocol** drop-down list, select **SAML**.

    d. In the **Issuer** field, enter the Identify Provider Issuer from Okta.

    e. In the **Certificate** field, enter/paste the certificate information from Okta.

    f. Configure User, and Org according to your IDP.

    g. Click **Save**.



External Authentication Profile

Name: okta-test

Organization: System

Protocol: SAML

Issuer: http://www.okta.com/exk6v8n1qzKZbPBNk357

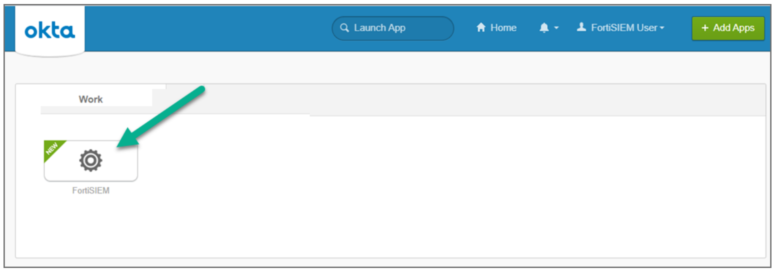
Certificate: MIIDpDCCAoygAwIBAgIGAW7J1NuMA0GCSqGSSIb3DQEBCwUAMIG [redacted]

User: ● In the NameIdentifier element of the Subject Statement ○ Custom Attribute

Org: ● In the Audience element of the AudienceRestriction ○ Custom Attribute

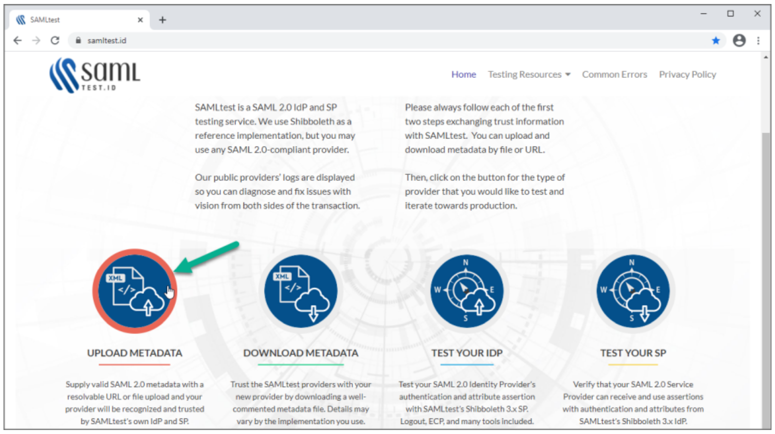
Role: ● None ○ Custom Attribute

17. Go to **CMDB > Users > Ungrouped**.
18. Click **New** to add the Okta user.
19. In the **User Name** field, enter the user's Okta assigned username.
    Note: You can enter the name by using an email address depending on how the user was configured in Okta.
20. Click the **System Admin** field to open the **New User** window.
21. From the **Mode** drop-down list, select **External**.
22. From the **Authentication Profiles** drop-down list, select your Okta authentication profile that you created under your External Authentication profile.
23. From the **Default Role** drop-down list, select the appropriate user role and check the appropriate organization checkboxes the user is enabled for.
24. Click **Back**.
25. Click **Save**.
26. Log on to Okta as an assigned user for FortiSIEM. The assigned Okta user is now able to log on to FortiSIEM by clicking the FortiSIEM icon/application.



Example 2 - https://samltest.id/

1. Prepare a SAML.XML file.
2. Go to https://samltest.id/.
3. Click **UPLOAD METADATA**.



SAMLtest is a SAML 2.0 IdP and SP testing service. We use Shibboleth as a reference implementation, but you may use any SAML 2.0-compliant provider.

Our public providers' logs are displayed so you can diagnose and fix issues with vision from both sides of the transaction.

Please always follow each of the first two steps exchanging trust information with SAMLtest. You can upload and download metadata by file or URL.

Then, click on the button for the type of provider that you would like to test and iterate towards production.

UPLOAD METADATA

Supply valid SAML 2.0 metadata with a resolvable URL or file upload and your provider will be recognized and trusted by SAMLtest's own IdP and SP.

DOWNLOAD METADATA

Trust the SAMLtest providers with your new provider by downloading a well-commented metadata file. Details may vary by the implementation you use.

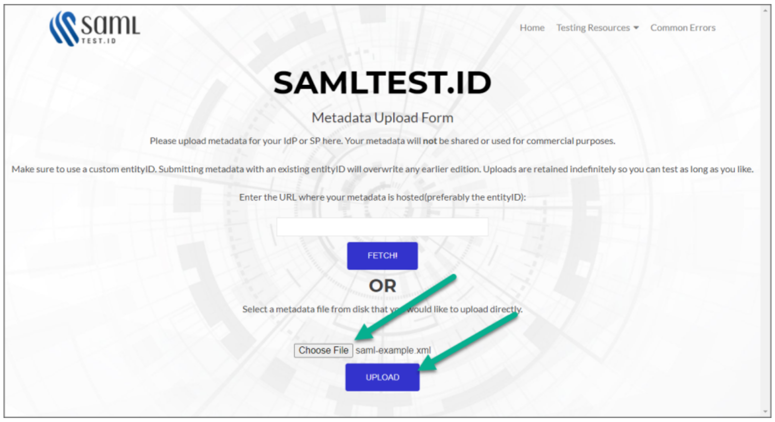
TEST YOUR IDP

Test your SAML 2.0 Identity Provider's authentication and attribute assertion with SAMLtest's Shibboleth 3.x SP. Logout, ECP, and many tools included.

TEST YOUR SP

Verify that your SAML 2.0 Service Provider can receive and use assertions with authentication and attributes from SAMLtest's Shibboleth 3.x IdP.

4. Click **Choose File**, select your SAML.XML file, and click **UPLOAD**. When SAMLTEST.ID reports success, proceed to the next step, otherwise check your XML file and re-upload.



SAMLTEST.ID

Metadata Upload Form

Please upload metadata for your IdP or SP here. Your metadata will **not** be shared or used for commercial purposes.

Make sure to use a custom entityID. Submitting metadata with an existing entityID will overwrite any earlier edition. Uploads are retained indefinitely so you can test as long as you like.

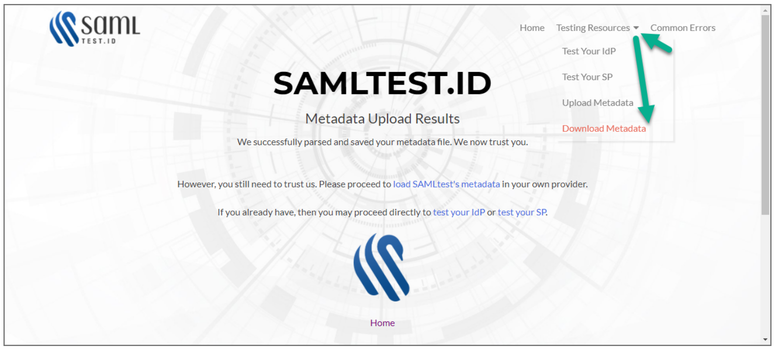
Enter the URL where your metadata is hosted(preferably the entityID):

OR

Select a metadata file from disk that you would like to upload directly.

saml-example.xml

5. Click on **Testing Resources**, and select **Download Metadata**.



SAMLTEST.ID

Metadata Upload Results

We successfully parsed and saved your metadata file. We now trust you.

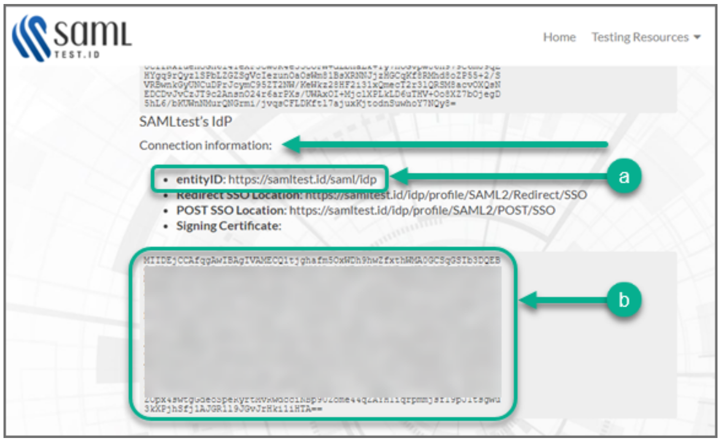
However, you still need to trust us. Please proceed to load SAMLtest's metadata in your own provider.

If you already have, then you may proceed directly to test your IdP or test your SP.

6. Scroll down until you see SAMLtest's IdP " Connection information".

   a. Copy the **entityID** information. This will go into the **Issuer** field in the External Authentication Profile for the SAML IDP configuration.

   b. Copy the **Signing Certificate** information. This will go into the **Certificate** field in the External Authentication Profile for the SAML IDP configuration.



```
HYgq9rQyz1SPbLZGZSgVcIezunOaOsWm81BsXRNNJjzMGCqKf8RMhd8oZP55+2/S
VRBwnkGyUNCuDPrJcymC95ZT2NW/KeWkz28HF2131xQmecT2r31QRSM8acvOXQeN
EDCDvJvCzJT9c2Ansn024r6arPXs/UWAx0I+Mjc1XPLkLD6uTHV+Oo8XZ7bOjegD
5hL6/bKUWnNMurQNGrmi/jvqsCFLDKft17ajuxKjtodnSuwhoY7NQy8=
```

SAMLtest's IdP

Connection information:

- **entityID:** https://samltest.id/saml/idp
- **Redirect SSO Location:** https://samltest.id/idp/profile/SAML2/Redirect/SSO
- **POST SSO Location:** https://samltest.id/idp/profile/SAML2/POST/SSO
- **Signing Certificate:**

```
MIIDEjCCAfqgAwIBAgIVAMECQ1tjghafm5OxWDh9hwZfxthWMA0GCSqGSIb3DQEB
[redacted]
2Cpx4swtgGdeoSpekyrtMvRwdcciNBp9UZome44qZAIHilqrpmmjsfl9pJltsgwu
3kKPjhSfj1AJGR119JGvJrHki1iHTA==
```

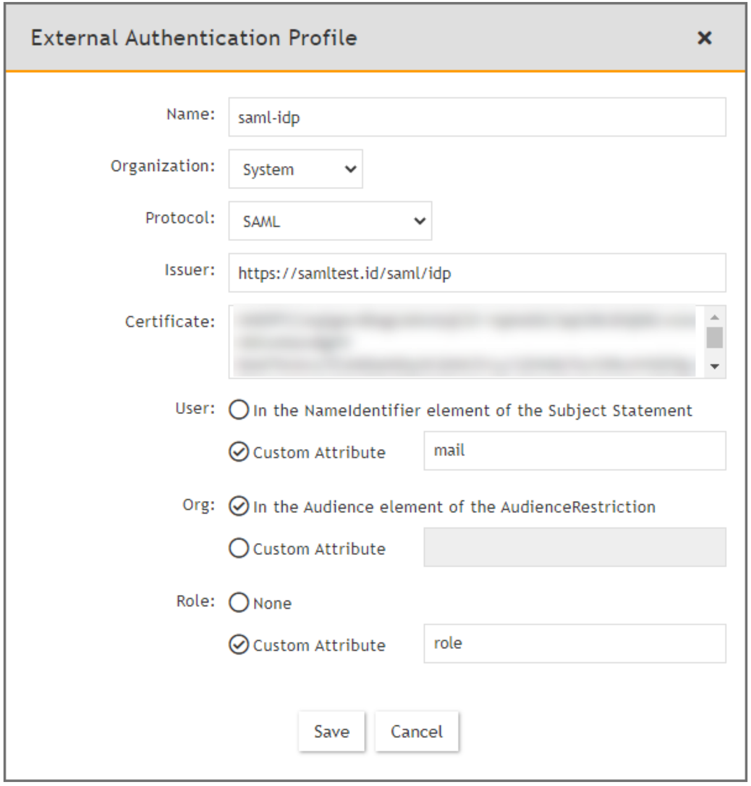
7. Log on to FortiSIEM with an Admin account, and navigate to **ADMIN > Settings > General > External Authentication**.

8. Click **New**.

9. Following Step 2 - Create External Authentication Profile in FortiSIEM, in the External Authentication Profile window, fill out the required information and click **Save**. Mandatory settings include

   - In the **Protocol** drop-down list, select **SAML**.
   - In the **Issuer** field, provide the entityID from step 6a.
   - In the **Certificate** field, paste/enter the signing certificate content from step 6b.

- Configure the User, Org, and Role appropriately, based on your elements.



External Authentication Profile ×

Name: saml-idp

Organization: System

Protocol: SAML

Issuer: https://samltest.id/saml/idp

Certificate: [redacted]

User: ○ In the NameIdentifier element of the Subject Statement

● Custom Attribute mail

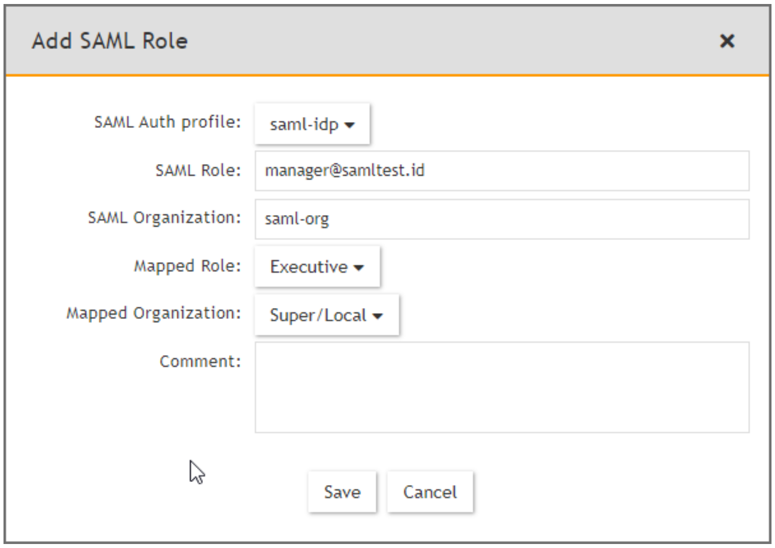
Org: ● In the Audience element of the AudienceRestriction

○ Custom Attribute

Role: ○ None

● Custom Attribute role

10. Go to **ADMIN > Settings > Role > SAML Role**, click **New**, fill out the information and click **Save**. The SAML user will be added automatically in **CMDB > Users** once the user logs on to FortiSIEM.



Add SAML Role ×

SAML Auth profile: saml-idp

SAML Role: manager@samltest.id

SAML Organization: saml-org

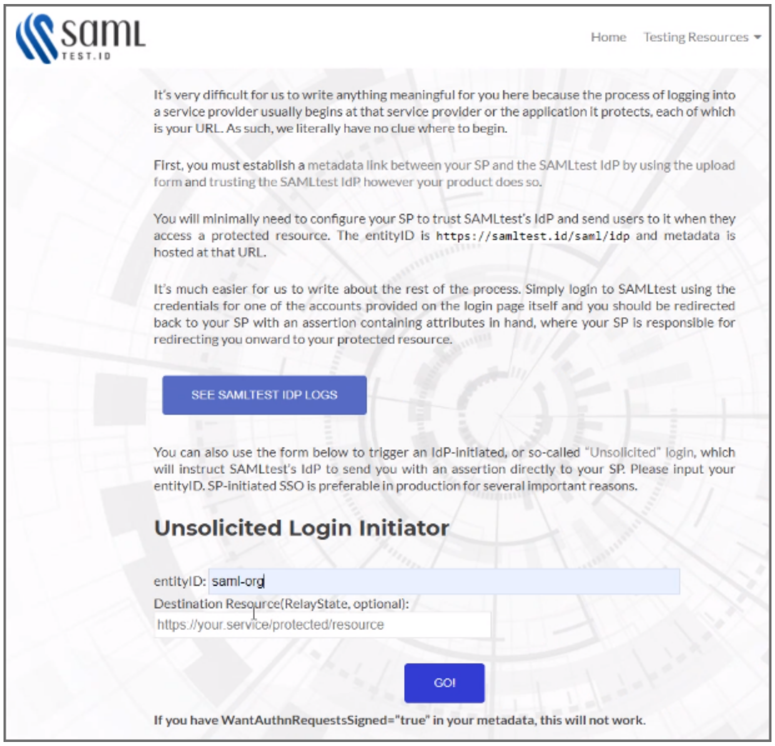
Mapped Role: Executive

Mapped Organization: Super/Local

Comment:

11. Go to https://samltest.id/ and navigate to **Testing Resources > Test Your SP**.

12. On the Test Your SP page, in the **entityID** field, enter your entityID, and click **GO!**.



It's very difficult for us to write anything meaningful for you here because the process of logging into a service provider usually begins at that service provider or the application it protects, each of which is your URL. As such, we literally have no clue where to begin.

First, you must establish a metadata link between your SP and the SAMLtest IdP by using the upload form and trusting the SAMLtest IdP however your product does so.

You will minimally need to configure your SP to trust SAMLtest's IdP and send users to it when they access a protected resource. The entityID is `https://samltest.id/saml/idp` and metadata is hosted at that URL.

It's much easier for us to write about the rest of the process. Simply login to SAMLtest using the credentials for one of the accounts provided on the login page itself and you should be redirected back to your SP with an assertion containing attributes in hand, where your SP is responsible for redirecting you onward to your protected resource.

You can also use the form below to trigger an IdP-initiated, or so-called "Unsolicited" login, which will instruct SAMLtest's IdP to send you with an assertion directly to your SP. Please input your entityID. SP-initiated SSO is preferable in production for several important reasons.

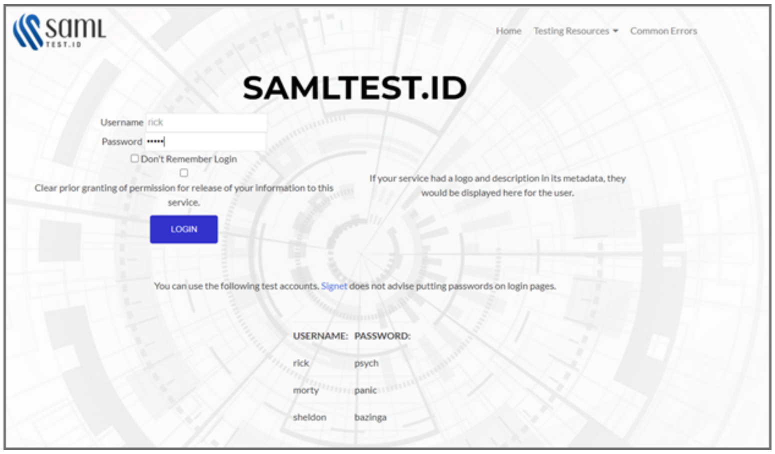
Unsolicited Login Initiator

entityID: saml-org

Destination Resource(RelayState, optional): https://your.service/protected/resource

If you have WantAuthnRequestsSigned="true" in your metadata, this will not work.

13. In the **Username** and **Password** fields, enter your user name and password respectively, and click **LOGIN**.



SAMLTEST.ID

Username rick

Password •••••

□ Don't Remember Login

□

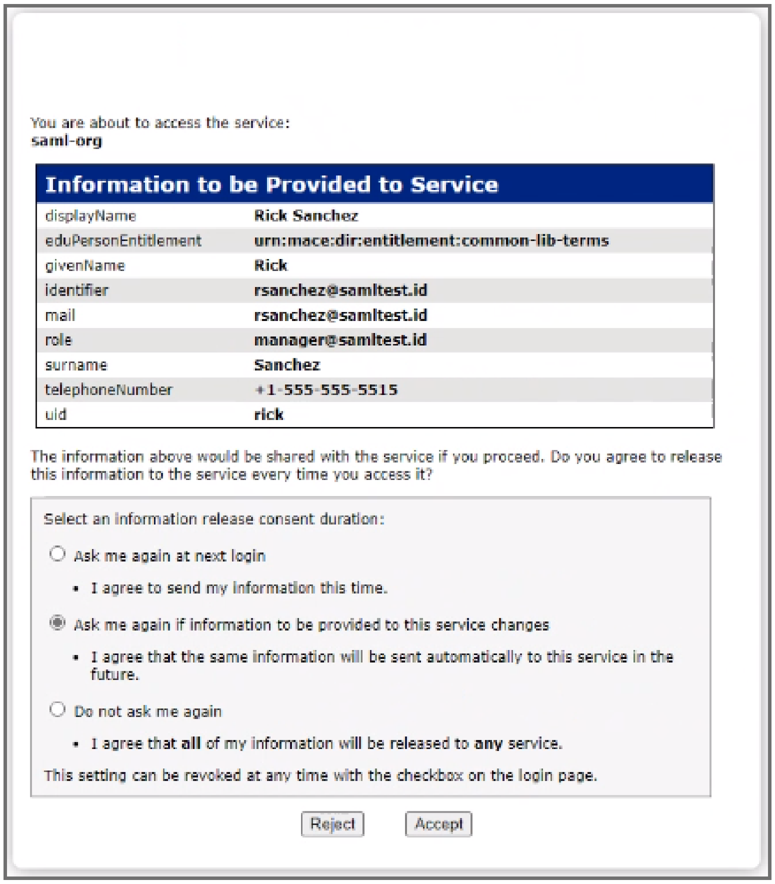
Clear prior granting of permission for release of your information to this service.

If your service had a logo and description in its metadata, they would be displayed here for the user.

You can use the following test accounts. Signet does not advise putting passwords on login pages.

USERNAME:	PASSWORD:
rick	psych
morty	panic
sheldon	bazinga

14. SAMLTEST.ID will prompt with choices for logging in. Select your choice, and click **Accept** to login to FortiSIEM.



You are about to access the service:
saml-org

Information to be Provided to Service	
displayName	Rick Sanchez
eduPersonEntitlement	urn:mace:dir:entitlement:common-lib-terms
givenName	Rick
identifier	rsanchez@samltest.id
mail	rsanchez@samltest.id
role	manager@samltest.id
surname	Sanchez
telephoneNumber	+1-555-555-5515
uid	rick

The information above would be shared with the service if you proceed. Do you agree to release this information to the service every time you access it?

Select an information release consent duration:

○ Ask me again at next login

- I agree to send my information this time.

● Ask me again if information to be provided to this service changes

- I agree that the same information will be sent automatically to this service in the future.

○ Do not ask me again

- I agree that **all** of my information will be released to **any** service.

This setting can be revoked at any time with the checkbox on the login page.

Adding 2-factor Authentication via Duo Security

Obtain keys for FortiSIEM to communicate with Duo Security

1. Sign up for a Duo Security account: signup.
   This will be admin account for Duo Security.
2. Log in to Duo Security Admin Panel and navigate to **Applications**.
3. Click **Protect an Application.** Locate **Web SDK** in the applications.
4. Get **API Host Name**, **Integration key**, **Secret key** from the page.
   You will need it when you configure FortiSIEM.
5. Generate **Application key** as a long string.
   This is a password that Duo Security will not know. You can choose any 40 character long string or generate it as follows using python

```
import os, hashlib

print hashlib.sha1(os.urandom(32)).hexdigest()
```

Create and Manage FortiSIEM users in Duo Security

This determines how the 2-factor authentication response page will look like in FortiSIEM and how the user will respond to the second-factor authentication challenge:

1. Log in to Duo Security as admin user.
2. Choose the **Logo** which will be shown to users as they log on.
3. Choose the super set of 2-factor **Authentication Methods**.
4. **Optional** - you can create the specific users that will logon via FortiSIEM. If the users are not pre-created here, then user accounts will be created automatically when they attempt 2-factor authentication for the first time.

Setup External Authentication Profiles

Add LDAP, LDAPS, and LDAPTLS authentication profile as follows:

1. Go to **ADMIN** > **Settings** > **General** > **External Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**.
5. Set **Protocol** as LDAP or LDAPS or LDAPTLS.
6. Set IP/Host of LDAP server.
7. Change the port if it is different than default port.
8. Check **Set DN Pattern** if needed by filling in the DN Pattern field.
   Setting the DN pattern manually is not necessary if the user is discovered via LDAP. However, this feature allows you to manually override the discovered pattern, or enter it for a user that is being manually created. Enter `%s` to represent the user's name (`CN/uid`), for example:
   `CN=%s,CN=Users,DC=accelops,DC=com`
9. Click **Save**

Add RADIUS authentication profile as follows:

1. Go to **ADMIN** > **Settings** > **General** > **External Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**.
5. Set **Protocol** as RADIUS.
6. Set IP/Host of RADIUS server.
7. Change and set **Authen Port** if the port is different from default.
8. Enter **Shared Secret**.
9. Click on **CHAP** if Radius server uses Challenge Handshake Authentication Protocol.
10. Click **Save**.

Add Okta authentication profile as follows:

1. Go to **ADMIN** > **Settings** > **General** > **External Authentication**.
2. Click **New**.
3. Enter **Name**.
4. Select **Organization**
5. Set **Protocol** as "Okta".
6. Copy and paste the certificate you downloaded in Configuring Okta Authentication - step 6 to **Certificate**.
7. Click **Save**.

Add 2-Factor Authentication Option for FortiSIEM Users

1. Create a 2-factor authentication profile:
    a. Go to **ADMIN** > **Settings** > **General** > **External Authentication**.
    b. Click **New**.
        a. Enter **Name**.
        b. Select the organization from the **Organization** drop-down.
        c. Set the **Protocol** as 'Duo'.
        d. Set the **IP/Host** from API hostname in Step 4 above.
        e. Set the **Integration key**, **Secret key**from Step 4 above.
        f. Set the **Application key** from Step 5 above.
        g. Click **Save**.
2. Add the 2-factor authentication profile to a user:
    a. Go to **CMDB** > **Users** > **Ungrouped**.
    b. Click **New** to create a new use or **Edit** to modify a selected user.
    c. Select **System Admin** checkbox and click the edit icon.
    d. In the **Edit User** dialog box, enter and confirm a password for a new user.
    e. Select the **Second Factor** check-box.
    f. Select the 2-factor authentication profile created in Step 1 above.
    g. Select a **Default Role** from the drop-down list.
    h. Click **Save**.

Log in to FortiSIEM Using 2-Factor Authentication

Before logging in to FortiSIEM with 2-factor authentication, make sure that these steps are completed.

1. Obtain keys for FortiSIEM to communicate with Duo Security.
2. Create and Manage FortiSIEM users in Duo Security.
3. Add 2-factor authentication option for FortiSIEM users.

Follow these steps:

1. Log on to FortiSIEM normally (first factor) using the credential defined in FortiSIEM - local or external in LDAP.
2. If the 2-factor authentication is enabled, the user will now be redirected to the 2-factor step.
    a. If the user is not created in the Duo system (by the Duo admin), a setup wizard will let you set some basic information like phone number and ask you to download the Duo app.
    b. If the user already exists in FortiSIEM, then follow the authentication method and click **Log in**.

    The user will be able to log in to FortiSIEM.

Authenticating Users Against FortiAuthenticator (FAC)

FortiSIEM authenticates users against FortiAuthenticator (FAC) via RADIUS. User credentials are either stored in the FAC local database, or in an external credential store such as Active Directory (AD), accessed via LDAP. FAC optionally applies 2-factor authentication to users with the FortiToken.

The following sections provide information about the configurations and steps to log in and troubleshoot:

a. Configure AD users
b. Configure FortiAuthenticator

c. Configure FortiSIEM

Configure AD Users

1. Install AD Domain Services following the steps here.
2. Configure the test domain users:
   a. **Server Manager** > **Tools** > **Active Directory Users and Computers**.
   b. Expand the Domain, right-click **Users**, select **New** > **User**.

Configure FortiAuthenticator

1. Perform the basic FAC setup following the steps in the *FortiAuthenticator Administration Guide: Section: FortiAuthenticator-VM image installation and initial setup* here.
   a. Use the default credentials:
      - user name: `admin`
      - password: <blank>
   b. At the CLI prompt enter the following commands:
      - `set port1-ip 192.168.1.99/24`
      - `set default-gw 192.168.1.2`

      Note that the CLI syntax has changed in FAC 5.x. Refer to FAC 6.x documentation for details.
   c. Log in to the FAC GUI (default credentials user name / password: `admin` / `<blank>`).
   d. Set the time zone under **System** > **Dashboard** > **Status** > **System Information** > **System Time**.
   e. Change the GUI idle timeout for ease of use during configuration, if desired: **System Administration** > **GUI Access** > **Idle Timeout**.
2. Configure the DC as a remote LDAP server under **Authentication** > **Remote Authentication Servers** > **LDAP**.
   Follow the instructions in the FortiAuthenticator - FSSO Authentication User Guide.Note that the user must have appropriate privileges. The Domain Admin account can be used for testing in a lab environment. The ‘Remote LDAP Users’ section will be blank at this stage, users are imported later.
3. Configure an external Realm to reference the LDAP store:
   a. Select **Authentication** > **User Management** > **Realms** > **Create New**.
   b. Choose the LDAP source from the drop-down and click **OK**.
4. Configure the FortiSIEM as a RADIUS Client:
   a. Select **Authentication** > **RADIUS Service** > **Clients** > **Create New**.
   b. Enter the IP address of FortiSIEM and a shared secret.
   c. Choose the realms as required.
   d. Click 'add a realm' to include multiple realms.
      Note the FAC evaluation license only supports 2 realms.
   e. Click **Save**.
5. Import users from LDAP to FortiSIEM to allow FortiToken to be used:
   a. Select **Authentication** > **User Management** > **Remote Users**.
   b. Select the **Import** button.
   c. Choose and import the test users configured in AD. Note that the FAC Evaluation license is limited to 5 users.
6. (Optional) Configure local users in the FAC database for local authentication under **Authentication** > **User Management** > **Local Users**.

7. Provision the FortiToken:
    a. Select and edit the user in **Authentication** > **User Management** > **Remote Users** (or Local Users as appropriate).
    b. Select the **Token Based Authentication** check box, and assign an available FortiToken Mobile.
    FAC evaluation includes 2 demo FortiTokens.
    c. Choose **Email** delivery method and enter an email address in user information.
    The email address doesn't have to be valid for basic testing, the provisioning code is visible in the FAC logs.
    d. Click **OK**.
8. Configure the FortiToken iPhone app:
    a. Install the FortiToken app from the app store.
    b. Open the app and select the **+** icon in the top right corner.
    c. Choose **enter manually** from the bottom of the screen.
    d. Select and edit the user in **Authentication** > **User Management** > **Remote Users** (or Local Users as appropriate).
    e. Select the **Token Based Authnetication** check box, and assign an avaialble FortiToken Mobile. FAC eval includes 2 demo FortiTokens.
    f. Choose **Email** delivery method and enter an email address in user information. The email address doesn't have to be valid for basic testing, the provisioning code is visible in the FAC logs.
    g. Click **OK**.

Configure FortiSIEM

Step 1: Configure an External Authentication Source

1. Go to **ADMIN** > **Settings** > **General** > **External Authentication**.
2. Click **New**.
3. Enter the following settings:
    - **Organization** - System
    - **Protocol** - RADIUS
    - **IP/Host** - IP of FortiAuthenticator
    - **Shared Secret** - Secret configured when setting RADIUS Client in FAC
4. Click **Save**.
5. Click **Test** to test the authentication settings.

Step 2: Configure Users in FortiSIEM Database

1. Go to **CMDB** > **Users** and click **New**.
2. Enter the user name to match the user configured in FSM/AD. (Use the format: user@domain.com)
3. Select the **System Admin** checkbox.
4. Select the **Mode** as **External**.
5. Select the RADIUS profile previously configured from **Authentication Profiles**.
6. Select the **Default Role** from the list.
7. Click **Save**.

Logging In

The **User Name** must be entered in the format `user@domain.xyz`. For 2-factor authentication, the password and FortiToken value must be concatenated and entered directly into the **Password** field.

For example:

- Username: `user123@testdomain.local`
- Password : `testpass123456`; where `123456` is the current FortiToken value

Troubleshooting

FortiAuthenticator logs are accessible by opening the **Logging** tab. Select a log entry to see more details.

Modifying External Authentication Settings

Complete these steps to modify External Authentication settings:

1. Use the following buttons to modify External Authentication settings:
   - **Edit** - to modify an External Authentication setting.
   - **Delete** - to delete an External Authentication setting.
2. Click **Save**.

Incident Notification Settings

Notification Policies handles the sending of notifications when an incident occurs. Instead of setting notifications for each rule, you can create a policy and apply it to multiple rules.

The following section describes the procedures to enable Incident Notification settings:

- Adding Incident Notification Settings
- Modifying Incident Notification Settings
- Enabling Notification Policies

Adding Incident Notification Settings

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy** tab.
2. Click **New**.
3. Select the **Severity**.
4. For **Rules**, click the drop-down and select the rule or rules you want to trigger this notification from the folders.
5. Set a **Time Range** during which this notification will be in effect.
   Notifications will be sent only if an incident occurs during the time range you set here.
6. For **Affected Items**, click the drop-down and select the devices or applications from the **Select Devices** drop-down list for which this policy should apply.
   Instead of individual devices or groups, you can apply the notification policy to an IP address or range by clicking **Add IP/Range**. You can also select a group, and move to the **(NOT) Selections** column to explicitly exclude that group of applications or devices from the notification policy.
7. For Service Provider deployments, select the **Affected Orgs** to which the notification policy should apply.
   Notifications will be sent only if the triggering incidents affect the selected organization.

8. Select the **Action** to take when the notification is triggered.
   - Send Email/SMS to the target users. See here.
   - Run Remediation/Script. See here.
   - Invoke integration Policy. Click on **Run** to change policy. A drop-down list will appear. Select the policies you wish to invoke. For example, click on **FortiGUARD IOC Lookup** to invoke this integration policy, if it is available for your FortiSIEM environment.
   - Send SNMP message to the destination set in **ADMIN > Settings > Analytics > Incident Notification**.
   - Send XML file over HTTP(S) to the destination set in **ADMIN> Settings > Analytics > Incident Notification**.
   - Open Remedy ticket using the configuration set in **ADMIN > Settings > Analytics > Incident Notification**.
9. Select the **Settings** to enable the exceptions for notification trigger.
   - Do not notify when an incident is cleared automatically.
   - Do not notify when an incident is cleared manually.
   - Do not notify when an incident is cleared by system.
10. Enter any **Comments** about the policy.
11. Click **Save**.

You can also create a duplicate notification by selecting a notification from the table and clicking **Clone**.

Remember to enable your notification policy after creating it. See Enabling Notification Policies.

Modifying Incident Notification Settings

Complete these steps to modify an Incident Notification setting.

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy** tab.
2. Use the following buttons to modify Incident Notification settings:
   - **Edit** - To edit an Incident Notification setting
   - **Delete** - To delete an Incident Notification setting
3. Click **Save**.

Enabling Notification Policies

Complete these steps to enable or disable a notification policy

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy** tab.
2. In the **Enabled** column, click on a notification policy's checkbox to enable or disable it.

System Integration Settings

This tab allows you to integrate devices and incidents with external CMDB and helpdesk/workflow systems. You can also write your own plugins to support other systems.

This section provides the procedures to configure External Systems Integration.

- Proxy Settings
- Setting Up External System Integration

- Modifying an External System Integration

Proxy Settings

If you want the communication between the FortiSIEM Supervisor and the external system to go through a proxy, then complete the following steps

1. Login to Supervisor as `admin`.
2. Go to the glassfish configuration directory: `/opt/glassfish/domains/domain1/config`.
3. Add proxy server information to the `domain.xml` file:
```
<jvm-options>-Dhttp.proxyHost=172.30.57.100</jvm-options>
<jvm-options>-Dhttp.proxyPort=3128</jvm-options>
<jvm-options>-Dhttp.proxyUser=foo</jvm-options>
<jvm-options>-Dhttp.proxyPassword=password</jvm-options>
```
4. Restart glassfish.

Setting Up External System Integration

FortiSIEM integration helps to create a two-way linkage between external ticketing/work flow systems like ServiceNow, ConnectWise and Salesforce. The integration can be for Incidents and CMDB.

This involves two steps:

1. Create an integration.
2. Attach the integration to an Incident Notification Policy or run the integration on a schedule.

Four types of integrations are supported:

- **Incident Outbound Integration**: This creates a ticket in an external ticketing system from FortiSIEM incidents.
- **Incident Inbound Integration**: This updates FortiSIEM incident ticket state from external system ticket states. Specifically, when a ticket is closed in the external ticketing system, the incident is cleared in FortiSIEM and the ticket status is marked closed to synchronize with the external ticketing system.
- **CMDB Outbound Integration**: This populates an external CMDB from FortiSIEM CMDB.
- **CMDB Inbound Integration**: This populates FortiSIEM CMDB from an external CMDB.

FortiSIEM provides a Java-based API that can be used to integrate with ticketing systems. Out of the box integration is available for ServiceNow, ConnectWise, Salesforce, RiskIQ, VirusTotal, and Jira. Integration with other systems can be built using the API. Contact Fortinet support for assistance.

See the following sections to set up External Systems Integration:

- ConnectWise Integration
- ServiceNow Integration
- Salesforce Integration
- RiskIQ Integration
- VirusTotal Integration
- Jira Integration
- CMDB Inbound Integration
- FortiGuard IOC Integration

ConnectWise Integration

- Adding a Client ID for ConnectWise Integration
- Configuring ConnectWise for FortiSIEM Integration
- ConnectWise Incident Outbound Integration
- ConnectWise Incident Inbound Integration
- ConnectWise CMDB Outbound Integration

Adding a Client ID for ConnectWise Integration

ConnectWise has recently changed their policy and requires that vendors create a client ID in order to integrate with FortiSIEM. Due to this change and restriction from ConnectWise, Fortinet has published a public client ID in order to allow clients to integrate with ConnectWise. This Client ID is `1a7ed749-47a1-4d3e-94b0-696288a1140f`.

Note: A ConnectWise working account is required before integration can occur.

To add this client ID for ConnectWise, take the following steps:

1. Go to **ADMIN > Settings >General > External Integration**.
2. Click **New** to create a new Integration Policy or select an existing Integration Policy and click **Edit**.
3. From the **Vendor** drop-down list, select **ConnectWise**.
4. In the **Client ID** field, paste the following Client ID:
   `1a7ed749-47a1-4d3e-94b0-696288a1140f`
5. Make any necessary configuration changes.
6. Click **Save**.

Configuring ConnectWise for FortiSIEM Integration

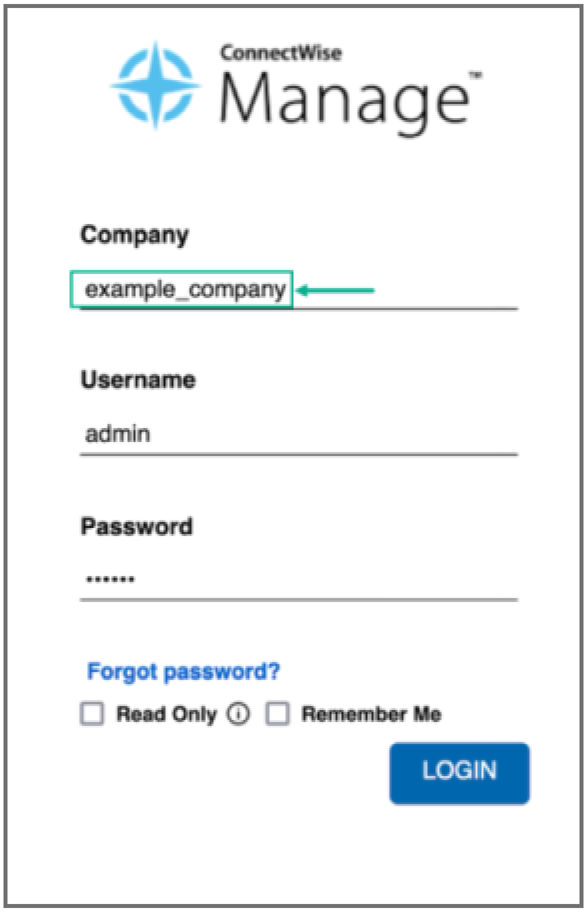
1. Log in to ConnectWise MANAGE.
2. Go to **Setup Tables > Integrator Login** List.
3. Create a new **Integrator Login** for FortiSIEM:
   a. Enter **Username**.
   b. Enter **Password**.
   c. Set **Access Level** to **Records created by integrator**.
   d. Enable **Service Ticket API** for Incident Integration.
   e. Enable **Configure API** for CMDB Integration.
4. For Service Provider Configurations, create Companies by creating:
   a. **Company Name**
   b. **Company ID**

ConnectWise Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:

   a. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
   b. Choose whether the **Plugin Type** is **SOAP** or **REST**.
   Note: The SOAP method is deprecated, so you should select REST.
   c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you must create your own plugin and enter the plugin name here.

7. For **Host/URL**, enter the host name or URL of the external system. For ConnectWise, enter the login URL of the ConnectWise instance. Make sure to include the https:// prefix.
   Example: `https://my.login.test`
8. For **Company**, enter the company name that you use when logging in to ConnectWise Manage. Do not use the company name from within ConnectWise.



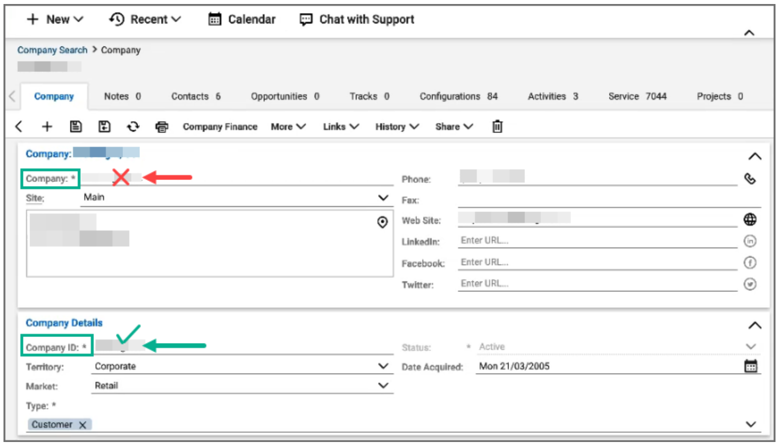
Company
example_company

Username
admin

Password
••••••

9. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key** and the **Private Key** and **Client ID**.
   Note: The Client ID is 1a7ed749-47a1-4d3e-94b0-696288a1140f. See Adding a Client ID for ConnectWise Integration for more information.
   To get your **Public Key** and **Private Key** from ConnectWise, login and take the following steps:

   a. In the upper right part of the window, click your account name to open a drop-down list, and select **My Account**.
   b. Click the **API Keys** tab, and create your private and public keys, keeping a record of what they are so you can enter them in the FortiSIEM configuration in the **Private Key** and **Public Key** fields.
10. For **Incidents Comments Template**, specify the formatting using the incident fields.
11. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. In ConnectWise, locate and use the **Company ID** field under Company Details in ConnectWise for the FortiSIEM Organization Mapping, NOT the company name.



Company: * [redacted]
Site: Main
Phone: [redacted]
Fax:
Web Site: [redacted]
LinkedIn: Enter URL...
Facebook: Enter URL...
Twitter: Enter URL...
Company ID: * [redacted]
Status: Active
Territory: Corporate
Date Acquired: Mon 21/03/2005
Market: Retail
Type: *
Customer

12. For **Run For**, choose the organizations for whom tickets will be created.
13. Enter the **Max Incidents** to be recorded.
    Note: The default number for **Max Incidents** is 50. When running this the first time with the default number, you may encounter a 502 proxy error due to the initial volume of incidents being requested. In this situation, you can change the **Max Incidents** value to 5 or 10 initially, then change it after running the ConnectWise integration once.
14. Click **Save**.

Next, link the integration to one or more incident notification policies.

ConnectWise Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for ConnectWise.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

   This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.

5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:
    1. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
    2. Choose whether the **Plugin Type** is **SOAP** or **REST**.
    3. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system (see section Configuring external helpdesk systems). For ConnectWise, select the login URL.
8. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key**, the **Private Key**, and **Client ID**.
9. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
10. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Note: FortiSIEM does not support custom mapping, only "new" and "closed", and the incident resolution is not updated.

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
    1. Select the integration policy.
    2. Select a schedule.

ConnectWise CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM’s own CMDB. Built in integrations are available for ServiceNow, ConnectWise and Salesforce.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.

4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ConnectWise is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two ConnectWise installations, each would have different Instance names.
   b. Choose whether the **Plugin Type** is **SOAP** or **REST**.
   c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ConnectWise. For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ConnectWise, select the login URL.
8. If you chose **SOAP** as **Plugin Type**, enter a **User Name**, **Password**, and **Client ID** that the system can use to authenticate with the external system. For ConnectWise, select the credentials created in Configuring ConnectWise for FortiSIEM Integration, Step 3. If you chose REST, enter the **Public Key** and the **Private Key** in addition to the **User Name**, **Password**, and **Client ID**.
9. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ConnectWise, select the Company name in Configuring ConnectWise for FortiSIEM Integration, Step 4.
10. For **Run For**, choose the organizations for whom tickets will be created.
11. For ConnectWise, it is possible to define a **Content Mapping**.
    a. Enter **Column Mapping** values:
       i. To add a new mapping, click the + button.
       ii. Choose FortiSIEM CMDB attribute as the Source Column.
       iii. Enter external (ConnectWise) attribute as the Destination Column.
       iv. Specify Default Mapped Value as the value assigned to the Destination Column if the Source Column is not found in Data Mapping definitions.
       v. Select Put to a Question is the Destination Column is a custom column in ConnectWise.
    b. Enter **Data Mapping** values:
       i. Choose the (Destination) Column Name.
       ii. Enter From as the value in FortiSIEM.
       iii. Enter To as the value in ConnectWise.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Enter the **Max Devices**: the number of devices to send to the external system.
15. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure Run after Discovery is checked.
3. Click **Save**.

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
   a. Select the integration policies.
   b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Select a specific integration policy and click **Run**.

ServiceNow Integration

- ServiceNow Security Operations (SecOps) Integration
- ServiceNow SOAP Integration Requirements

- Configuring ServiceNow for FortiSIEM Integration
- ServiceNow Incident Outbound Integration
- ServiceNow Incident Inbound Integration
- ServiceNow CMDB Outbound Integration

Configuring ServiceNow for FortiSIEM Integration

1. Log in to ServiceNow.
2. For Service Provider Configurations, create Companies by creating Company Name.

ServiceNow Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two ServiceNow installations, each would have different Instance names.
   b. Select whether **Plugin Type** is **Ticket** or **Event Management**.
   c. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ServiceNow, enter the login URL.

8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, enter the login credentials.
9. If your **Plugin Type** is **Ticket**, specify the formatting of the incident fields in the **Incidents Comments Template**. If your **Plugin Type** is **Event Management**, specify the mapping of attributes to resources in the **Attribute Mapping** table.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ServiceNow, enter the Company names as in Configuring ServiceNow for FortiSIEM Integration, Step 2.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. Enter the maximum number of incidents you want to record in **Max Incidents**.
13. Click **Save**.

Next, link the integration to one or more incident notification policies.

ServiceNow Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for ServiceNow.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

   This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two ServiceNow installations, each would have different Instance names.
   b. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system (see section Configuring external helpdesk systems). For ServiceNow, select the login URL.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, select the login credentials.
9. In **Attribute Mapping**, specify the mapping of attributes to resources.

10. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
11. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policy.
    b. Select a schedule.

ServiceNow CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM's own CMDB. Built in integrations are available for ServiceNow.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. ServiceNow is supported out of the box. When you select the Vendor:
    a. An **Instance** is created - this is the unique name for this policy. For example if you had 2 ServiceNow installations, each would have different Instance names.
    b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for ServiceNow. For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For ServiceNow, select the login URL
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For ServiceNow, select the login credentials.
9. In **Attribute Mapping**, specify the mapping of attributes to resources.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For ServiceNow, select the Company names as iin Configuring ServiceNow for FortiSIEM Integration, Step 2.

11. For **Run For**, choose the organizations for whom tickets will be created.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Enter the **Maximum** number of devices to send to the external system.
15. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure **Run after Discovery** is checked.
3. Click **Save**.

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
   a. Select the integration policies.
   b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Select a specific integration policy and click **Run**.

Salesforce Integration

- Configuring Salesforce for FortiSIEM Integration
- Salesforce Incident Outbound Integration
- Salesforce Incident Inbound Integration
- Salesforce CMDB Outbound Integration

Configuring Salesforce for FortiSIEM Integration

1. Log in to Salesforce.
2. Create a **custom domain**.
3. For Service Provider Configurations, create **Service App** > **Accounts**.
   FortiSIEM will use the **Account Name**.

Salesforce Incident Outbound Integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.

4. For **Type**, select **Incident**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two Salesforce installations, each would have different Instance names.
   b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
   a. Log in to Salesforce.
   b. Go to **Setup** > **Settings**.
   c. Use the **Custom URL** under **My Domain**, typically it is `xyz.my.salesforce.com`
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system.
   a. For Salesforce, enter the login credentials.
9. For **Security Token**, enter the security token from Salesforce. If you do not have your security token information, you can get this by taking the following steps:
   a. Log in to Salesforce.
   b. At <*your name*>, click the drop-down list and navigate to **Setup > Personal Setup > My Personal Information**.
   c. Click **Reset My Security Token** to get Salesforce to email your security token.
10. For **Incidents Comments Template**, specify the formatting of the incident fields.
11. For **Organization Mapping**, click the **Edit** icon to take you to the **Integration Policy > Org Mapping** window. Here, you can create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For Salesforce, to get your account name, take the following steps in Salesforce:
    a. Go to **Service App** > **Accounts**.
    b. Use **Account Name**.
    c. In FortiSIEM, at the **Integration Policy > Org Mapping** window, enter the **Account Name** in the **Default** field.
    Note: You can choose to provide an organization name from FortiSIEM in the **Default** field.
12. For **Run For**, choose the organizations for whom tickets will be created.
13. In the **Max Incidents** field, enter the maximum number of incidents you want recorded.
14. Click **Save**.
15. Click **Run** to confirm the integration. If you receive an "...unable to find valid certification path to requested target", you need to upload a certificate to FortiSIEM.

Next, link the integration to one or more incident notification policies.

Salesforce Incident Inbound Integration

This updates the FortiSIEM incident state and clears the incident when the incident is cleared in the external help desk system. Built-in integrations are available for Salesforce.

The steps are:

1. Create an Incident Inbound integration schedule.
2. Create a schedule for automatically running the Incident Inbound integration.

   This will update the FortiSIEM incident inbound integration schedule and clears the incident when the incident is cleared in the external help desk system.

Step 1: Create an Incident Inbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Incident**.
5. For **Direction**, select **Inbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had two Salesforce installations, each would have different Instance names.
   b. A default **Plugin Name** is populated. This is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce. For other vendors, you must create your own plugin and enter the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
   a. Log in to Salesforce.
   b. Go to **Setup > Settings**.
   c. Use the **custom URL** under **My Domain** – typically it is `xyz.my.salesforce.com`.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For Salesforce, select the login credentials.
9. For **Time Window**, select the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.
10. Click **Save**.

Step 2: Create an Incident Inbound integration schedule

This will update FortiSIEM following incident fields when ticket state is updated in the external ticketing system.

- External Ticket State
- Ticket State
- External Cleared Time
- External Resolve Time

Follow these steps:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.

3. Click **Schedule** and then click **+**.
   a. Select the integration policy.
   b. Select a schedule.

Salesforce CMDB Outbound Integration

CMDB Outbound Integration populates an external CMDB from FortiSIEM’s own CMDB. Built in integrations are available for Salesforce.

Step 1: Create a CMDB Outbound integration

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Outbound**.
6. For **Vendor**, select the vendor of the system you want to connect to. Salesforce is supported out of the box. When you select the Vendor:
   a. An **Instance** is created - this is the unique name for this policy. For example if you had 2 Salesforce installations, each would have different Instance names.
   b. A default **Plugin Name** is populated - this is the Java code that implements the integration including connecting to the external help desk systems and synching the CMDB elements. The plugin is automatically populated for Salesforce . For other vendors, you have to create your own plugin and type in the plugin name here.
7. For **Host/URL**, enter the host name or URL of the external system. For Salesforce:
   a. Log in to Salesforce.
   b. Go to **Setup** > **Settings**.
   c. Use the **Custom URL** under **My Domain**, typically it is `xyz.my.salesforce.com`.
8. For **User Name** and **Password**, enter a user name and password that the system can use to authenticate with the external system. For Salesforce, select the login credentials.
9. Enter the **Maximum** number of devices to send to the external system.
10. For **Organization Mapping**, click **Edit** to create mappings between the organizations in your FortiSIEM deployment and the names of the organization in the external system. For Salesforce:
    a. Go to **Service App** > **Accounts**.
    b. Use **Account Name**.
11. For **Run For**, choose the organizations for whom tickets will be created.
12. For **Groups**, select the FortiSIEM CMDB Groups whose member devices would be synched to external CMDB.
13. Select **Run after Discovery** if you want this export to take place after you have run discovery in your system. This is the only way to push automatic changes from FortiSIEM to the external system.
14. Click **Save**.

Step 2: Create a CMDB Outbound integration schedule

Updating external CMDB automatically after FortiSIEM discovery:

1. Create an integration policy.
2. Make sure Run after Discovery is checked.
3. Click **Save**.

Updating external CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
   a. Select the integration policies.
   b. Select a schedule.

Updating external CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Select a specific integration policy and click **Run**.

RiskIQ Integration

- Configuring RiskIQ for FortiSIEM Integration
- RiskIQ Incident Outbound Integration

Configuring RiskIQ for FortiSIEM Integration

Register at the RiskIQ website to obtain a user name, password, and the API keys. For more information, see https://api.riskiq.net/api/concepts.html.

RiskIQ Incident Outbound Integration

To create an outbound integration, follow these steps:

1. Go to **Admin > Settings > General > External Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **RiskIQ**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
   - **Username** and **Password**, enter your RiskIQ user name and the API key as the password.
4. Enter an optional **Description** of the integration.
5. Click the edit icon next to **Attribute Mapping**.
   a. In the **Incident Comments Template** dialog box, select content from the **Insert Content** drop-down list.
   b. Click **Save** when you are finished.

6. Click the edit icon next to the **Organization Mapping** to map attributes to resources.
7. Click the edit icon next to the **Run for**.
   a. In the **Run for** dialog box, select the organizations for which the integrations will be run.
   b. Click **Save** when you are finished.
8. Enter the maximum number of incidents you want recorded in the **Max Incidents** field.
9. Click **Save**.

VirusTotal Integration

- Configuring VirusTotal for FortiSIEM Integration
- VirusTotal Incident Outbound Integration

Configuring VirusTotal for FortiSIEM Integration

Register at the VirusTotal website to obtain a user name, password, and the API key. For more information, see https://developers.virustotal.com/reference?gclid=Cj0KCQjw4-XlBRDuARIsAK96p3AvLlJSGdBtBWpE1Tm0_KJkWci7U0aAxBVcoOgoZKfd3qjDMG2jJ9IaArVuEALw_wcB#getting-started.

VirusTotal Incident Outbound Integration

To create an outbound integration, follow these steps:

1. Go to **Admin > Settings > General > External Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **VirusTotal**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the integration class: `com.accelops.service.integration.impl.VirusTotalIntegrationServiceImpl`.
   - **Password**: enter your API key in the password field.
4. Enter an optional **Description** of the integration.
5. Click the edit icon next to the **Incident Comments template**.
   a. In the **Incident Comments Template** dialog box, select content from the **Insert Content** drop-down list.
   b. Click **Save** when you are finished.
6. Click the edit icon next to the **Organization Mapping**.
   a. In the **Org Mapping** dialog box, click beneath **External Company ID** to enter the ID of the company you want to map to organizations.
   b. Click **Save** when you are finished.
7. Click the edit icon next to the **Run for**.
   a. In the **Run for** dialog box, select the organizations for which the integrations will be run.
   b. Click **Save** when you are finished.

8. Enter the maximum number of incidents you want recorded in the **Max Incidents** field.
9. Click **Save**.

Jira Integration

- Configuring Jira for FortiSIEM Integration
- Jira Incident Outbound Integration
- Jira Incident Inbound Integration

Configuring Jira for FortiSIEM Integration

Before configuring Jira, you must log in to your Jira account and create an API Key. Follow these steps:

1. Log in to your Jira account.
2. Create an API Key.
3. Use the GUI user name and API Key in FortiSIEM.

Jira Incident Outbound Integration

Jira outbound integration allows a user to map FortiSIEM fields to Jira ticket fields and to create incidents in Jira. When the integration runs, FortiSIEM looks for incidents that match the mappings and creates a ticket in the Jira system.

To create an outbound integration, follow these steps:

Step 1: Provide Configuration Information

1. Go to **Admin > Settings > General > External Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **Jira**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the Jira integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
   - **Host/URL**, enter the URL of the Jira provider, for example, `https://rackspace.atlassian.net`.
   - **Username** and **Password**, enter your Jira user name and password.

Step 2: Specify the FortiSIEM to Jira Field Mapping

1. Click the edit icon next to **Field Mapping**.
2. In the **Field Mapping** dialog box, provide the following values:
   - **Project**: enter a name for the project.
   - **Issue Type**: select **Event**.
   - The **Summary**: field is pre-populated with the **Incident Rule Name (**`$ruleName`**)**.

- For **Description**: click the edit icon to build the expression for the Jira issue description. The drop-down list contains FortiSIEM fields that can be mapped to.
- The **Priority**: field is pre-populated with **Incident Severity Category (**`$incident_severityCat`**)**.

3. Create mappings between Jira fields and FortiSIEM fields by clicking **New**.
   Select Jira fields from the upper drop-down list and match them with corresponding FortiSIEM fields in the lower drop-down list.
4. Click **Save** when you are finished mapping fileds. The mappings are reflected in the table in the Field Mapping dialog box.
5. Click **Save** to dismiss the **Mapping Fields** dialog box.

Step 3: Run the Jira Integration

Select the Jira instance and click **Run**. FortiSIEM looks for incidents that match the mappings and creates a ticket in the Jira system.

Jira Incident Inbound Integration

Jira inbound integration allows a user to close a ticket in FortiSIEM if the ticket is closed in Jira.

To create an inbound integration, follow these steps:

Step 1: Provide Configuration Information

1. Go to **Admin > Settings > General > External Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.
3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Inbound**.
   - **Vendor**: select **Jira**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the Jira integration class: `com.accelops.phoenix.jira.JiraTicketIntegration`.
   - **Host/URL**, enter the URL of the Jira provider, for example, `https://rackspace.atlassian.net`.
   - **Username** and **Password**, enter your Jira user name and password.
   - **Description**: enter an optional description of the integration.
   - **Time Window**: enter the number of hours for which incident states will be synched. For example, if time windows is set to 10 hours, the states of incidents that occurred in the last 10 hours will be synched.

Step 2: Specify the FortiSIEM to Jira Field Mapping

1. Click the edit icon next to **Field Mapping**.
2. In the **Field Mapping** dialog box, provide the following values:
   - **Project**: enter a name for the project.
   - **Issue Type**: select **Event**.
   - The **Summary**: field is pre-populated with the **Incident Rule Name (**`$ruleName`**)**.

   - For **Description**: click the edit icon to build the expression for the Jira issue description. The drop-down list contains FortiSIEM fields that can be mapped to.
   - The **Priority**: field is pre-populated with **Incident Severity Category (**`$incident_severityCat`**)**.
3. Create mappings between Jira fields and FortiSIEM fields by clicking **New**.
   Select Jira fields from the upper drop-down list and match them with corresponding FortiSIEM fields in the lower drop-down list.
4. Click **Save** when you are finished mapping fileds. The mappings are reflected in the table in the Field Mapping dialog box.
5. Click **Save** to dismiss the **Mapping Fields** dialog box.

Step 3: Run the Jira Integration

Select the Jira instance and click **Run**. FortiSIEM looks for incidents which are closed in the Jira system and closes them if they also appear in FortiSIEM.

Link the Integration to One or More Incident Notification Policies (for Incident Outbound)

1. Complete the incident outbound integration steps for your system.
2. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**.
3. Click **New** to create a new policy or **Edit** to edit an existing policy.
4. In the **Notification Settings** dialog box, select **Action** > **Invoke an Integration Policy**, then select the edit icon.
5. Choose a specific integration from the drop-down list.
6. Click **Save**.

CMDB Inbound Integration

CMDB Inbound Integration populates FortiSIEM CMDB from an external CMDB.

Step 1: Create a CMDB Inbound integration

You must create a CSV file for mapping the contents of the external database to a location on your FortiSIEM Supervisor, which will be periodically updated based on the schedule you set.

1. Log into your Supervisor node with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **New**.
4. For **Type**, select **Device**.
5. For **Direction**, select **Inbound**.
6. Enter the **File Path** to the CSV file.
7. For **Content Mapping**, click the edit icon.
   a. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
      I. Enter Source CSV column Name for **Source Column**
      II. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist

            i. Enter a name for the **Destination Column** of the property from the drop-down list.
            ii. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
        III. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
        IV. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
        V. Click **OK**.
    b. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
    For example, if you wanted to change all instances of **California** in the entries for the **State** attribute in the external system to **CA** in the destination CMDB, you would select the **State** attribute, enter **California** for **From**. and **CA** for **To**.
8. In **Attribute Mapping**, map attributes to resources.
9. Click **OK**.
10. Click **Save**.

Step 2: Create a CMDB Inbound integration schedule

Updating FortiSIEM CMDB on a schedule:

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Click **Schedule** and then click **+**.
    a. Select the integration policies.
    b. Select a schedule.

Updating FortiSIEM CMDB on-demand (one-time):

1. Log into your FortiSIEM Supervisor with administrator credentials.
2. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
3. Select a specific integration policy and click **Run**.

FortiGuard IOC Integration

- Configuring FortiGuard for FortiSIEM Integration
- FortiGuard Incident Outbound Integration

Configuring FortiGuard for FortiSIEM Integration

No additional license is required to use the FortiGuard feature. Follow the steps in FortiGuard Incident Outbound Integration and Adding Incident Notification Settings to configure this feature.

FortiGuard Incident Outbound Integration

To create an outbound integration, follow these steps:

1. Go to **ADMIN > Settings > General > External Integration**.
2. Click **New** to create a new integration or **Edit** to modify an existing integration.

3. In the **Integration Policy** dialog box, provide the following values:
   - **Type**: select **Incident**.
   - **Direction**: select **Outbound**.
   - **Vendor**: select **FortiGuard IOC Lookup**.
   - **Instance**: enter an instance name or accept the default.
   - **Plugin Name**: is pre-populated with the name of the integration class: `com.accelops.service.integration.impl.FortiGuardIOCIntegrationServiceImpl`.
4. Enter an optional **Description** of the integration.
5. In the **Max Incidents** field, enter the maximum number of incidents you want recorded.
6. Click **Save**.

Modifying an External System Integration

Complete these steps to modify an External System Integration.

1. Use the below options to modify an External System Integration setting.

Settings	Guidelines
Edit	To edit an External System Integration setting.
Delete	To delete an External System Integration setting.

2. Click **Save**.

ServiceNow Security Operations (SecOps) Integration

- Scope and Purpose
- XML Assets
- Process Overview
- Process Workflow
- ServiceNow FortiSIEM Integration Usage
- ServiceNow FortiSIEM Integration Deletion
- ServiceNow and FortiSIEM Field Mappings
- Known Limitations

Scope and Purpose

ServiceNow FortiSIEM integration is designed to pull FortiSIEM incidents and triggering events from the remote FortiSIEM server every 30 seconds into the desired ServiceNow instance. FortiSIEM incidents pulled into the ServiceNow instance will be automatically mapped to new security incidents. Upon closing the created security incidents, the corresponding FortiSIEM incidents status on the remote FortiSIEM sever will also be updated.

XML Assets

The required XML files for this integration can be downloaded here.

File: FortiSIEM-ServiceNow-Integration-v1_3_6.zip

SHA256 hash: 945214c2128337dc7d8b03f80ebd51e1a07a8c75c855c3ec49583ca61d43e1f5

MD5 hash: d397ad5bf6ba0c0e15942958b95bad4e

Process Overview

1. The ServiceNow system administrator must request a new Paris release ServiceNow instance or login to an existing one to import the provided ServiceNow FortiSIEM integration XML file to ServiceNow.
2. The ServiceNow system administrator configures the REST Message API endpoints and Basic Auth Profile settings on the ServiceNow instance to make API calls to the remote FortiSIEM server.
3. The ServiceNow instance will begin to fetch FortiSIEM incidents and triggering events every 30 seconds.
4. The ServiceNow system administrator or ServiceNow users with security incident roles can view and update security incidents created from FortiSIEM incidents pulled.

Process and Workflow

The following information contains a detailed explanation on how ServiceNow FortiSIEM integration is set up and its usage.

ServiceNow FortiSIEM Integration Prerequisites

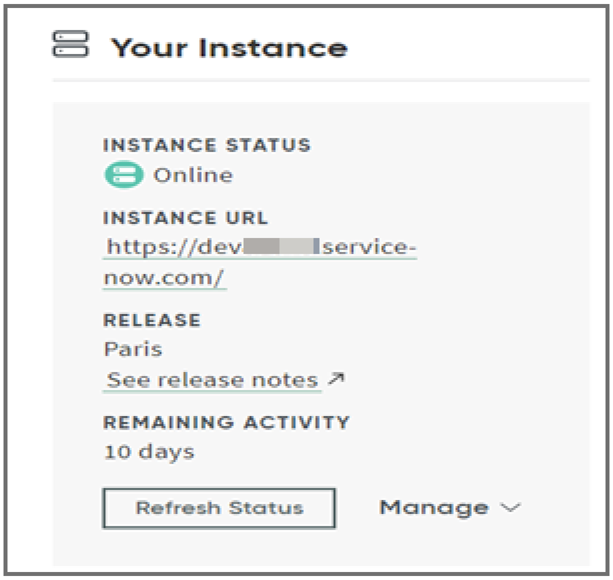
The following is required for ServiceNow FortiSIEM integration.

1. FortiSIEM server.
2. Paris release ServiceNow instance.
3. ServiceNow instance plugin – Security Incident Response Dependencies.
4. ServiceNow instance plugin – Security Incident Response.

ServiceNow FortiSIEM Integration Installation

A ServiceNow system administrator must take the following steps:

1. Request a new Paris release ServiceNow instance or login to an existing one.



Your Instance

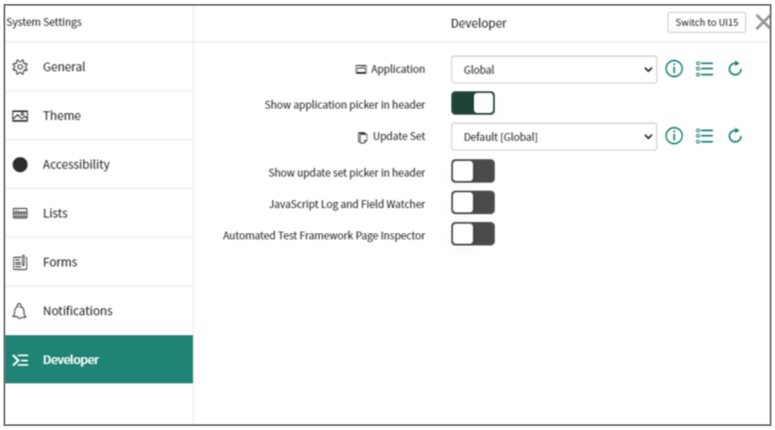
INSTANCE STATUS
Online

INSTANCE URL
https://dev[redacted]service-now.com/

RELEASE
Paris
See release notes ↗

REMAINING ACTIVITY
10 days

2. In the ServiceNow instance, click the **Application** drop-down list and select **Global**.



Developer

Application: Global

Show application picker in header: on

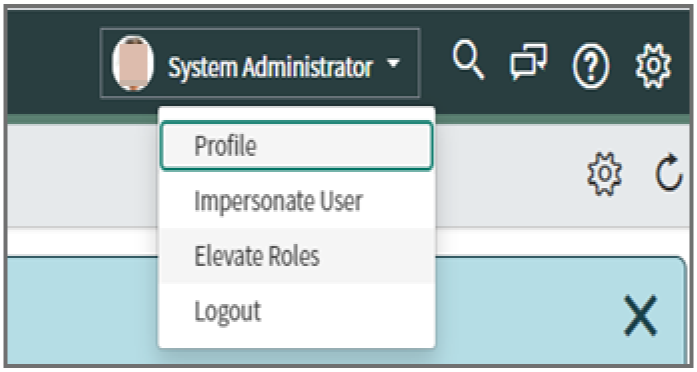
Update Set: Default [Global]

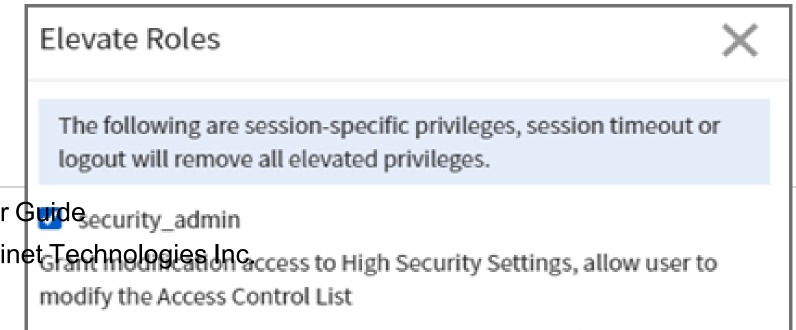
Show update set picker in header: off

JavaScript Log and Field Watcher: off

Automated Test Framework Page Inspector: off

3. Click on the role drop down list and select **Elevate Roles**. Elevate the "System Administrator" role to "Security Admin". This new role ensures the success of the ServiceNow FortiSIEM integration import in the next step.





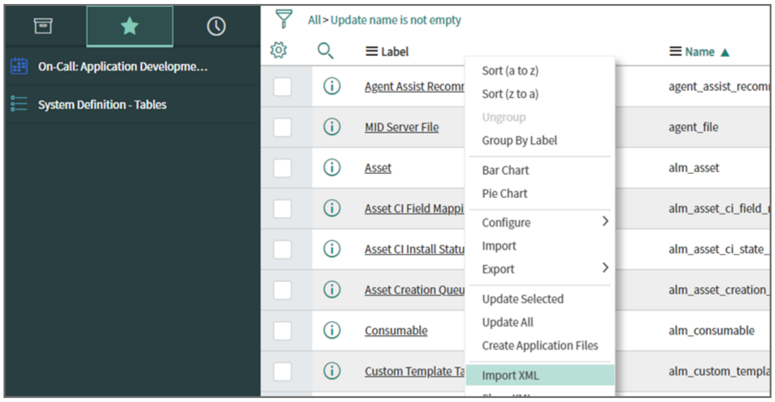
Elevate Roles

The following are session-specific privileges, session timeout or logout will remove all elevated privileges.

☑ security_admin

Grant modification access to High Security Settings, allow user to modify the Access Control List

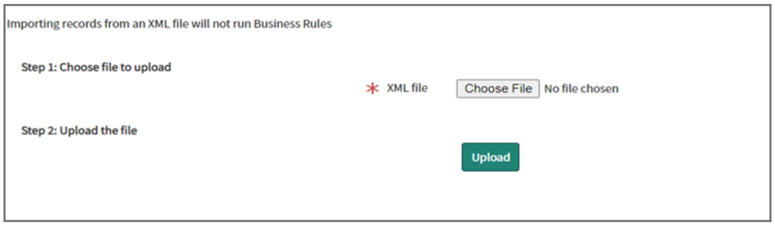
4. Navigate to **System Definition - Tables**, right click on **Table Headers** on the page, and select **Import XML**.



All > Update name is not empty

Label	Name ▲
Agent Assist Recomr	agent_assist_recomi
MID Server File	agent_file
Asset	alm_asset
Asset CI Field Mappi	alm_asset_ci_field_
Asset CI Install Statu	alm_asset_ci_state_
Asset Creation Queu	alm_asset_creation_
Consumable	alm_consumable
Custom Template Ta	alm_custom_templa

5. In "Import XML", select the provided `FSMSNIntegrationImportData` file (See XML Assets) and click **Upload**.



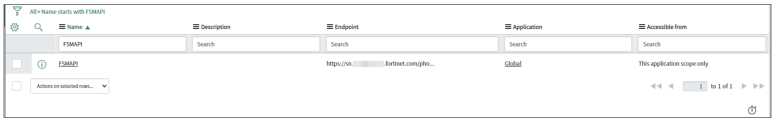
Importing records from an XML file will not run Business Rules

Step 1: Choose file to upload

* XML file [Choose File] No file chosen

Step 2: Upload the file

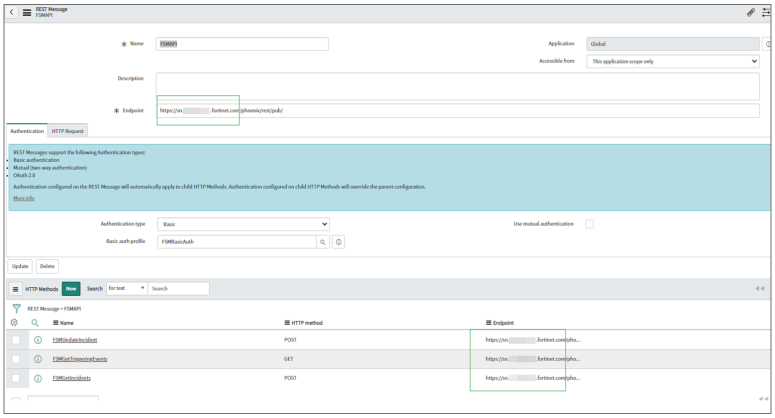
6. After the upload is complete, navigate to **System Web Services/Rest Message**, and click on **FSMAPI** (This was imported in step 5) to change the FortiSIEM remote server API endpoint and basic auth profile.



All > Name starts with FSMAPI

Name ▲	Description	Endpoint	Application	Accessible from
FSMAPI	Search	Search	Search	Search
FSMAPI		https://sn.[redacted].fortinet.com/pho...	Global	This application scope only

7. In **REST Message/FSMAPI**, if the remote FortiSIEM server host name is different than the ones displayed, please manually change the hostname in “FSMAPI” and all the endpoints in **HTTP Methods**, as shown here. For **HTTP Methods**, please manually click on each record, and change the hostname.
Note: Only change the host name.(I.E. `https://myNewHostName.com`). The slashes or symbols after the host name must be retained.



REST Message
FSMAPI

Name: FSMAPI

Application: Global

Accessible from: This application scope only

Description:

Endpoint: https://sn.[redacted].fortinet.com/phoenix/rest/pub/

Authentication | HTTP Request

REST Messages support the following Authentication types:
- Basic authentication
- Mutual (two-way authentication)
- OAuth 2.0

Authentication configured on the REST Message will automatically apply to child HTTP Methods. Authentication configured on child HTTP Methods will override the parent configuration.

More info

Authentication type: Basic

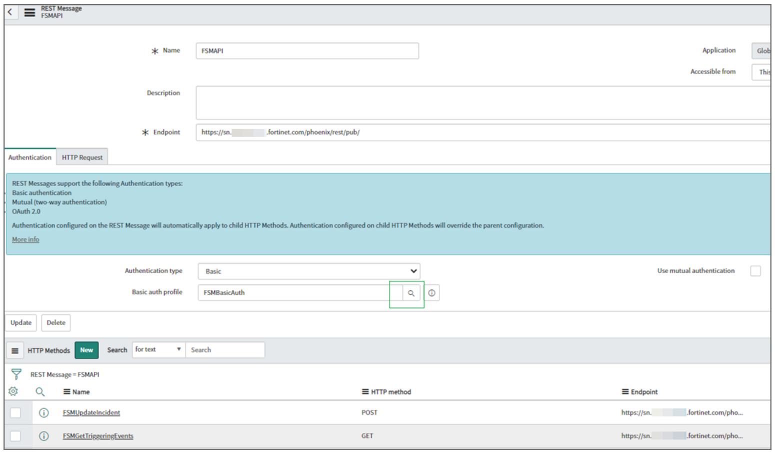
Use mutual authentication: □

Basic auth profile: FSMBasicAuth

REST Message = FSMAPI

Name	HTTP method	Endpoint
FSMUpdateIncident	POST	https://sn.[redacted].fortinet.com/pho...
FSMGetTriggeringEvents	GET	https://sn.[redacted].fortinet.com/pho...
FSMGetIncidents	POST	https://sn.[redacted].fortinet.com/pho...

8. In “REST Message/FSM API”, to change the basic auth profile, first click the search icon.



REST Message
FSMAPI

Name: FSMAPI

Application: Glob

Accessible from: This

Description:

Endpoint: https://sn.[redacted].fortinet.com/phoenix/rest/pub/

Authentication | HTTP Request

REST Messages support the following Authentication types:
- Basic authentication
- Mutual (two-way authentication)
- OAuth 2.0

Authentication configured on the REST Message will automatically apply to child HTTP Methods. Authentication configured on child HTTP Methods will override the parent configuration.

More info

Authentication type: Basic

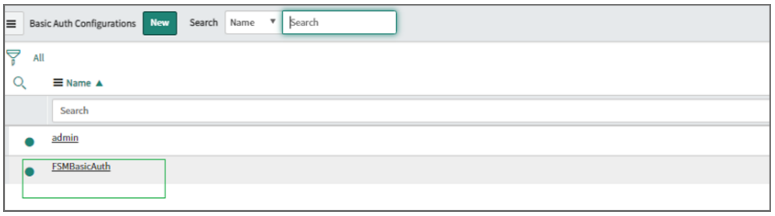
Use mutual authentication: □

Basic auth profile: FSMBasicAuth

REST Message = FSMAPI

Name	HTTP method	Endpoint
FSMUpdateIncident	POST	https://sn.[redacted].fortinet.com/pho...
FSMGetTriggeringEvents	GET	https://sn.[redacted].fortinet.com/pho...

9. Click **FSMBasicAuth**, and change the user name and password accordingly. You may also create a new Basic auth profile.



Name ▲
Search
admin
FSMBasicAuth

10. The integration uses a “HTTPS outbound REST end point”, and requires the FortiSIEM certificate to be added to the ServiceNow Certificate Trust Store. Please follow the sub-steps here before proceeding to step 11.

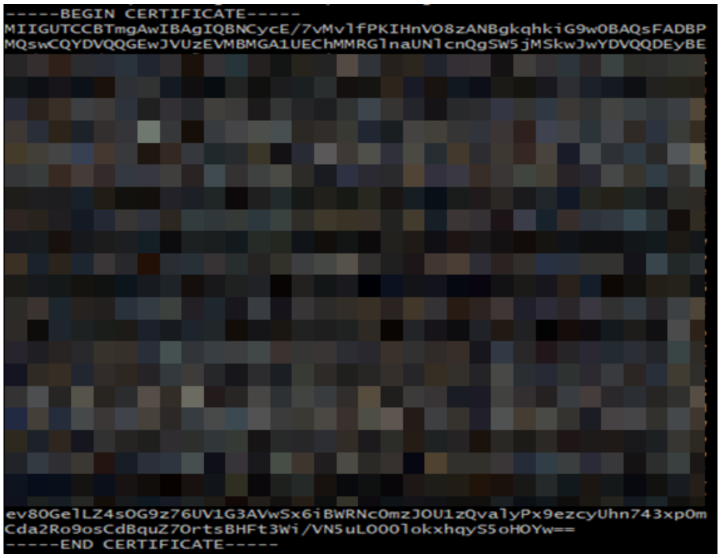
   a. Retrieve destination server SSL certificates. This can be given by the network administrator of the destination server, or by using the Linux command:

   ```
   openssl s_client -connect <destination_server_name>:443 -showcerts
   ```

   To gather the specific certificate, run this command from a Linux server:

   ```
   echo | openssl s_client -connect <destination_server_name>:443 2>&1 | sed
   --quiet '/-BEGIN CERTIFICATE-/,/-END CERTIFICATE-/p' > <destination_
   server_name>.pem
   ```

A sample SSL certificate is shown here.

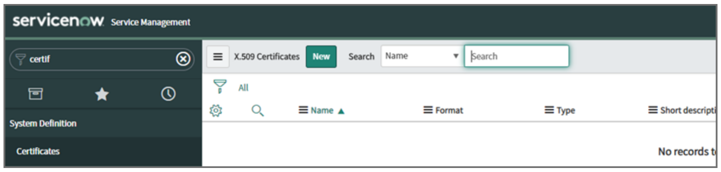


```
-----BEGIN CERTIFICATE-----
MIIGUTCCBTmgAwIBAgIQBNCycE/7vMv1fPKIHnVO8zANBgkqhkiG9w0BAQsFADBP
MQswCQYDVQQGEwJVUzEVMBMGA1UEChMMRGlnaUNlcnQgSW5jMSkwJwYDVQQDEyBE
[redacted]
ev80Ge1LZ4sOG9z76UV1G3AVwSx6iBWRNcOmzJOU1zQvalyPx9ezcyUhn743xpOm
Cda2Ro9osCdBquZ7OrtsBHFt3Wi/VN5uLO0O1okxhqyS5oHOYw==
-----END CERTIFICATE-----
```

b. Validate retrieved SSL certificate in part a to see if it has any issues or errors. It can be done through https://www.digicert.com/help/ or through the Linux command:
`openssl s_client -connect <destination_server_name>:443 -showcerts`

   If the certificate has issues or errors, please contact the destination server administrator for a correct one. For any reason that a correct SSL certificate cannot be obtained, please refer to step 10g for a temporary workaround in a ServiceNow instance. **Note that this workaround is not recommended for ServiceNow production instances**.

c. Now, upload the retrieved SSL certificate in part a to the ServiceNow instance. Navigate to **System Definition/Certificates** and on the right panel, click **New**.



d. On the new dialog box, take the following steps:

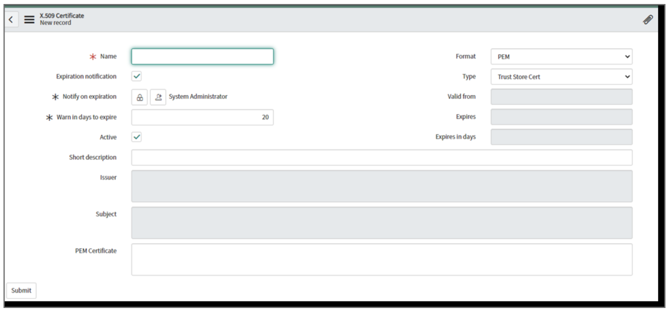
   i. In the **Name** field, enter a name for the certificate.

   ii. From the **Format** drop-down list, select **PEM**.

   iii. From the **Type** drop-down list, select **Trust Store Cert**.

   iv. In the **PEM Certificate** field, enter/paste the SSL certificate retrieved in 10a.

v. When done, click **Submit**.

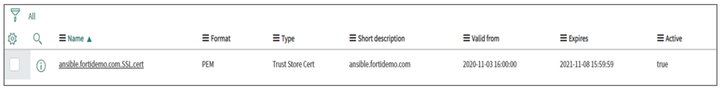


X.509 Certificate
New record

* Name		Format	PEM
Expiration notification	☑	Type	Trust Store Cert
* Notify on expiration	System Administrator	Valid from	
* Warn in days to expire	20	Expires	
Active	☑	Expires in days	
Short description			
Issuer			
Subject			
PEM Certificate			

Submit

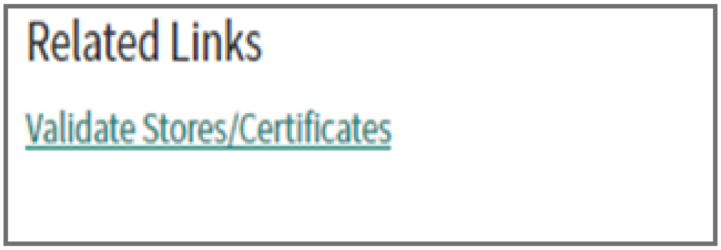
e. Once the certificate has been created, click on it.



All

☰ Name ▲	☰ Format	☰ Type	☰ Short description	☰ Valid from	☰ Expires	☰ Active
ansible.fortidemo.com.SSL.cert	PEM	Trust Store Cert	ansible.fortidemo.com	2020-11-03 16:00:00	2021-11-08 15:59:59	true

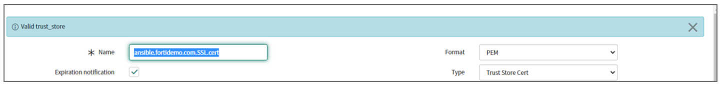
f. Click **Validate Stores/Certificates** to ensure it is valid.



Related Links

Validate Stores/Certificates

If it is valid, a “Valid trust_store” message will show. If you get an invalid certificate, please contact the destination server administrator.



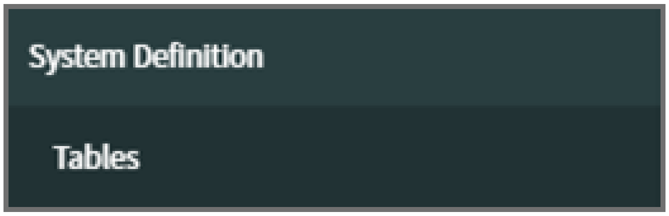
Valid trust_store

* Name	ansible.fortidemo.com.SSL.cert	Format	PEM
Expiration notification	☑	Type	Trust Store Cert

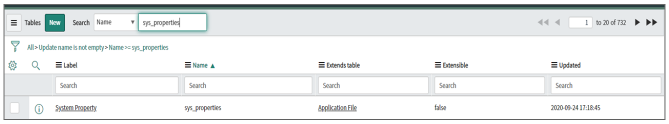
g. **Note**: This is workaround step in ServiceNow instance to solve invalid certification issue encountered in step 10b.
This is only recommended for ServiceNow developer instances.

To proceed, take the following steps:

i. Navigate to **System Definition / Tables**.



ii. Search for “sys_properties”, click on **System Property** from the displayed records and navigate to **Related Links**.

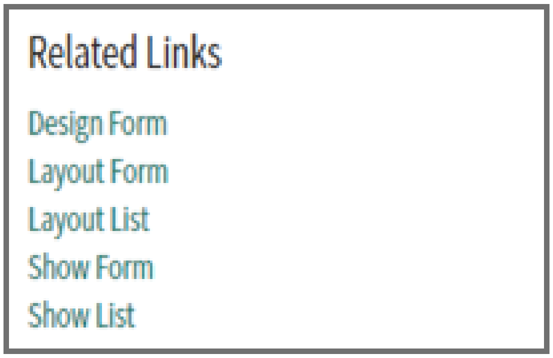


Tables New Search Name sys_properties 1 to 20 of 732

All > Update name is not empty > Name >= sys_properties

Label	Name ▲	Extends table	Extensible	Updated
System Property	sys_properties	Application File	false	2020-09-24 17:18:45

iii. Click **Show List** to open up all system properties entries stored in the current instance.



Related Links

Design Form

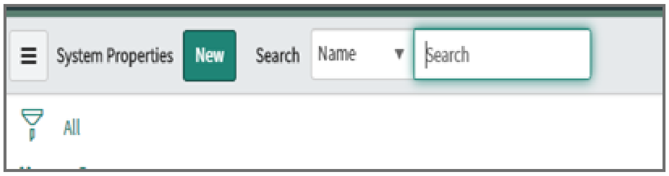
Layout Form

Layout List

Show Form

Show List

iv. Next to the System Properties header, click **New**.

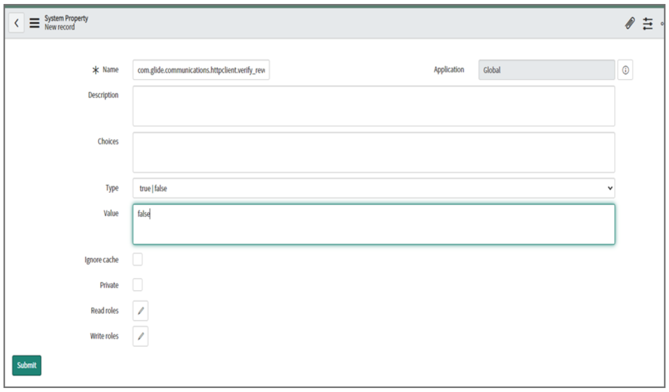


v. Enter the following:

In the **Name** field, enter "com.glide.communications.httpclient.verify_revoked_certificate".

In the **Type** field, enter "true|false".

In the **Value** field, enter "false".

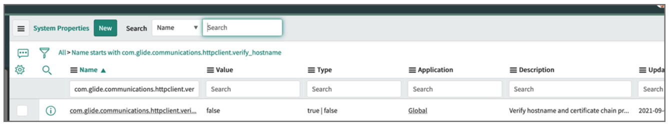


System Property
New record

* Name	com.glide.communications.httpclient.verify_rev
Application	Global
Description	
Choices	
Type	true | false
Value	false
Ignore cache	□
Private	□
Read roles	
Write roles	

vi. Click **Submit**.

vii. If the certificate in use by FortiSIEM is also Self Signed, then set the following System Property to false . Under the same section, search for *com.glide.communications.httpclient.verify_hostname* and change to false.



System Properties New Search Name ▾ Search

All > Name starts with com.glide.communications.httpclient.verify_hostname

		Name ▲	Value	Type	Application	Description	Upda
		com.glide.communications.httpclient.ver	Search	Search	Search	Search	Search
□	ⓘ	com.glide.communications.httpclient.veri...	false	true | false	Global	Verify hostname and certificate chain pr...	2021-09-

Once this record has been created, the ServiceNow instance will ignore any SSL certification validation issues or errors encountered.

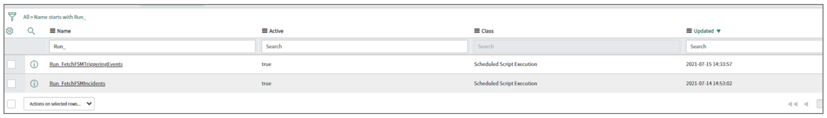
The installation is now complete.

ServiceNow FortiSIEM Integration Usage

The ServiceNow FortiSIEM Integration can be used in the following ways:

View Scheduled Jobs

The ServiceNow system administrator can view scheduled jobs that are running every 30 seconds to pull FSM incidents and FSM triggering events in “System Definitions/ Scheduled Jobs”.

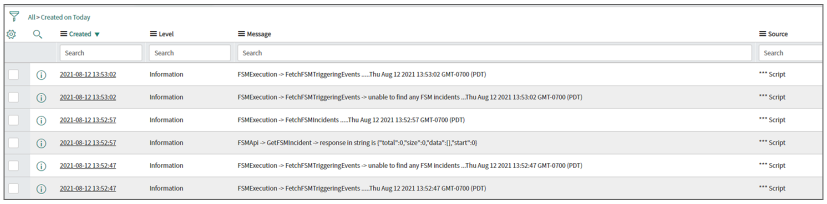


All > Name starts with Run_

		Name	Active	Class	Updated ▼
		Run_	Search	Search	Search
□	ⓘ	Run_FetchFSMTriggeringEvents	true	Scheduled Script Execution	2021-07-15 14:33:57
□	ⓘ	Run_FetchFSMIncidents	true	Scheduled Script Execution	2021-07-14 14:53:02

Monitor Scheduled Job Execution Logs

The ServiceNow system administrator can monitor the scheduled job execution logs in **System Log / All**.

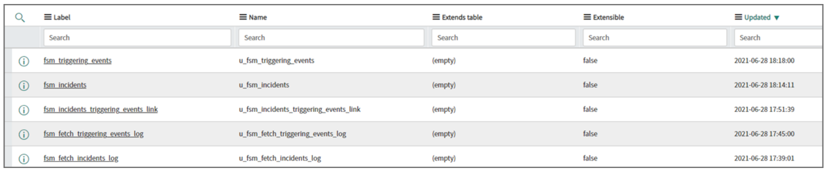


All > Created on Today

		Created ▼	Level	Message	Source
		Search	Search	Search	Search
□	ⓘ	2021-08-12 13:53:02	Information	FSMExecution -> FetchFSMTriggeringEvents .....Thu Aug 12 2021 13:53:02 GMT-0700 (PDT)	*** Script
□	ⓘ	2021-08-12 13:53:02	Information	FSMExecution -> FetchFSMTriggeringEvents -> unable to find any FSM incidents ...Thu Aug 12 2021 13:53:02 GMT-0700 (PDT)	*** Script
□	ⓘ	2021-08-12 13:52:57	Information	FSMExecution -> FetchFSMIncidents .....Thu Aug 12 2021 13:52:57 GMT-0700 (PDT)	*** Script
□	ⓘ	2021-08-12 13:52:57	Information	FSMApi -> GetFSMIncident -> response in string is {"total":0,"size":0,"data":[],"start":0}	*** Script
□	ⓘ	2021-08-12 13:52:47	Information	FSMExecution -> FetchFSMTriggeringEvents -> unable to find any FSM incidents ...Thu Aug 12 2021 13:52:47 GMT-0700 (PDT)	*** Script
□	ⓘ	2021-08-12 13:52:47	Information	FSMExecution -> FetchFSMTriggeringEvents .....Thu Aug 12 2021 13:52:47 GMT-0700 (PDT)	*** Script

Examine FortiSIEM Incidents, Logs, and Triggering Events

Fetched FortiSIEM incidents will be stored in the “fsm_incidents” table, and logs will be stored in “fsm_fetch_incidents_log” table. Fetched FSM triggering events will be stored in “fsm_triggering_events” table, and logs will be stored in the “fsm_riggering_events_log” table. The link between incidents and events will be stored in the “fsm_incidents_triggering_events_link” table.

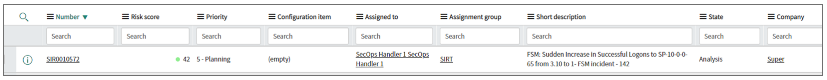


	Label	Name	Extends table	Extensible	Updated ▼
	Search	Search	Search	Search	Search
ⓘ	fsm_triggering_events	u_fsm_triggering_events	(empty)	false	2021-06-28 18:18:00
ⓘ	fsm_incidents	u_fsm_incidents	(empty)	false	2021-06-28 18:14:11
ⓘ	fsm_incidents_triggering_events_link	u_fsm_incidents_triggering_events_link	(empty)	false	2021-06-28 17:51:39
ⓘ	fsm_fetch_triggering_events_log	u_fsm_fetch_triggering_events_log	(empty)	false	2021-06-28 17:45:00
ⓘ	fsm_fetch_incidents_log	u_fsm_fetch_incidents_log	(empty)	false	2021-06-28 17:39:01

View Corresponding Security Incidents

After a FortiSIEM incident has been fetched, a corresponding security incident will be created with the short description:

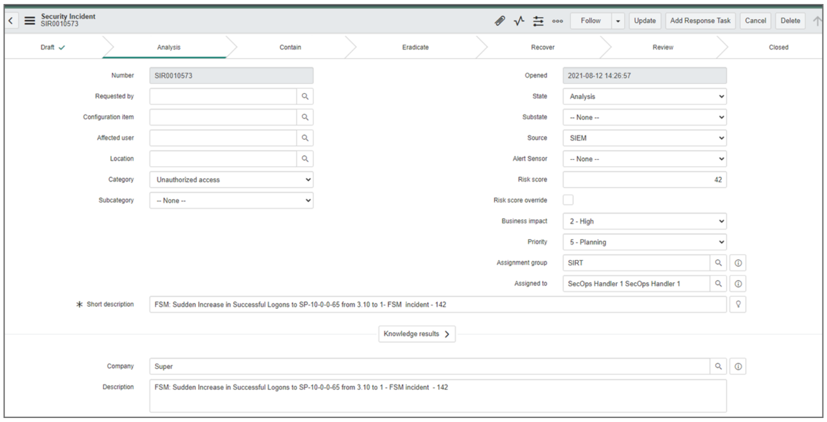
```
FSM : <IncidentTitle> - FSM Incident - <IncidentID>
```



	Number ▼	Risk score	Priority	Configuration item	Assigned to	Assignment group	Short description	State	Company
	Search	Search	Search	Search	Search	Search	Search	Search	Search
ⓘ	SIR0010572	● 42	5 - Planning	(empty)	SecOps Handler 1 SecOps Handler 1	SIRT	FSM: Sudden Increase in Successful Logons to SP-10-0-0-65 from 3.10 to 1- FSM incident - 142	Analysis	Super

Examine Security Incidents in Detail

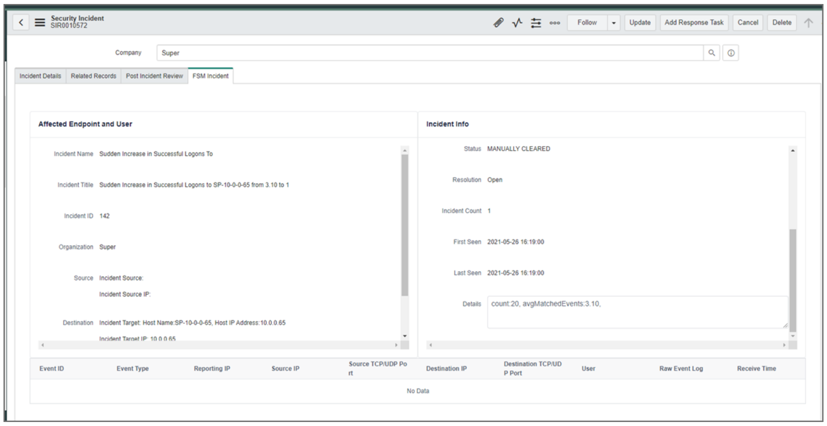
Security incidents created by FortiSIEM incident contain the “Category”, “Source”, “Priority”, “Description”, “Short Description”, and “Company” fields, pre-defined based on corresponding FortiSIEM incident fields.



Number: SIR0010573
Requested by:
Configuration item:
Affected user:
Location:
Category: Unauthorized access
Subcategory: -- None --
Opened: 2021-08-12 14:26:57
State: Analysis
Substate: -- None --
Source: SIEM
Alert Sensor: -- None --
Risk score: 42
Risk score override: □
Business impact: 2 - High
Priority: 5 - Planning
Assignment group: SIRT
Assigned to: SecOps Handler 1 SecOps Handler 1
* Short description: FSM: Sudden Increase in Successful Logons to SP-10-0-0-65 from 3.10 to 1- FSM incident - 142
Company: Super
Description: FSM: Sudden Increase in Successful Logons to SP-10-0-0-65 from 3.10 to 1 - FSM incident - 142

Customized "FortiSIEM Incident" Page

Security incident created by FortiSIEM incidents also have a customized UI section **FSM Incident**, which can be used to view FortiSIEM incident details and triggering events. For the current version V1.3.6, 10 triggering events are fetched per FortiSIEM incident.



Company: Super

Affected Endpoint and User

Incident Name: Sudden Increase in Successful Logons To
Incident Titile: Sudden Increase in Successful Logons to SP-10-0-0-65 from 3.10 to 1
Incident ID: 142
Organization: Super
Source: Incident Source:
Incident Source IP:
Destination: Incident Target: Host Name:SP-10-0-0-65, Host IP Address:10.0.0.65
Incident Target IP: 10.0.0.65

Incident Info

Status: MANUALLY CLEARED
Resolution: Open
Incident Count: 1
First Seen: 2021-05-26 16:19:00
Last Seen: 2021-05-26 16:19:00
Details: count:20, avgMatchedEvents:3.10,

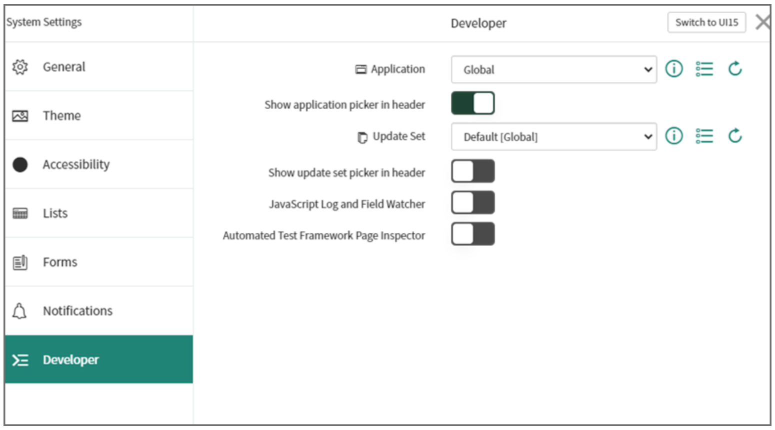
Event ID	Event Type	Reporting IP	Source IP	Source TCP/UDP Port	Destination IP	Destination TCP/UDP Port	User	Raw Event Log	Receive Time
No Data									

ServiceNow FortiSIEM Integration Deletion

Deleting the Integration will remove the FortiSIEM configuration, scheduled jobs, GUI elements, Incident information from FortiSIEM and Triggering events in ServiceNow. **Do not proceed if these ServiceNow elements and FortiSIEM Incident data is needed in your ServiceNow instance.**

To remove ServiceNow FortiSIEM Integration, take the following steps as a ServiceNow system administrator:

1. Navigate to System Settings, and set Application to **Global**.



Application: Global

Show application picker in header

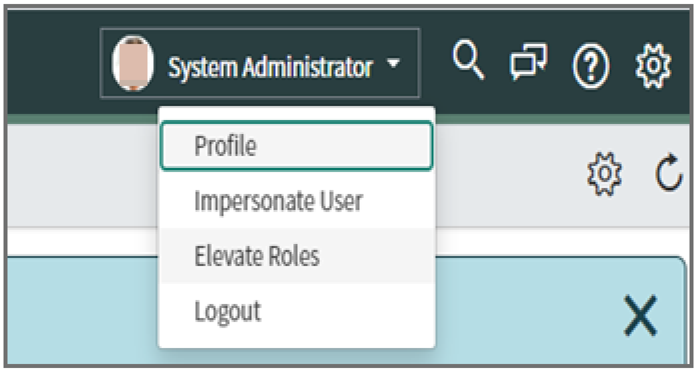
Update Set: Default [Global]

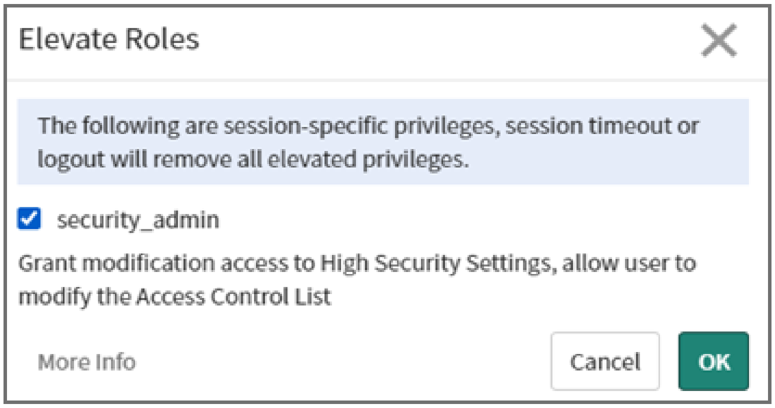
Show update set picker in header

JavaScript Log and Field Watcher

Automated Test Framework Page Inspector

2. Click on the role drop down list and select **Elevate Roles**. Elevate the "System Administrator" role to "Security Admin". This role ensures the success of the ServiceNow FortiSIEM integration import in the next step.



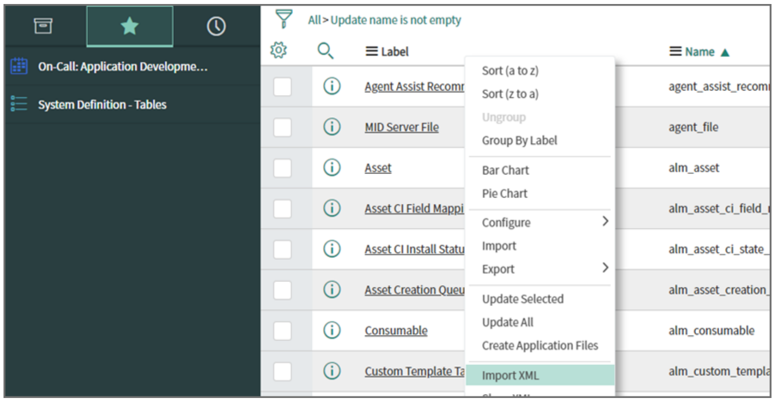


The following are session-specific privileges, session timeout or logout will remove all elevated privileges.

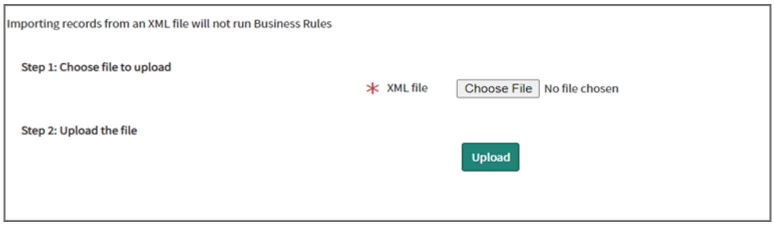
☑ security_admin

Grant modification access to High Security Settings, allow user to modify the Access Control List

3. With the elevated role, navigate to **System Definition - Tables**. Right click on “table headers” on the page and select **Import XML**.



4. In “Import XML”, select the provided `FSMSNIntegrationDeleteData` file (See XML Assets) and click **Upload**.



Importing records from an XML file will not run Business Rules

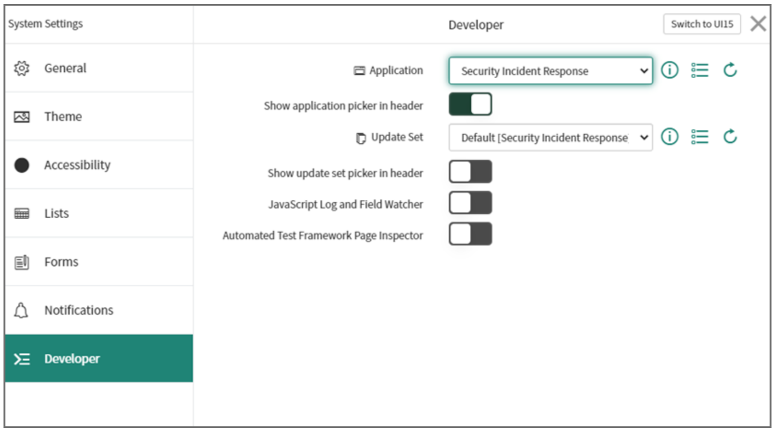
Step 1: Choose file to upload

* XML file Choose File No file chosen

Step 2: Upload the file

Upload

5. To complete the deletion process, you must have the elevated “Security Admin” permission, and change **Application** to “Security Incident Response”.



Developer

Application: Security Incident Response

Show application picker in header

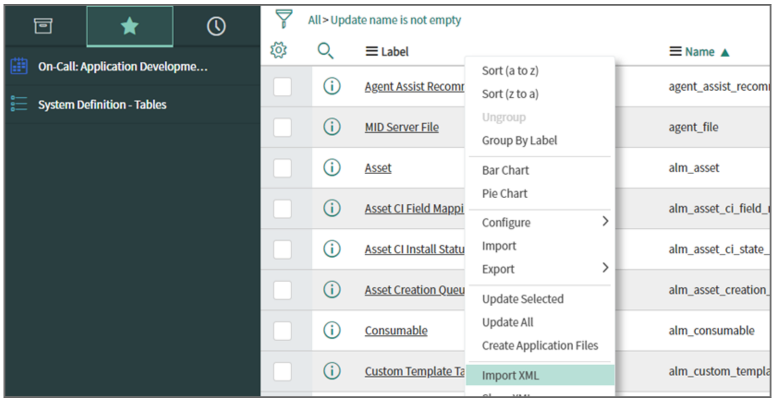
Update Set: Default [Security Incident Response

Show update set picker in header

JavaScript Log and Field Watcher

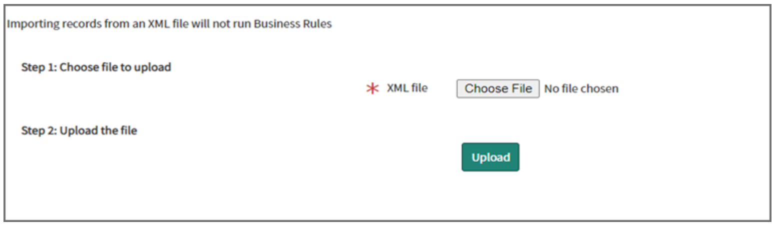
Automated Test Framework Page Inspector

6. Navigate to **System Definition - Tables**, right click on “table headers” of the page and select **Import XML**.



Label	Name ▲
Agent Assist Recomr	agent_assist_recomi
MID Server File	agent_file
Asset	alm_asset
Asset CI Field Mappi	alm_asset_ci_field_
Asset CI Install Statu	alm_asset_ci_state_
Asset Creation Queu	alm_asset_creation_
Consumable	alm_consumable
Custom Template Ta	alm_custom_templa

7. In “Import XML”, select the provided `delete_sys_ui_section` file (See XML Assets) and click **Upload**.


Importing records from an XML file will not run Business Rules

Step 1: Choose file to upload

* XML file Choose File No file chosen

Step 2: Upload the file

Upload

The ServiceNow FortiSIEM Integration deletion is now complete.

ServiceNow and FortiSIEM Field Mappings

FortiSIEM Closed State Mappings

FortiSIEM Incident State	ServiceNow Incident State
MANUALLY CLEARED, 2	Closed

FortiSIEM Incident Category Field: "phSubIncidentCategory" Mappings

FortiSIEM Incident Category	ServiceNow Category	FortiSIEM Major Rule Categories
Audit	Policy violation	Change
Authentication	Failed login	Security
Command and Control	Malware	Security
Command and Control	Malware	Security

FortiSIEM Incident Category	ServiceNow Category	FortiSIEM Major Rule Categories
Credential Access	Unauthorized access	Security
Defense Evasion	Privilege escalation	Security
Discovery	Reconnaissance activity	Security
Execution	Malicious code activity	Security
Exfiltration	Confidential personal identity data exposure	Security
Exploit	Malware	Security
Initial Access	Unauthorized access	Security
Lateral Movement	Privilege esclation	Security
Mail Server	Spam source	Security
Malware	Malware	Security
Persistence	Malware	Security
Policy Violation	Policy violation	Security
Privilege Escalation	Privilege escalation	Security
Reconnaissance	Reconnaissance activity	Security
Suspicious Activity	Reconnaissance activity	Security
UEBA	Insider Breach	Security

The following FortiSIEM incidents do not have a mapping to ServiceNow SecOps categories.

FortiSIEM	ServiceNow	FortiSIEM Major Rule Categories
Application		Performance
Behavioral Anomaly		Security
Collection		Security
CPU		Performance
Database		Performance

FortiSIEM	ServiceNow	FortiSIEM Major Rule Categories
Domain Controller		Performance
Environmental		Performance
FortiSIEM		Performance
Hardware		Performance
HVAC		Performance
Impact		Performance
Interface		Performance
License		Availability
Memory		Performance
Network		Performance
Performance		Performance
SDN		Performance
Server		Performance
Storage		Performance
Storage I/O		Performance
Storage Space		Performance
UPS		Performance
Video Conferencing		Performance
VoIP		Performance
WAN		Performance
Windows Cluster Service		Performance
Windows File System Replication		Performance

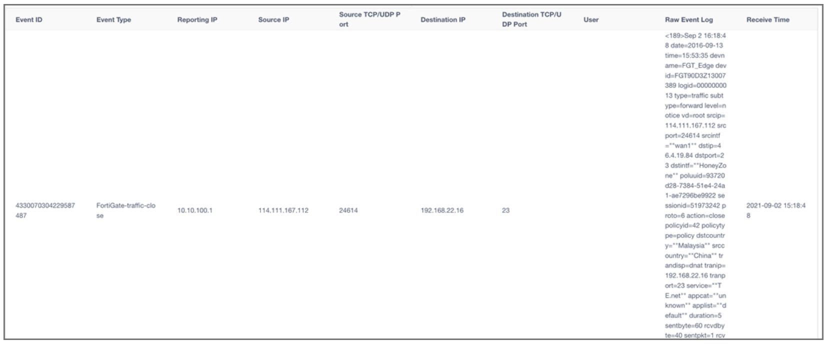
FortiSIEM Incident Severity Field: "eventSeverity" Mappings

FortiSIEM Severities	ServiceNow Severities
10	1 - Critical
9	2 - High
5 to 8	3 - Moderate
1 to 4	4 - Low
N/A	5 - Planning

FortiSIEM Triggering Events Attributes Displayed in ServiceNow

Name	Attribute Name	Type	Always Present in Triggering Events
Event Receive Time	phRecvTime	date	Yes
Event Type	eventType	string	Yes
Reporting IP	reptDevIpAddr	IP	Yes
Source IP	srcIpAddr	IP	No
Source TCP/UDP Port	srcIpPort	uint16	No
Destination IP	destipAddr	IP	No
Destination TCP/UDP Port	destipPort	uint16	No
User	User	string	No
Raw Event Log	rawEventMsg	string	Yes

Here is an example.



Event ID	Event Type	Reporting IP	Source IP	Source TCP/UDP Port	Destination IP	Destination TCP/UDP Port	User	Raw Event Log	Receive Time
4330070304229587487	FortiGate-traffic-close	10.10.100.1	114.111.167.112	24614	192.168.22.16	23		<189>Sep 2 16:18:48 date=2016-09-13 time=15:53:35 devname=FGT_Edge devid=FGT90D3Z13007389 logid=0000000013 type=traffic subtype=forward level=notice vd=root srcip=114.111.167.112 srcport=24614 srcintf=""wan1"" dstip=46.4.19.84 dstport=23 dstintf=""HoneyZone"" poluuid=93720d28-7384-51e4-24a1-ae7296be9922 sessionid=51973242 proto=6 action=close policyid=42 policytype=policy dstcountry=""Malaysia"" srccountry=""China"" trandisp=dnat tranip=192.168.22.16 tranport=23 service=""TE.net"" appcat=""unknown"" applist=""default"" duration=5 sentbyte=60 rcvdbyte=40 sentpkt=1 rcv	2021-09-02 15:18:48

Known Limitations

The following are known limitation for this integration:

- Incidents are synced by ServiceNow to FortiSIEM every 30 seconds. This is not configurable.
- Incident status changes in FortiSIEM, e.g. are not synced to ServiceNow.
- Incident External ID and External Incident Status is not synced to FortiSIEM from ServiceNow until there is a change to the ServiceNow incident such as the State or assignment to a User.

ServiceNow SOAP Integration Requirements

General Requirements

FortiSIEM uses ServiceNow Direct Web Service for integration. FortiSIEM communicates on SOAP port 80.

The following SOA APIs are used:

- Insert
- Update
- getKeys
- get
- getRecords

The following role types are required:

- soap_create
- soap_query
- soap_query_update
- soap_update

The following Table and Field permissions are provided.

- Required Table and Field Permissions for CMDB Outbound Integration
  - Main Table Permissions
  - Extended Table Permissions

Required Table and Field Permissions for CMDB Outbound Integration

Main Table Permissions

ServiceNow Table	FortiSIEM Actions	Required Permissions
configuration item [cmdb_ci]	• Query • Insert • Update	• Read • Write • Create
Running Process [cmdb_running_process]	• Query • Insert / Create • Update	• Read • Write • Create
Software Instance [cmdb_software_instance]	• Query • Insert / Create • Update	• Read • Write • Create

Extended Table Permissions

ServiceNow Table	FortiSIEM Actions	Required Permissions
cmdb_ci_linux_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_win_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_hpux_server	• Query • Insert / Create	• Read • Write

ServiceNow Table	FortiSIEM Actions	Required Permissions
	• Update	• Create
cmdb_ci_unix_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_aix_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_solaris_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_esx_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_web_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_app_server_java	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_app_server_tomcat	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_app_server_weblogic	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_app_server_websphere	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_app_server_jboss	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_netware_server	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_database	• Query	• Read

ServiceNow Table	FortiSIEM Actions	Required Permissions
	• Insert / Create • Update	• Write • Create
cmdb_ci_vpn	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_ip_router	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_netgear	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_ups	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_printer	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_network_adapter	• Query • Insert / Create • Update	• Read • Write • Create
cmdb_ci_storage_disk	• Query • Insert / Create • Update	• Read • Write • Create

Reference Table Permissions

ServiceNow Table	FortiSIEM Actions	Required Permissions
Company [core_company]	• Query	• Read

Reference Field Permissions

Field	ServiceNow Table	Required Permissions	Need write_role
company	core_company	• Read • Write	Yes. The default role in ServiceNow is : admin

Regular Field Permissions

Need Read/Write and write_role is not required.

Required Table and Field Permissions for Incident Outbound Integration

Main Table Permissions

ServiceNow Table	FortiSIEM Actions	Required Permissions
Incident [incident]	• Query • Insert / Create • Update	• Read • Write • Create

Reference Table Permissions

ServiceNow Table	FortiSIEM Actions	Required Permissions
Company [core_company]	• Query	• Read

Reference Field Permissions

Field	ServiceNow Table	Required Permissions	Need write_role
assigned_to	sys_user	• Read	Yes. The default role in ServiceNow is : itil
company	core_company	• Read • Write	Yes. The default role in ServiceNow is: admin

Regular Field Permissions

Field	Required Permissions	Need write_role
state	• Read	Yes. The default role in ServiceNow is : itil
comments	• Read • Write	Yes. The default role in ServiceNow is : itil
closed_by	• Read	Yes. The default role in ServiceNow is : itil
short_description	• Read • Write	Yes. The default role in ServiceNow is : itil
impact	• Read • Write	Yes. The default role in ServiceNow is : itil
urgency	• Read • Write	Yes. The default role in ServiceNow is : itil
closed_at	• Read	Yes. The default role in ServiceNow is : admin
work_notes	• Read • Write	Yes. The default role in ServiceNow is : itil
Active	• Read • Write	No

Escalation Settings

Escalation settings allow you to define escalation policies for incident tickets and then use it as an escalation policy when creating a ticket using FortiSIEM Case system.

Follow the below procedures to enable Escalation Settings:

- Adding an Escalation Policy
- Modifying an Escalation Policy

Adding an Escalation Policy

Complete these steps to create an escalation ticket and then use it as an escalation policy while creating a ticket, using FortiSIEM Case system.

1. Go to **ADMIN** > **Settings** > **General** > **Case Escalation** tab.
2. Click **New**.
3. In the **Escalation Policy** dialog box, enter or select the following information:

Settings	Guidelines
Name	[Required] Name of the escalation policy.
Remaining Time	Expiration Time of the policy either relative or absolute time.
Email To	Email the policy to the Assignee or Assignee's Manager.

4. Click **Save**.

Modifying an Escalation Policy

Complete these steps to create an escalation ticket:

1. Go to **ADMIN** > **Settings** > **General** > **Case Escalation** tab.
2. Select one or more ticket(s).
3. Use the options below to edit an escalation ticket.
   - **Edit** - to edit an escalation ticket.
   - **Delete** - to delete an escalation ticket.
4. Click **Save**.

Configuring SSL Socket Certificates

Before the 6.0.0 release, the mechanism to communicate notifications between backend processes and the app server was through plain sockets. Beginning with the 6.0.0 release, these communications are performed by the safer SSL sockets.

Before starting to transport data through the SSL tunnel, certificates are used to authenticate endpoints. Certificate verification is important, because “man-in-the-middle” attacks can happen when certificate verification is not enabled.

SSL certificate verification is performed in two directions: the client verifies the server’s certificate and the server verifies the client’s certificate.

By default, certificate verification is disabled in both directions in FortiSIEM. This section describes how to configure certificate verification in FortiSIEM

Running the SSL Configuration Script

The `config-ssl-cert.sh` shell script does the work to configure SSL certificates correctly. This script performs the following tasks:

- Provides values for the SSL configuration attributes in the GLOBAL section of the `/opt/phoenix/config/phoenix_config.txt` file.
- Generates files, such as the certificate chain file, trust store, and key store.
- Restarts backend processes to apply the configuration.

To run the `config-ssl-cert.sh` shell script, follow these steps:

1. Log in to the system as user `root`.
2. Run the `config-ssl-cert.sh` shell script with the appropriate options for your environment. See Script Options and Script Examples.

Note:

- When running the script, use the absolute path for all files and directories.
- The script will back-up the existing `phoenix_config.txt` file and `cert_store`, before modifying it. You can restore the previous version if you need to.

Script Options

The following table describes the options that can be used with the `config-ssl-cert.sh` shell script.

Option	Description
-h	Display the help message of script.
-v <0|1|2|3>	Set certificate verify model. This is a required option, with following possible values. • **0**: Disable certificate verify at both directions • **1**: Enable only the verifying server's certificate. This means that the client will verify the certificate from server, but server will not require or verify the certificate from client. • **2**: Enable only the verifying client's certificate. This means that the server will require and verify certificate from client, but client will not verify the certificate from server • **3**: Enable certificate verification in both directions. This means that the client will verify the certificate from server, and server will require and verify the certificate from client.
-p	This option indicates whether the provided certificate is public. Public certificates are signed by a well-known CA organization. It should not be signed by a private CA, or by itself. This option is useful, because it indicates whether you need a CA for the certificate. As you know, if the certificate is public, then the ROOT CA for that certificate is always installed in the system by default. You do not have to provide one. However, if the certificate is private, then a private CA is required.
-c <Certificate file> -k <Key file>	The **-c** and **-k** options are used together to specify the Certificate File and corresponding Key file.
-a <CA file> -d <CA dir>	The CA is used to verify the certificate. The **-a** and **-d** options are used together to specify the CA file and the directory where it is stored. If the provided certificate is private, then the CA is required. If the provided certificate is public, then the CA is optional (typically, it is not needed).

Option	Description

-i <Intermediate CA chain file>	If the certificate is not signed by the ROOT CA directly (this is typically the case for public certificates), then there is a trust chain:
	`Certificate -> Intermediate CA1 -> Intermediate CA2 ->…-> Root CA`
	Use this option to provide the intermediate CA (`Intermediate CA`) chain. If there is only one intermediate CA, then that intermediate CA certificate can act as the intermediate CA chain file directly. If there is more than one intermediate CA, then you must create a chain file for them by using the `cat` command, for example:
	`cat IntermediateCA1 Intermediate CA2 … IntermediateCAn > IntermediateCAChain`

-s <cert_store>	You might need to generate some useful files, such as the trust store file and key store file. Use this option to specify where you want to store those files. By default, they will be stored in the `/opt/phoenix/config/cert_store` directory.

-r	Typically, you must restart backend processes to apply the configuration changes. Use this option, to instruct the script to restart the processes automatically.
	NOTE: because you are configuring the notification communicating mechanism, it might fail if you try to restart the backend processes using tools such as `phtools --stop` all or `monctl stop`.
	If you want to restart the backend processes manually, use following commands:
	`phstatus.py |grep ph |cut -d' ' -f1 |xargs killall -9`
	`monctl start`
	`phtools --start all`

Script Examples

- Disable Certificate Verification in Both Directions
- Enable Verification in Both Directions Using a Public Certificate
- Enable Verification in Both Directions with a Self-Signed Certificate

Disable Certificate Verification in Both Directions

This command disables verification in both directions:

```
config-ssl-cert.sh -v 0 -r
```

where:

- `-v 0` - disables verification in both directions.
- `-r` - restarts backend processes to apply the changes.

Enable Verification in Both Directions Using a Public Certificate

This command enables verification in both directions using a public certificate.

```
config-ssl-cert.sh -v 3 -p -c /opt/star_qa_fortisiem_fortinet_com.crt -k /opt/star_
qa_fortisiem_fortinet_com.key -i /opt/DigiCertCA.crt -r
```

where:

- `-v 3` - enables verification in both directions. You can change to `1` to verify only the server’s certificate, or change to `2` to verify only the client’s certificate.
- `-p` - specifies that the `-c` and `-k` options identify the <certificate, key> pair of a public certificate.
- `-i` – specifies that there is an intermediate CA for the certificate. This means that there is a trust chain here: `star_qa_fortisiem_fortinet_com.crt -> DigiCertCA.crt -> Root CA`.

Because this is a public certificate, the CA (`-a`) option is not required.

Enable Verification in Both Directions with a Self-Signed Certificate

This command enables verification in both directions using a self-signed certificate.

```
config-ssl-cert.sh -v 3 -c /etc/pki/tls/certs/localhost.crt -k /etc/p-
ki/tls/private/localhost.key -a /etc/pki/tls/certs/localhost.crt -r
```

where:

- The absence of the `-p` option indicates that the provided `-c` and `-k` options are specifying a private <certificate, key> pair.
- `-a` – specifies the CA file used to verify the certificate. This is the certificate itself, in the self-signed case.

Role Settings

FortiSIEM provides performance, availability, and environmental alerts, as well as change and security monitoring for network devices, servers and applications. It is difficult for one admin to monitor across the entire spectrum of available information. In addition, devices may be in widely distributed geographical and administratively disjointed locations. Role-based access control provides a way to partition the FortiSIEM administrative responsibilities across multiple admins.

A role defines two aspects of a user's interaction with the FortiSIEM platform:

- Which user interface elements a user can see and the ability to use the associated Read/Write/Execute permissions. As an example, the built-in Executive role can see only the dashboard, while the Server Admin role cannot see network devices. Role permissions can be defined to the attribute level in which, for example, a Tier1 Network Admin role can see network devices but not their configurations.
- What data can the user see. For example, consider a Windows Admin role and a Unix Admin role. They both can run the same reports, but the Windows admins sees only logs from Windows devices. This definition can also be fine-grained, for example one Windows admin sub-role can be defined to see Windows performance metrics, while another Windows admin sub-role can see Windows authentication logs. The roles described in the following table are default roles.

Role	Permissions
DB Admin	Full access to the database servers part of the GUI and full access to logs from those devices.

Role	Permissions
Executive	View access to the Business Service dashboard and personalized My Dashboard tabs, but reports can be populated by logs from any device.
Full Admin	Full access to the GUI and full access to the data. Only this role can define roles, create users and map users to roles.
Help Desk	Access to the Admin, CMDB, and Dashboard tabs, with view and run permissions for the Analytics and Incidents tabs.
Network Admin	Full access to the network device portion of the GUI and full access to logs from network devices.
Read Only Admin	View access to all tabs and permission to run reports.
Security Admin	Full access to Security aspects of all devices.
Server Admin	Full access to the Server part of the GUI and full access to logs from those devices.
Storage Admin	Full access to the Storage device part of the GUI and full access to logs from those devices.
System Admin	Full access to the Server/Workstation/Storage part of the GUI and full access to logs from those devices.
Unix Server Admin	Full access to the Unix Server part of the GUI and full access to logs from those devices.
Windows Server Admin	Full access to the Windows Server part of the GUI and full access to logs from those devices.

The following sections describe the procedures to create custom roles and privileges:

- Adding a New Role
- Modifying a Role
- Example Role Setup
- Viewing User Roles for AD Group Mappings

Adding a New Role

You can create a new role or use an existing role by selecting an existing role and clicking the **Clone** button.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New**.
3. Enter a **Role Name** and **Description**.
4. Enter the **Data Conditions** for this role.
   This restricts access to the event/log data that is available to the user, and will be appended to any query that is submitted by users with this role. This applies to both Real-Time and Historical searches, as well as Report and Dashboard information.
5. Enter the **CMDB Report Conditions** for this role. Choose a type from the drop-down list.
   This restricts access to the reports for devices, users, monitors, rule, report, task, identity, incident, audit that are available to the user with this role.
6. Select the appropriate **Approver** capability:
   - Select **De-Obfuscation** if this role can approve De-Obfuscation requests.
   - Select **Report Schedule** if this role can approve Report Schedule Activation requests.
   - Select **Rule Activation/Deactivation** if this role can approve Rule Activation/Deactivation requests.
   - Select **Remediation** if this role can approve Remediation requests. FortiSIEM recommends creating at least two user accounts with the Remediation approver role. See Adding Users for more information on creating a user account.
7. Select the appropriate **Activation** capability:
   - Select **Report Schedule** if this role does NOT require approval for Report Schedule Activation.
   - Select **Rule Activation/Deactivation** if this role does NOT require approval for Rule Activation/Deactivation.
   - Select **Remediation** if this role does NOT require approval for Remediation Activation.
8. Select the **Data Obfuscation** options for this role:
   - **System Event/CMDB Attribtues** to anonymize IP, User and Email, or Host Name in the events.
   - **Custom Event Attributes** to anonymize custom event attributes. Search or click **+** to include multiple attributes. To create a custom event attribute, see Adding an Event Attribute.

   Note: If Data Obfuscation is turned on for a FortiSIEM user:
   - - The value for that object marked for data obfuscation is obfuscated. For example, if IP is marked for data obfuscation, the IP address is obfuscated. In earlier versions of FortiSIEM, raw events were completely obfuscated.
   - CSV Export feature is disabled.

   Note: If Remediation is turned on, the requestor and approver users must have a valid email address, configured in the **Email** field in Contacts, in order for the requestor and approver to receive requests and approval information.
9. Select the **UI Access** conditions for this role.
   This defines the user interface elements that can be accessed by users with this role. By default, the child nodes in the tree inherit the permissions of their immediate parent, however you can override those default permissions by explicitly editing the permission of the child node. The options for these settings are in the **All Nodes** drop-down list:
   - **Full** - No access restrictions.
   - **Edit** - The role can make changes to the UI element.

- **Run** - The role can execute processes for the UI element.
- **View** - The role can only view the UI element.
- **Hide** - The UI element is hidden from the role.

10. Click **Save**.

Hiding Network Segments

If a **Network Segment** is marked as hidden for a user role, users with that role will not be able to see any of the devices whose IP addresses fall within that network segment, even if the CMDB folder(s) containing those devices have not been hidden.

Modifying a Role

Complete these steps to modify a cloned or user defined role. (You cannot directly modify a system defined role):

1. Select the role from the table.
2. Click the required option:
   a. **Edit** to modify any role setting.
   b. **Delete** to remove a role.
   c. **Clone** to duplicate a role.
3. Click **Save**.

Example Role Setup

- Setting Up an Incident Remediation Workflow Example

Setting Up an Incident Remediation Workflow Example

You will need at least one user as an incident remediation approver, and one user as a requester that requires approval for incident remediation. This example assumes you have incident remediation configured.

From here, take the following steps as an admin:

1. Create a role for an incident remediation approver by taking the steps in Add a New Role and ensuring in step 6 that the role can approve incident remediation, which we'll call Approver.

2. Create a user with the Approver role by taking the steps in Adding Users, and ensuring that step 3m is configured correctly, and that a valid email address is provided in step 3n.
   Note: A requester can select multiple approvers when making a request. For real world scenarios, Fortinet recommends creating a minimum of two approvers, in case an approver is unavailable.

3. Create a requester user by taking the steps in Adding Users, and ensuring the following:

   - A non-admin role is assigned in step 3kii.
     Note: By default, a non-admin role requires approval for incident remediation. If you want to create/edit a non-admin role where a user does NOT need to get approval for incident remediation, you would add a checkmark to **Remediation** at **Activation** in step 7 in Add a New Role.

   - A valid email address is provided in step 3n.

4. Log out of FortiSIEM, and log in as the requester user.

5. Navigate to **INCIDENTS > List by Time >** and select an incident.

6. Click on **Actions**, and select **Remediate Incident**.
7. From the **Remediation** drop-down list, select a remediation script and select **Run**. A **Create New Request** window will appear with the message "No permission to run Remediation. Send a permission request."
8. From the **Approver** drop-down list, select the user with the Approver role that you created.
Note: The user may select multiple approvers in his/her request, not just one.
9. In the **Justification** field, enter any comments and click **Submit**. This request will appear as "pending" in **TASKS**.
10. Log out of FortiSIEM, and log in as the user with the Approver role. As the "Approver" user, you will see a message stating "You have pending requests. Please check Task > Approval.
11. Navigate to **TASKS** and select **Approval** in the left panel.
12. Select the **Request ID** of the request, and review it. You have the choice to "Approve" or "Reject" the request in the drop-down list, next to the **Status** column. In this situation, select "Approve".
Note: See Approving a de-anonymization request for more information, including how FortiSIEM handles requests when multiple approvers are involved.
13. An **Approve Request** windows appears, prompting for the expiry timeframe. If we want to make the approval window available for two days, you would select **For**, and input "2" for Days, then click **OK**. The **Status** column is updated with this information.
14. Log out of FortiSIEM, and log in as the requester user.
15. The requester user should have received an email from the user with the approver role, with the title "Remediation Request is approved".
16. Navigate to **TASKS**. In the left panel, select **Request**. In the **Status** column, you will see that the request has been approved.
17. Navigate to **INCIDENTS > List by Time >** and select the incident that was approved for remediation.
18. Click on **Actions**, and select **Remediate Incident**.
19. From the **Remediation** drop-down list, select a remediation script and select **Run**. The remediation script now runs.

Viewing User Roles for AD Group Mappings

To see the AD groups that the user is a member of, go to **CMDB > Users > Member Of**.

The User Roles are explicitly shown in **CMDB > Users > Access Control**.

Mapping AD Groups to Roles

FortiSIEM provides the ability to map Microsoft Active Directory (AD) Groups to Roles. A user mapped to more than one Role has permissions for all roles following the Least Restrictive Role principle described below.

Follow these steps to map an AD Group to a Role:

Step 1: Setup or Edit an Authentication Profile

1. Log in to the FortiSIEM system.

2. Follow the instructions in Adding External Authentication Settings to setup a new profile or edit an existing profile. Currently, only LDAPS and LDAPTLS are supported for mapping AD Groups. The new or edited entry appears in the list of authenticated organizations.

Step 2: Create a Role to be Mapped to the AD Group

Follow the instructions in Adding a New Role to add a role that is to be mapped to an AD Group.

Step 3: Assign an AD Group

1. Click **ADMIN > Settings > Role > AD Group Role**.
2. Click **New** to create a new AD Group mapping or select a row and click **Edit** to edit an existing mapping.
3. Provide the following information in the Add AD Group Role popup:
   - **Organization** - Set to System (all organizations can use the information), Super/Local (only Super/Local can use the information).
   - **AD Group DN** - The AD Group domain name. Currently, the server must be either LDAPS or LDAPTLS.
   - **Mapped Role** - Scroll down the list for the role you want to map to. You can find descriptions of the predefined roles in Role Settings.
   - **Comment** - Enter an optional comment describing the mapping.

Step 4: Test Your Mappings

Test your mappings by logging out of the FortiSIEM session then logging back in as the LDAPS/LDAPTLS user.

You can use either the CN or the SamAccountName as the Username in FortiSIEM.

The following example account illustrates the options:

```
PS C:\Users\Administrator> Get-ADUser -Identity jdoe

DistinguishedName : CN=J Doe,OU=department1,DC=fortisiem,DC=lab
Enabled : True
GivenName : J
Name : J Doe
ObjectClass : user
ObjectGUID : 2386c3e6-d2c0-47b8-85d0-334585e959f
SamAccountName : jdoe
SID : S-1-5-21-87403157-1919951427-186658781-1620
Surname : Doe
UserPrincipalName : jdoe@fortisiem.lab
```

- Using the CN as the Username, for example:

  ```
  User: J Doe
  Password: ********
  Domain: local
  ```

- Using the SamAccountName as the Username, for example:

  ```
  User: fortisiem\jdoe
  Password: ********
  Domain: local
  ```

Principle of Least Restrictive Role

If a user belongs to two FortiSIEM Roles, then the user will have the rights of BOTH Roles.

- Case 1 - A node is explicitly defined in both role definitions. Then a user belonging to BOTH roles have the union of all permissions for that node. Explicit definitions mean that the node appears in the bottom **Restrictions** area when you view the Role in **Settings > Role > Role Management**. Some examples:
  One Role has READ permission on the **RESOURCES** tab, while the other Role has WRITE and EXECUTE permissions on **RESOURCES** tab. Then, a user belonging to BOTH roles has READ, WRITE, EXECUTE on **RESOURCES** tab.

  One Role has READ permission on the **RESOURCES** tab, while the **RESOURCES** tab is hidden in the other Role. Then, a user belonging to BOTH roles has READ permission on the **RESOURCES** tab.
- Case 2 - A node is not explicitly defined in one Role but explicitly defined in the other role. Then the user belonging to BOTH roles have the explicit permission defined in the second role. For example, a Full Admin role has nothing explicitly defined, because it has full permission on ALL nodes. If the user belongs to both Full Admin role and another role that can only READ the CMDB tab, then the user has only READ permission on the CMDB tab.
- Case 3 - A node is not explicitly defined in two Roles. Then the user belonging to BOTH roles has full permission on that node.

Managing CMDB

FortiSIEM Configuration Management Database (CMDB) contains the following:

- Discovery information about your IT infrastructure such as devices, applications, and users.
- Information derived from your discovered infrastructure, including inter-device relationships such as the relationship of WLAN Access Points to Controller, and Virtual Machines to ESX Hosts.
- Information about system objects such as business services and CMDB reports.

The following topics provide more information about managing CMDB:

Devices

You can add devices to the CMDB through the Discovering Infrastructure process. However, there may be situations in which you want to add devices to the CMDB manually. For example, you may not have access credentials for a device but still want to include network information about it so that logs received by FortiSIEM can be parsed properly.

These topics describe those situations and provide instructions for adding a device to the CMDB:

Viewing Device Information

To view device information, open the **CMDB** page and click **Devices** in the left panel. Expand **Devices** to see all of the subgroups belonging to it. Click **Devices**, or on one of its subgroups, to see the devices in the table associated with that group. The icons above the panel allow you to add, edit, and delete subgroups. System-defined subgroups cannot be deleted, but they can be edited. For more information on managing device groups, see Working with Device Groups.

The headings and numbers at the top of the page, such as above **Routers**, **Firewall**, **Windows**, and so on, represent the number of devices of that type that are active in FortiSIEM. Click the heading to see the devices associated with that device type.

The table on the right of the page displays a list of all of the devices known to FortiSIEM. The table contains columns such as the **Device Name**, **IP** address, **Device Type**, **Status**, and so on.

On the **CMDB** page you can do the following:

- Choose which columns to display by clicking the **Choose columns** icon. For more information, see Changing Display Columns.
- Create, edit, and delete devices by clicking the **New**, **Edit**, and **Delete** buttons. See Creating and Editing Devices for more information.
- Filter the list of devices by organization by opening the drop-down list to the right of the **Delete** button.
- Perform a variety of operations on a selected device by making a selection from the **Actions** drop-down list. For more information on the operations you can perform, see Performing Operations on Devices.
- Get more information about a device by clicking a device name and then clicking one of the buttons beneath the table: **Summary**, **Properties**, **Monitor**, **Software**, **Hardware**, **Configuration**, **Relationships**, and **File**. The information returned is described in the following table.

Selection	Description
Summary	Click **Summary** to return general information about the device such as the **Name**, **Device Type**, **Importance**, **IP address**, and so on. It also displays information regarding the device's health, what group it is a member of, and various statistics (such as **Created**, **Last Discovered**, **Last Updated**, and so on.
Properties	Click **Properties** to view general device location information.
Monitor	Click **Monitor** to return tables describing the **Event Received Status** and **Monitor Status**.
Software	Click **Software** and make a selection from the drop-down list: **Installed Software**, **Running Applications**, **Windows Services**, or **Installed Patches** to get more detailed information. For **Installed Software**, you have the following options: • **Diff...** - Click to compare two selected files/revisions. **Note**: Use Ctrl-Click to select a second file. • **Delete** - Click to delete selected file(s). You will be prompted to confirm the deletion. **Note**: You can use Ctrl-Click and Shift-Click to select multiple files. • **Export** - Click to export selected files as a PDF report.

Selection	Description
Hardware	Click **Hardware** and make a selection from the drop-down list: **Interfaces**, **Processes**, **Storage**, **SAN Storage**, **System BIOS**, **Components**, or **SAN Ports**.
Configuration	Click **Configuration** to view the existing configuration files for your router device. For **Configuration**, you have the following options: • **Diff...** - Click to compare two selected files/revisions. **Note**: Use Ctrl-Click to select a second file. • **Delete** - Click to delete selected file(s). You will be prompted to confirm the deletion. **Note**: You can use Ctrl-Click and Shift-Click to select multiple files. • **Export** - Click to export selected files as a PDF report.
Relationships	Click **Relationships** to return the device's **Node Name**, **Access IP**, **Version**, **Device Type**, and **Description**.
File	Click **File** to view any version or content files from your Windows/Linux agent devices. You have the following options: • **Diff...** - Click to compare two selected files/revisions. **Note**: Use Ctrl-Click to select a second file. • **Delete** - Click to delete selected file(s). You will be prompted to confirm the deletion. **Note**: You can use Ctrl-Click and Shift-Click to select multiple files.

Working with Device Groups

This section provides the procedures to set up Device Groups.

- Adding Device Groups
- Modifying Device Groups
- Performing Operations on Device Groups
- Changing Display Columns

Adding Device Groups

Complete these steps to add device groups:

1. Go to **CMDB** and click **Devices** folder on the left panel.
2. Click **+** above the list of CMDB groups list.
3. In the **Create New Device Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the organization from the drop-down list.

Settings	Guidelines
Group	[Required] Enter a name for the group.
Description	Enter a description of the device group.
Folders	Choose a folder under **Devices** where you want to create the new group.
Items	Displays the devices in the selected folder. Use the **|<**, **<**, **>** and **>|** buttons to page through the list of devices. Select the devices you want to include in the new group.
Selections	Click **>** to shuttle the selected devices into the **Selections** column. These devices will be the members of the new group.

4. Click **Save**.
   The new device group appears on the left panel.

Modifying Device Groups

Complete these steps to modify a Device Group:

1. Click **Devices** from the left panel and navigate to the device group.
2. Select the required change from the table below:

Settings	Guidelines
Edit	To modify any Device Group.
Delete	To delete any Device Group.

3. Click **Save**.

Performing Operations on Device Groups

You can perform a number of operations on devices or device groups by selecting the **Actions** drop-down list. For more information on these actions, see Performing Operations on Devices and Device Groups.

Changing Display Columns

Complete these steps to choose which columns appear in the device table.

1. Click the **Choose columns** icon.
2. In the Select Columns dialog box, select the columns you want to display from **Available Columns** and use the **>** button to shuttle them to **Selected Columns**. Likewise, you can remove columns from the display by selecting columns in **Selected Columns** and using the **<** button to shuttle them to **Available Columns**.
3. Click **Save**.

The table will display your chosen columns.

Creating and Editing Devices

Complete these steps to add a new device.

1. Click **CMDB** and select the device group under **Devices** on the left panel.
2. Click **New**.
3. In the **Add New Device** dialog box, enter the information under **Summary**, **Contact**, **Interfaces**, and **Properties** tabs.
4. Click **Save**.
   The new device appears in the list.
5. Click on the device from the list.
   A second pane opens below with information under various tabs.

Complete these steps to edit a device:

1. Go to **CMDB** tab.
2. From the left panel, select the device type under **Devices** folder.
3. Select the Device from the list displayed on the table and click **Edit**.
4. In the **Edit Device** dialog box, modify the settings under **Summary**, **Contact**, **Interfaces**, **Properties** and **Parser** tabs.
5. Click **Save**.

Performing Operations on Devices and Device Groups

You can perform various operations on individual devices or device groups by selecting the device or device group and clicking the **Actions** drop-down list. The following table descries the operations you can perform.

Action Settings	Function description
Quick Info	Displays the a summary of information about the device. The information can include the Device Name, Access IP, Device Type , Version, and so on.
Device Health	Displays Availability Status, Performance Status, and a variety of health reports for the device, such as Monitor Status, Incident Status, and so on. Click the **<** and **>** buttons to shuttle through additional health information.
Vulnerabilities	By default, displays the top 10 vulnerabilities of the past week. You can also choose a time interval of 15 minutes, 1 hour, one day, or 30 days.
Incidents	Displays the summary of incidents associated with the device. Click an incident and open the **Actions** drop-down list to drill down on the incident for more information.
Real Time Events	Opens a Real Time Search window for events for the selected device. For more information, see Viewing Real-time Search Results.

Action Settings	Function description
Historical Events	Displays the historical events under **ANALYTICS** tab. Use **Actions** tab on top-left corner to email, export, copy to a new tab or save results. For more information, see Viewing Historical Search Results.
Real-time Performance	Displays the real-time Performance Metrics of the selected device. You can choose a **Monitor**, and **Collector** from the drop-down lists, and set the polling **Frequency** and the number of **Runs**.
Impacted Business Services	Displays the Business services that contain the selected device.
Change Status	Changes the status of the device to **Approved** or **Unmanaged**. The devices under license are called 'Managed' while the remaining devices are called "Unmanaged".
Edit Location	Changes the device location address: Country, State, City, Latitude, Longitude, Region, Building and Floor.
Change Organization	Changes the organization in the **New Organization** drop-down list.
Impacted Organization	Select the **Impacted Orgs** from the drop-down list.
Decommission	Decommissions the selected device. Enter a reason in the Decommission Device dialog box.
Recommission	Recommissions the selected device.
Connect To	Connects to a specific Protocol or Port. Select a **Protocol** from the drop-down list and enter a **Port** number and **User** name. A Secure Shell plugin is required.
Re-discover	Specify the **Range Definition** information to rediscover the device. For a description of the options in the Discovery Definition dialog box, see the table in Creating a discovery entry.
Add to Watchlist	Add the device to Watchlist. In the Add to Watch List dialog, select the **Attribute**, **Organization**, and **Expires** on time. Make selections from the list using the **>** button.
All Event Group	Displays all event groups under **ANALYTICS** tab. Use the **Actions** tab on top-left corner to email, export, copy to a new tab or save results.

Action Settings	Function description
Enable Agent	Enables Agent monitoring for the selected device.
Disable Agent	Disables Agent monitoring for the selected device.

Associating Parsers to a Device

You can attach a set of parsers to a device in CMDB. This overrides the default parser selection mechanism based on the Event Format Recognizer. When a device with a list of attached parsers sends a log, the specified parsers are attempted first.

1. Go to **CMDB** tab.
2. From the left panel, select the device(s) under **Devices** folder.
3. Click **Edit** and select the **Parsers** tab.
4. Select the parsers from the **Available Parsers** list and move to the **Selected Parsers** list using the right arrow.
   You can use the up and down arrows to re-arrange the order of the parsers. Note that the parsers will be attempted in order.
5. Click **Save** to confirm the parser selection.
   The selected parsers are now associated to the device.

Searching for Devices

FortiSIEM allows you to search for CMDB devices based on system device properties and custom device properties.

Note: For custom properties to appear in the search list, you must first select them in **ADMIN > Device Support > Custom Property**. To select and define custom properties, see Working with Custom Properties.

1. Go to **CMDB > Devices**.
2. Click the **Search** icon.
3. Select the value(s) you want to search for:
   - In the drop-down list, click a device attribute (for example, **Device Type**). All possible values of the selected attribute (for example, Cent OS, VMware, Cisco, and so on) are displayed with a count next to it. You can select multiple attributes and values in the drop-down list. The results will be ANDed together.
   - If you need to search for a column or an attribute value, enter it in the **Search** field.
4. Click **Search** at the top of the drop-down list.
   The top 5 items are returned. Click **Show All** to display all of the returned items.
5. The CMDB device list updates based on your search criteria.
6. To refine your search, click the **Search** icon again and select other CMDB device attributes or click **X** to cancel a selection.

Applications

Applications in the CMDB are grouped at the highest level by Infrastructure and User apps, with further sub-categorization in each of those two categories.

Viewing Application Information

Complete these steps to add and view application information:

1. Click **CMDB** and select the application group under **Applications** on the left panel.
2. Click **New**.
3. In the **Add New Application** dialog box, enter the information related to the Application.
4. To add an IP to the Application, click the edit icon near **Running on**.
   a. Click **Add by IP** and enter the IP in the search box.
   b. Click the tick mark.
5. Click **Save**.
   The new application appears in the list.
6. Click on the application from the list.
   A second pane opens below with information under various tabs.

Editing Applications

Complete these steps to edit an application:

1. From the left panel tree, select the application group under **Applications**.
2. Select the Application from the list and click **Edit**.
3. In the **Edit Application** dialog box, modify the settings.
4. To modify an IP, click the edit icon near **Running on** and select the IP.
   - Click **Add by IP** to add a new IP.
   - Click **Delete** to delete the IP.
5. Click **Save**.

Working with Application Groups

This section provides the procedures to set up Application Groups.

- Adding Application Groups
- Modifying Application Groups

Adding Application Groups

Complete these steps to add Application groups:

1. Go to **CMDB** and click **Applications** folder on the left panel.
2. Click **+** above the list of CMDB groups list.

3. In the **Create New application Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.
Description	Description about the application group.
Folders	Folder under **Applications** where the group has to be created.
Items	Items to add under the application group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new application group appears on the left panel.

Modifying Application Groups

Complete these steps to modify an Application Group:

1. Click **Applications** from the left panel and navigate to the Application group.
2. Use the delete, edit or move icon above the application groups list for the required modification.
3. Click **Save**.

Users

FortiSIEM CMDB Users page contains information about the users of your system.

Adding Users

Complete these steps to add a user:

1. Navigate to **CMDB > Users > Ungrouped**.
2. Click **New** to create a new user.

3. In the **New User** dialog box, enter the detailed information about this user:
   a. Add the user profile information including **User Name**, **Full Name**, **Job Title** and **Company**.
   b. Click the drop-down list to select the **Importance** of this user - "Normal", "Important", "Critical", or "Mission Critical".
   c. Enable **Active** if this is an active user.
   d. Enter the user's **Domain**.
   e. Enter the user's Distinguished Name **DN**.
   f. For **User Lockout**, enter the number of minutes the user will be unable to log into the system after three successive authentication failures.
   g. For **Password Reset**, enter the number of days after which a user’s current password for logging in to the system will automatically expire. If left blank, the user's password will never expire.
   h. For **Idle Timeout**, enter the number of minutes after which an inactive user will be logged out.
   i. Enter the **Employee ID** of the user.
   j. Select the **Manager** to which this user belongs.
   k. For **System Admin**, enable by selecting the System Admin checkbox.
      i. For **Mode**, select **Local** or **External**.
         If you select **Local**, enter and then reconfirm the user password. For **External**, see Authentication Settings for more information about using external authentication.
         Note: If more than one authentication profile is associated with a user, then the servers will be contacted one-by-one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.
      ii. Select a **Default Role** for the user.
         See the topic Role Settings for a list of default roles and permission. You can also create new roles, which will be available in this menu after you create them.

         If this System Admin user should be allowed to approve de-anonymization requests, ensure the **Deobfuscation Approver** role has been configured in Role Settings and that this configured role is selected here.

         If the System Admin user should be allowed to approve remediation requests, ensure the **Remediation Approver** role has been configured in Role Settings and that this configured role is selected here.
      iii. Click **Back** when done.
   l. Click **Contact Info** to enter your personal contact information.
      i. Add user contact information to the appropriate contact information fields - **Work Phone**, **Mobile Phone**, **Home Phone**, **SMS**, **SMS Provider**, **ZIP**, **Email**, **Address**, **City**, **State**, and **Country** field.
      ii. If your company uses S/MIME for email, make sure the **Email** field is filled out, and upload the S/MIME certificate in the **Certificate** field by clicking **Upload**, and selecting your certificate.
      iii. Click **Back** when done.
   m. Enter any **Description** about the user.
4. Click **Save**.
   The new user details appear in the list.

Notes:

- When viewing this user list as a Super global user, you may see repetitions of a few **User Names**, where those names exist in multiple Organizations. This can be determined by checking the contents of the **Organization** column.
- Repetition of **User Names** may also occur if an LDAP server has moved from one Organization to another and discovery of that LDAP server introduces users from the previous organization who may share the same user name. In this case, the administrator may wish to remove users that are no longer applicable.
- An Agent User can be created by navigating to **ADMIN > Setup > Organization**, and clicking **New** or **Edit**. These types of Admin Users are not allowed to log into the UI. Their primary purpose is for Windows Agent registration against the FortiSIEM environment. See Setting Organizations and Collectors (Service Provider) for more information.

Editing User Information

Complete these steps to edit a CMDB user:

1. Navigate to **CMDB > Users >**.
2. Click **Edit**.
3. In the **Edit User** dialog box, update any detailed information about this user:
    a. Edit user profile information including **User Name**, **Full Name**, **Job Title** and **Company**.
    b. Click the drop-down list to select the **Importance** of this user - "Normal", "Important", "Critical", or "Mission Critical".
    c. Enable **Active** if this is an active user.
    d. Update the user's **Domain**.
    e. Update the user's Distinguished Name **DN**.
    f. For **User Lockout**, enter the number of minutes the user will be unable to log into the system after three successive authentication failures.
    g. For **Password Reset**, enter the number of days after which a user’s current password for logging in to the system will automatically expire. If left blank, the user's password will never expire.
    h. For **Idle Timeout**, enter the number of minutes after which an inactive user will be logged out.
    i. Enter the **Employee ID** of the user.
    j. Select the **Manager** to which this user belongs.
    k. For **System Admin**, enable by selecting the System Admin checkbox.
        i. For **Mode**, select **Local** or **External**.
        If you select **Local**, enter and then reconfirm the user password. For **External**, see Authentication Settings for more information about using external authentication.
        Note: If more than one authentication profile is associated with a user, then the servers will be contacted one-by-one until a connection to one of them is successful. Once a server has been contacted, if the authentication fails, the process ends, and the user is notified that the authentication failed.
        ii. Select a **Default Role** for the user.
        See the topic Role Settings for a list of default roles and permission. You can also create new roles, which will be available in this menu after you create them.

        If this System Admin user should be allowed to approve de-anonymization requests, ensure the **Deobfuscation Approver** role has been configured in Role Settings and that this configured role is selected here.

        If the System Admin user should be allowed to approve remediation requests, ensure the

Remediation Approver role has been configured in Role Settings and that this configured role is selected here.

iii. Click **Back** when done.

l. Click **Contact Info** to update the user's personal contact information.

i. Update the user contact information in the appropriate contact information fields - **Work Phone**, **Mobile Phone**, **Home Phone**, **SMS**, **SMS Provider**, **ZIP**, **Email**, **Address**, **City**, **State**, and **Country** field.

ii. If your company uses S/MIME for email, make sure the **Email** field is filled out, and upload the S/MIME certificate in the **Certificate** field by clicking **Upload**, and selecting your certificate.

iii. Click **Back** when done.

m. Update the **Description** about the user.

4. Click **Save**.

You can also use the following functions on the **Actions** menu:

- **Unlock** - to unlock a user, select the user from the list and click **Actions** >**Unlock**.
- **Add to WatchList**- select the user from the list and click **Actions** > **Add to WatchList**. In the **Add to Watch List** dialog, select the **Organization** and **Expires on** time. Make the selections from the list using the **>** button and click **Save** to save.

Working with User Groups

This section provides the procedures to set up User Groups.

- Adding User Groups
- Modifying User Groups

Adding User Groups

Complete these steps to add User groups:

1. Go to **CMDB** and click the **Users** folder on the left panel.
2. Click **+** above the list of CMDB groups.
3. In the **Create New User Group** dialog box, provide the following information:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.
Description	Description about the User group.
Folders	Folder under **Users** where the group has to be created.
Items	Items to add under the User group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new User group appears on the left panel.

Modifying User Groups

Complete these steps to modify a User Group:

1. Click **Users** from the left panel and navigate to the User group.
2. Use the delete, edit or move icon above the User groups list for the required modification.
3. Click **Save**.

Business Services

A business service lets you view FortiSIEM metrics and prioritize alerts from a business service perspective. A business service is defined within FortiSIEM as a smart container of relevant devices and applications serving a business purpose. Once defined, all monitoring and analysis can be presented from a business service perspective. It is possible to track service level metrics, efficiently respond to incidents on a prioritized basis, record business impact, and provide business intelligence on IT best practices, compliance reporting, and IT service improvement. What is also novel about FortiSIEM is how easily a business service can be defined and maintained. Because FortiSIEM automatically discovers the applications running on the servers as well as the network connectivity and the traffic flow, you can simply choose the applications and respective servers and be intelligently guided to choose the rest of components of the business service. This business service discovery and definition capability in FortiSIEM completely automates a process that would normally take many people and considerable effort to complete and maintain.

Defining an IT or Business Service can create a logical grouping of devices and IT components which can be monitored together.

Viewing Business Services

Complete these steps to view Business Services:

1. Go to **CMDB** and select a service under **Business Services** in the left panel.
   The services are: IT Srvc, Biz Srvc, Compliance, or Ungrouped.
2. Select the service from the list.
   The lower panel displays the information about the service including the following details: Type, Name, Running on, Access IP, Details, and Maintenance.

Creating Business Services

Complete these steps to create a Business Service:

1. Go to **CMDB** and select a service under **Business Services** in the left panel.
2. Click **New**.
3. In the **New Business Service** dialog box, enter the following information.

Settings	Guidelines
Name	Name of the Business Service group.
Description	Description about the Business Service group.
Filter	Click this field to add the **Filter**.
Devices	Browse this folder to select or search the devices and also the adjacent network devices. Click **>** to move the device selections to the **Selected Devices/Apps** table.
Applications	Browse this folder to select or search the applications, instance running on and adjacent network devices. Click **>** to move the application selections to the **Selected Devices/Apps** table.

4. Click **Save** to save the selections or **Apply Filter and Save** to proceed with adding the service.

You can use the links in the drilldown menu on the Business Services Summary Dashboard to find out more information about incidents, device availability, device and application performance, interface and event status, and real-time and historical search for a selected business service.

Working with Business Service Groups

This section provides the procedures to set up Business Service Groups.

- Adding Business Service Groups
- Modifying Business Service Groups

Adding Business Service Groups

Complete these steps to add Business Service groups:

1. Go to **CMDB** and click **Business Services** folder on the left panel.
2. Click **+** above the list of CMDB groups list.
3. In the **Create New Business Service Group** dialog box, enter/select the information below:

Settings	Guidelines
Organization	Select the Organization.
Group	[Required] Group name.

Settings	Guidelines
Description	Description about the Business Service group.
Folders	Folder under **Business Service** where the group has to be created.
Items	Items to add under the Business Service group.
Selections	Click **>** to confirm the selections from **Folders** and **Items**.

4. Click **Save**.
   The new Business Service group appears on the left panel.

Modifying Business Service Groups

Complete these steps to modify a Business Service Group:

1. Click **Business Services** from the left panel and select a Business Service group.
2. Click the required option:
   - **Edit** to modify the settings of a Business Service.
   - **Delete** to remove a Business Service.
3. Click **Save**.

CMDB Reports

You can find all system-defined reports under **CMDB** > **CMDB Reports**. The reports are organized into folders as shown on the left tree. Click a report to view Summary and Schedule information. the report conditions, and the columns included in the report.

CMDB Report Folder	Object to Report On	Report Name
Overall	Device Approval Status	• Approved Devices • Not Approved Devices
	Users	• Discovered Users • Externally Authenticated FortiSIEM Users • Locally Authenticated FortiSIEM Users • Manually Defined Users
	Rules	• Active Rules • Rules with Exceptions
	Reports	• Scheduled Reports

CMDB Report Folder	Object to Report On	Report Name
	Performance Monitors	• Active Performance Monitors
	Task	• All Existing Tasks
	Business Service	• Business Service Membership
Network	Inventory	• Network Device Components with Serial Number • Network Interface Report • Router/Switch Inventory • Router/Switch Image Distribution
	Ports	• Network Open Ports
	Relationship	• WLAN-AP Relationship
Server	Inventory	• Server Inventory • Server OS Distribution • Server Hardware: Processor • Server Hardware: Memory and Storage
	Ports	• Server Open Ports
	Running Services	• Windows Auto Running Services • Windows Auto Stopped Services • Windows Exchange Running Services • Windows IIS Running Services • Windows Manual Running Services • Windows Manual Stopped Services • Windows SNMP Running Services • Windows VNC Running Services • Windows WMI Running Services
	Installed Software / Patches	• Windows Installed Software • Windows Installed Patches • Windows Installed Software Distribution
Virtualization	Relationship	• VM-ESX Relationship
Beaconing		• CMDB Device Types • CMDB Network Device Count • CMDB Server Count

CMDB Report Folder	Object to Report On	Report Name
		• CMDB Storage Device Count • PING Monitored Device Count • Performance Monitor Status
FortiCare		• FortiCare 360 Device Inventory Report • FortiCare 360 Software License Report • FortiCare 360 Software Update Report • Top FortiCare 360 Customers By Devices Monitored • Top FortiCare 360 Customers and Hardware Models By Count • Top FortiCare 360 Customers and OS Versions By Count
Ungrouped	user-defined	user-defined

The following topics provides information about using CMDB reports.

Creating CMDB Reports

There are two ways you can create new CMDB reports:

- Create a new report from scratch.
- Clone and modify an existing system or user-defined report by selecting a report and clicking **Clone**.

Follow these procedures to create or modify a CMDB Report.

- Creating a CMDB Report
- Cloning and Modifying a CMDB Report
- Exporting a CMDB Report
- Importing and Exporting CMDB Report Definitions

Creating a CMDB Report

1. Go to **CMDB** and select the CMDB report folder where you want to create the report.
2. Click **New**.
3. In the **New CMDB Report** dialog box, enter the following information.

Settings	Guidelines
Report Name	Name of the CMDB report.
Description	Any information related to the new report.
Target	Select the target type.
Conditions	Set the filter conditions by selecting (Attributes, Operator and Value) together with Next Operators. Parenthesis can be added by clicking **+** to give higher precedence to any evaluation conditions.
Display Columns	The columns in the report result. The order can be changed by selecting a column and clicking the Up or Down icons. You can specify the **Order** as ASC or DESC.

4. Click **Save**.

You can also import a report under CMDB by clicking **Import** to browse and choose.

Cloning and Modifying a CMDB Report

You can modify user-defined reports by selecting the report and clicking **Edit**. However, you cannot directly edit a system-defined report. Instead, you have to clone it, then save it as a new report and modify.

1. Go to **CMDB** > **CMDB Reports**.
2. Select the system-defined report you want to modify, and click **Clone**.
3. Enter a name for the new report, and click **Save**.
   The cloned report will be added to the folder of the original report.
4. Select the new report, and then click **Edit**.
5. Modify the report, and click **Save**.

Exporting a CMDB Report

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB Report folder from where the report will be exported.
3. Click **Export** to download and save the report.

Importing and Exporting CMDB Report Definitions

Instead of using the user interface to define a report, you can import report definitions, or you can export a definition, modify it, and import it back into your FortiSIEM virtual appliance. Report definitions follow an XML schema.

Importing a CMDB Report Definition

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB Report folder to where the report will be imported.
3. Click **Import**. The report will appear in the selected folder.

Exporting a Report Definition

1. Go to **CMDB** > **CMDB Reports**.
2. Select the CMDB report to be imported.
3. Click **Export**. The report will appear in the selected folder.
4. Paste the report definition into a text editor, modify it, and then follow the instructions for importing it back into your virtual appliance.

XML Schema for Report Definitions

The XML schema for the report definition is:

```
<cmdbReports>
<cmdbReport>
<name></name>
<naturalid></naturalid>
<description></description>
<selectClause></selectClause>
<orderByClause></orderByClause>
<whereClause></whereClause>
</cmdbReport>
</cmdbReports>
```

This is an example for the **Active Rules** report:

```
<cmdbReports>
<cmdbReport>
<name>Active Rules</name>
<naturalId>PH_CMDB_Report_Overall_8</naturalId>
<target>com.ph.phoenix.model.query.Rule</target>
<description>This report captures active rules on a per organization
basis</description>
<selectClause>ph_drq_rule.ph_incident_category,ph_drq_rule.name,ph_sys_d
omain.name</selectClause>
<orderByClause>ph_drq_rule.ph_incident_category ASC</orderByClause>
<whereClause>ph_drq_rule.active = true</whereClause>
</cmdbReport>
</cmdbReports>
```

Scheduling a CMDB Report

Complete these steps to schedule a CMDB report to run at a later time:

1. Go to **CMDB** and browse to select the report under **CMDB Reports** on the left tree.
2. Select the report from the list.
3. Click **Schedule**.
4. In the **Schedule** dialog box, select the required information.

Settings	Guidelines
Organization	Organization type. Select whether to **Run this report for** or **Schedule this report for** the remaining settings. • Choose **Run this report for** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF, RTF, or CSV report and sent to the Global Administrators added in the notification settings while scheduling report alerts. • Choose **Schedule this report for** if you would like to run this report for each selected Organization seperately same as your login to each of these Organizations and schedule this report there. In this case, each selected Organization will receive its own copy of PDF, RTF, or CSV report containing the event data for its own Organization based on the notification settings added while scheduling report alerts.
Schedule Time Range	Enter the Time range to run the report.
Schedule Recurrence Pattern	Recurrence pattern: once, hourly, daily, weekly or monthly. Enter the start date in the **Start From** field.
Notification	Use the options as required: • Default Notification - to send notification to new recipients by adding them using the **+** icon. • Custom Notification - to send the notification to the specific email addresses added under **ADMIN > Settings > System**. • Copy to a remote location - To copy the report to a remote directory, first define the remote location in **ADMIN > Settings > Analytics > Scheduled Report** to be copied to this remote location when scheduler runs any report and then select this option.

5. Click **OK**.

You can also schedule a CMDB report by selecting the report from the list and clicking **+**under **Schedule** tab in the lower pane.

Running a CMDB Report

Complete these steps to run a CMDB Report.

1. Go to **CMDB > CMDB Reports** and select the report you want to run from the folder.
2. Click **Run**.
3. In the **Run CMDB for** dialog box, select the Organization and click **Run**.

Reports are saved only for the duration of your login session. You can view saved reports by clicking **Results**. You can use the **Export** button to export any report in PDF or CSV format.

Adding CMDB Report to Dashboard

Complete these steps to add CMDB reports to Dashboard:

1. Select the dashboard to which you want to add a CMDB report.
2. Click **+** to the right of the dashboard.
3. In the **Create New Dashboard** dialog box, enter a name for the Dashboard and select the Widget Dashboard from the drop-down list. For more information, refer to Dashboard.
4. Click **+** below the Dashboard drop-down list.
5. Select a report from the **CMDB Reports** folder, then click **>**. The report will be added to the dashboard.

Managing Resources

The following sections provide the procedures for managing Resources:

Reports

Reports as similar to pre-defined versions of searches that you can load and run at any time. FortiSIEM includes over 2000 pre-defined reports that you can access in **RESOURCES > Reports**.

Viewing System Reports

Complete these steps to view system-defined Reports:

1. Go to **RESOURCES** > **Reports**.
2. Select the **Organization** for which you want to view the available reports.
3. Expand the **Reports** folder on the left panel and select the sub-category of report to view.
4. Select the report you want to view information about.
   The reports display the information below under various tabs in the lower pane:
   - **Summary** - Includes the **Condition** and **Group By** conditions for the report, and the report's **Display** attributes.
   - **Schedule** - Information about when the report is scheduled to run. See Scheduling a Report for more information. Click the **+** icon to set a schedule for the report to run.
   - **Results** - The results from any scheduled runs of the report, or results you have saved by running the report.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- The value for that object marked for data obfuscation is obfuscated. For example, if IP is marked for data obfuscation, the IP address is obfuscated. In earlier versions of FortiSIEM, raw events were completely obfuscated.
- CSV Export feature is disabled.

Working with Report Design Templates

FortiSIEM gives you the flexibility of designing custom templates for each of your reports. When you select **RESOURCES > Reports**, notice that the table of reports includes a **Report Design Template** column. This column identifies the template to be used when generating and exporting a report. By default, all reports are assigned the same template. The default template name has the format *organization_name scope* **Reports Template**. For example, Global System Reports Template would be a report for the Global organization with System scope.

The Global System Reports Template cannot be edited unless you log in as Super/Global. In this case, an Edit icon will appear next to Global System Reports Template.

A Template can be created at various levels:

- For each Report in **RESOURCES > Reports**
- For each Report folder in **RESOURCES > Reports**
- For each Report Bundle defined in **RESOURCES > Reports > Report Bundles**

When you run a report under **RESOURCES > Reports**, FortiSIEM will choose the appropriate Report Template in the following order:

1. If a specific template is defined for the selected report, then that template will be chosen.
2. If a template in the previous step is not found, then the template for the folder to which the Report belongs will be chosen.
3. If no matching template is found in Steps 1 and 2, then the system-defined template for the root folder **RESOURCES > Reports** will be chosen. System-defined templates cannot be edited.

If you load and run a report in **RESOURCES > Reports** from the **ANALYTICS** page and then manually export the Report in PDF or RTF format:

- If you choose the **Defined** option, then FortiSIEM will use the rules above to find the matching template.
- If you choose the **New** option, then you can define a new Report format for this report instance only.

Note:

- For Service Provider deployments, the Report templates can only be defined at the Super/Global level and applies for all customers.
- If a report is part of two folders and each folder has its own template defined, then the template of the current folder being viewed will be used.

The following sections provide information about:

- Creating a Report Template
- Designing a Report Template

Creating a Report Template

A Report template for PDF and RTF can be created as follows:

1. Go to **RESOURCES > Reports** and select one of the subcategories from the left pane.
2. Select the desired row from the table.
3. (Optional) Select the **Sync** checkbox in the row to synchronize the report with the Report Server.
4. Open the **More** drop-down list and select **Report Design**. The Report Design page opens.

5. Notice that the **Name** given to the report template is in the form *organization_name scope report_name* **Template**. You can edit this name if you want.
6. Follow the instructions in Designing a Report Template to design the cover page and add sections, subsections, attachments, and so on, to the report.
7. Click **Save**.
   The name of the new template will be displayed in the **Report Design Template** column of the table. Notice that an edit icon appears next to the name of the template.

Creating Report Templates for a Report Folder or Resource Bundle

To create a report template for a Resource folder, choose any Report folder from the left pane. The steps to create the template are similar to Creating a Report Template.

To create a report template for a Report Bundle, complete these steps:

1. Select any system-defined or user-defined report bundle in this group.
2. Select all of the reports in the table.
3. Click **More** > **Report Design**.

Notice that the **Name** of the template for a Report Bundle cannot be edited.

Modifying an Existing Report Template

1. Click the edit icon next to the name of the existing report design template. The Report Design page opens.
2. Make the desired changes to the template design.
3. Click **Save**.

Designing a Report Template

You can design or modify the following template sections using the settings under **Report Design** for PDF and RTF reports:

- Overview
- Cover Page
- Table of Contents - Sections and Subsections

Overview

Report Designer allows you to build a report out the following objects, the Cover Page, Table of Contents, Sections, and Subsections.

- Adding an Object
- Deleting an Object
- Orientation
- Using the Text Editor when Adding Text to an Object

Adding an Object

When you create a new Report Design, a default Cover Page and Table of Contents is automatically created. If you choose to delete the Cover Page and/or Table of Contents, the option to add these objects will appear from the left **Add** drop-down list button.

To add a Section, click on the Table of Contents or an existing section and click the left **Add** drop-down list button and select **Section**.

To add a Subsection, select the Section where you wish to add a Subsection to, then click the left **Add** drop-down button and select **Subsection**.

Deleting an Object

A report can have a maximum of one Cover Page and one Table of Contents. The Table of Contents is based off the section(s) and subsection(s) that you create, or that already exist. To delete any existing objects, add a check mark to the checkbox for the objects you wish to delete, then click **Delete**. You will be prompted to confirm deletion when you click **Delete**.

Orientation

You can choose the page orientation that your report appears in by clicking on the **Orientation** drop-down list button and selecting **Portrait** or **Landscape**.

Using the Text Editor when Adding Text to an Object

When you add text to a cover page, section, or subsection, the text editor will open. Use the editor to add any text you wish to display with your report in the **Enter Text** window. When done, click **Save**.The text editor also provides the following tools:

Icon	Description
Undo	Click to undo the last typing action.
Redo	Click to re-apply the last undo action.
Size	Click the drop-down list, and select a size. To apply to existing text, select the text first, then click the icon and select a size.
Font Color	Click the icon and select a color. To apply to existing text,

Icon	Description
	select the text first, then click the icon and select a color.
Bold	Click the icon to begin bolding text. To apply to existing text, select the text first, then click the icon.
Underline	Click the icon to begin underling text. To apply to existing text, select the text first, then click the icon.
Italic	Click the icon to begin italicizing text. To apply to existing text, select the text first, then click the icon.
Remove Format	Click the icon to remove any existing formatting that is currently being applied. To apply to existing text, select the text first,

Icon	Description
	then click the icon.
Code view	Click to toggle between normal and code view.
Preview	Click to view your work in a separate window.

Cover Page

The default Cover Page template includes the current Organization, Start Time, End Time, Generated Time, and Device Time Zone as Default Text. These settings can be deleted or rearranged but not modified. You can also add text content and attachments to the **Cover Page**.

- Adding Text to Cover Page
- Adding Attachments to Cover Page
- Adding Page Break to Cover Page

Adding Text to Cover Page

1. Click the **Cover Page** bar to expand the section.
2. Click the right **Add** drop-down list button and select **Text** from the drop-down list to add text content in the cover page.
3. Add the text in the **Enter Text** window. For information on text tools, see Using the Text Editor when Adding Text to an Object.
4. Click **Save** to apply the changes.

Adding Attachments to Cover Page

1. Click the **Cover Page** bar to expand the section.
2. Click the right **Add** drop-down list button and select **Attachment** from the drop-down list to add any PDF or PNG attachments in the cover page.
3. Click **Upload** to add the attachment.
4. Enter the required **Width** and **Height** of the attachment or else enable **Auto Resize** to adjust the size of the attachment to the PDF borders. The units for Height and Width are in pixels. The acceptable range of values is 595-860.
5. Click **Save** to apply the changes.

   Use the **Edit**, **Delete**, **Move Up** or **Move Down** icons to the right of the **Text** field to modify, delete or re-arrange the order of text.

Note:

1. The Auto Resize checkbox does not work correctly.
2. To fill the width of a page, the image size must be set to 5000 x 5000.
3. Even when enlarged, the PDF or PNG image will appear pixelated (it does not use vector graphics). the more you zoom the page, the worse the image will look.

Adding Page Break to Cover Page

1. Click the **Cover Page** bar to expand the section.
2. Click the right **Add** drop-down list button and select **Page Break** from the drop-down list to add a page break that appears after the cover page.
3. Click **Save** to apply the changes.

Use the **Edit**, **Delete**, **Move Up** or **Move Down** icons to the right of the configurable fields to modify, delete or re-arrange the order of the page break.

Table of Contents - Sections and Subsections

This sections allows you to add new **Sections** and **Sub Sections** to the **Table of Contents**. You can also add text content, attachments, event reports and CMDB reports here.

- Adding Sections and Subsections
- Adding Text to a Section or Subsection
- Adding Attachments to a Section or Subsection
- Adding Page Break to a Section or Subsection
- Adding an Event Report to a Section or Subsection
- Adding a CMDB Report to a Section or Subsection

Adding Sections and Subsections

1. Click the **Table of Contents** bar to expand the section.
2. Click the right **Add** drop-down list button and select **Section** to add a new section.
3. To add a subsection, select the required Section and click the right **Add** drop-down list button and select **Sub Section**.
4. Click the new section bar to expand.
5. Enter a **Title** for the section.
6. Click **Preview** to view the changes before saving.
7. Click **Save** to apply the changes.

Adding Text to a Section or Subsection

1. Click the required section or subsection bar to expand the section.
2. Click the right **Add** drop-down list button and select **Text** from the drop-down list to add text information in the cover page.
3. Add the text in the **Enter Text** window. For information on text tools, see Using the Text Editor when Adding Text to an Object.
4. Click **Save** to apply the changes.

Adding Attachments to a Section or Subsection

1. Click on the required section or subsection bar to expand the section.
2. Click the right **Add** drop-down list button and select **Attachment** from the drop-down list to add any PDF or PNG attachments.
3. Click **Upload** to add the attachment.
4. Enter the required **Width** and **Height** of the attachment or else enable **Auto Resize** to adjust the size of the attachment to the PDF borders.
5. Click **Save** to apply the changes.

Note:

1. The Auto Resize checkbox does not work correctly.
2. To fill the width of a page, the image size must be set to 5000 x 5000.
3. Even when enlarged, the PDF or PNG image will appear pixelated (it does not use vector graphics). the more you zoom the page, the worse the image will look.

Adding Page Break to a Section or Subsection

1. Click on the required section or subsection bar to expand the section.
2. Click the right **Add** drop-down list button and select **Page Break** from the drop-down list to add a page break.
3. Click **Save** to apply the change.

Adding an Event Report to a Section or Subsection

1. Click on the required section or subsection bar to expand the section.
2. Click the right **Add** drop-down list button and select **Event Report** from the drop-down list.
3. Select the Event Report from the drop-down.
4. To display the event type, enable **Show Event Type**.
5. When you define a custom template for **Report Bundles** (excluding the root group), you can select any Event Reports from the **Select Event Report** drop-down list.
   Note the following:
   - For Report folders (including the root group), the **Select Event Report** setting is not available.
   - For a single Report, the Event Report is automatically selected under **Select Event Report** setting and you cannot modify this.
6. Configure the display format:
   a. Select the report **Format** from the drop-down list. The list displays the available charts.
   b. Select the **Attribute**.
   c. Enter the **Title** for the chart.
   d. Select or enter the number of **Items** to display.
   e. Enter the **Height** of the chart or table.
   f. To add more formats, click **+** under **Row** and use the **Move** arrows to re-order the list.
   g. Click **Save**.
7. Click **Save** to apply the changes.

Adding a CMDB Report to a Section or Subsection

Note: You can add **CMDB Reports** only to a **Report Bundle** template.

1. Click on the required section or subsection bar to expand the section.
2. Click the right **Add** drop-down list button and select **CMDB Report** from the drop-down.
3. Click the **Edit** icon to select the **CMDB Report** from the drop-down. You can also use the search bar to find a specific CMDB report.
4. Click **Select** to confirm the selection.
5. Select the number of **Items** to display.
6. Click **Save** to apply the changes.

Creating New Reports

- Creating a Report
- Creating a Report Bundle
- Editing a Report Bundle

Creating a Report

Creating a report or baseline report is like creating a structured historical search, because you set the **Conditions** and **Group By** attributes that will be used to process the report data, and specify **Display Columns** to use in the report summary. You can clone an existing report to use as the basis for a new report by selecting the existing report, and clicking **Clone**.

Complete these steps to create a report:

1. Go to **RESOURCES** > **Reports**.
2. Select the report type from the **Reports** folder on the left panel.
3. Click **New**.
4. Enter a **Report Name** and **Description**.
5. For baseline reports, select **Anomaly Detection Baseline**.
6. Enter the **Conditions** to use in your report.
7. Set the **Display Columns** to use in your search results.
8. Click **Save**.
9. Optional - If you want to create a new PDF report template for this report, follow the steps in Working With Report Templates or else the system-defined template will be used.

Your report will be saved into the selected category, and you can run it or schedule it to run later.

Creating a Report Bundle

Complete these steps to create a report bundle:

1. Go to the **RESOURCES** tab and select a **Report Bundle** from the left panel.
2. Click **New**.
3. Enter a **Report Name** and **Description**.
4. For baseline reports, select **Anomaly Detection Baseline**.
5. Enter the **Conditions** to use in your report.
6. Set the **Display Columns** to use in your search results.
7. Click **Save**.

8. Optional - If you want to create a new PDF report template for this report, follow the steps here or else the system-defined template will be used.

Your report will be saved into the selected category, and you can run it or schedule it to run later.

Editing a Report Bundle

Complete these steps to edit a user-defined resource bundle:

1. Go to the **RESOURCES** tab and select a **Report Bundle** from the left panel.
2. Click the Edit icon (✎) above the left panel. The Edit Report Group dialog box opens.
3. Edit the Report Group **Name** and **Description**, if needed.
4. From the **Folders** column select the report subcategory.
5. In the **Items** column, select the desired report(s) to add to the report bundle.
6. Select **Update Template** if you want to add the selected reports to the previously defined Report Bundle template. See Creating a PDF Report Template.
7. Click **Save**.

Running System Reports

FortiSIEM includes a number of baseline reports for common data center analytics, as well as over 300 reports relating to IT infrastructure. You can also create your own reports.

Complete these steps to run a system-generated or user-defined baseline report:

1. Go to **RESOURCES** tab and select the desired report group from the **Reports** folder.
2. Select the report(s) from the table.
3. Click **Run** to run the report(s) immediately, or select **More** and click **Schedule** to schedule the report.
4. If you have a multi-tenant deployment, select the **Organization** for which you want to run the report.
5. Select one of the **Report Time Range** options:
   - **Relative**: Select the last number of hours from which report has to be generated.
   - **Absolute**: Select the range of start and end date and time.
6. Click **OK**.
   The report will run and the results will be displayed.

Starting in 6.1.1, adhoc reports run from GUI and scheduled reports may time out after running for a long time. In a cluster environment with Worker nodes, the user may see partial results (indicated in the PDF), if some workers are able to finish their queries within the timeout. The default timeouts are specified (in seconds) in the `phoenix_config.txt` file on the Supervisor node.

```
[BEGIN phQueryMaster]
...
interactive_query_timeout=1800 # 30 mins
...
scheduled_query_timeout=3600 # 60mins
...
```

```
        [END]
```

To change the default timeout values, SSH to the Supervisor node, change the values, save the file, and restart the Query Master process.

Scheduling Reports

You can schedule reports/report bundles to run once or for recurring periods in the future. When you schedule a reports/report bundle, you can specify notifications that can be sent for the report. In addition, you should make sure that the default settings for notifications for all scheduled reports/report bundles have been set up.

- Scheduling a Report
- Scheduling a Report Bundle
- Scheduling Reports Using a Workflow

Starting in 6.1.1, adhoc reports run from GUI and scheduled reports may time out after running for a long time. In a cluster environment with Worker nodes, the user may see partial results (indicated in the PDF, in PDF or RTF starting in 6.3.0), if some workers are able to finish their queries within the timeout. The default timeouts are specified (in seconds) in the `phoenix_config.txt` file on the Supervisor node.

```
        [BEGIN phQueryMaster]
        ...
        interactive_query_timeout=1800 # 30 mins
        ...
        scheduled_query_timeout=3600 # 60mins
        ...
        [END]
```

To change the default timeout values, SSH to the Supervisor node, change the values, save the file, and restart the Query Master process.

Scheduling a Report

Complete these steps to schedule a report:

1. Go to **RESOURCES** tab and select the report under **Reports** folder from the left pane.
2. Select the report(s) to schedule from the list on the right pane.
3. Click **More** > **Schedule**.
   Note: You can also schedule a report from the lower pane - select the **Schedule** tab after selecting the report. Use the **+** icon to enter the **Schedule** settings.
4. In Super/Global scope, under **Organization** section, for **Report Data**, you can choose either **Combine all selected Organizations into one Report** or **Generate separate Report for each selected Organization** with selected organizations:

   - Choose **Combine all selected Organizations into one Report** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF or RTF report and sent to the Global Administrators added in the Notification settings while scheduling reports.
   - Choose **Generate separate Report for each selected Organization** if you would like to run this report for each selected Organization separately same as your login to each of these Organizations and schedule this report there. In this case, each selected organization will receive its own copy of the CSV, PDF or RTF report containing the event data for its own Organization based on the Notification settings added while scheduling reports.

5. In Report Time Range, configure the range of time that the report should provide. See Specifying Search Time Window.
6. In Trend Interval, configure appropriately if your report uses trend event attributes, otherwise, leave as **Auto**. See Specifying Trend Interval.
7. Click **Next**.
8. Use the **Schedule Time Range** option if the run time has to be scheduled for a later period and a specific place.
9. Schedule the **Schedule Recurrence Pattern** for the report to run once, hourly, daily, weekly, or monthly or set the range under **Schedule Recurrence Range**.
10. Click **Next**.
11. Select the **Output Format** as **PDF**, **CSV**, or **RTF**.
    For PDF and RTF output, the default template configured under **RESOURCES** > **Reports** is used. You can customize the report templates following the steps under Designing a Report Template.
12. Specify the **Notification** that should be sent when the report runs from the available options:
    - **Default Notifications** - to send default notifications. Click the edit icon to add more **Recipients**.
    - **Custom Notifications** - to send notifications to specific email addresses. Use the edit icon to add more **Recipients**
    - **Copy to a remote directory** - to copy the report to a remote directory.
13. Specify the time that the report should be retained after it has run using the **Retention** setting in hours or number of days.
14. Click **OK**.
    The report will run at the time you scheduled.

Scheduling a Report Bundle

Complete these steps to schedule a report bundle:

1. Go to **RESOURCES > Reports** tab and select a report bundle under **Report Bundles** folder from the left pane.
2. Select the clock icon (🕓) above the left panel folders to open the scheduler settings.
3. In the **Schedule Report Bundle** window, click **+**.
4. In Super/Global scope, under **Organization** section, for **Report Data**, you can choose either **Combine all selected Organizations into one Report** or **Generate separate Report for each selected Organization** with selected organizations:
    - Choose **Combine all selected Organizations into one Report** if you would like to run the report for only Global administrators. This choice will combine event data from all selected Organizations within one PDF or RTF report and sent to the Global Administrators added in the Notification settings while scheduling reports.
    - Choose **Generate separate Report for each selected Organization** if you would like to run this report for each selected Organization separately same as your login to each of these Organizations and schedule this report there. In this case, each selected Organization will receive its own copy of the PDF or RTF report containing the event data for its own Organization based on the Notification settings added while scheduling reports.
5. Select the **Report Time Range**:

  - Select the **Time Zone**.
  - Select **Relative** to enter the last number of hours from which report has to be generated or **Absolute** to enter the range of start and end date and time.

6. Select the Trend Interval for **Trend**. See Specifying Trend Interval.
7. Click **Next**.
8. Use the **Schedule Time Range** if the run time has to be scheduled for a later period and a specific place.
9. Click **Next**.
10. Select the **Output Format** as **PDF** or **RTF**.
    For PDF or RTF output, the default template configured under **RESOURCES** > **Reports** is used. You can customize the report templates following the steps under Designing a Report Template.
11. Schedule the **Schedule Recurrence Pattern** for the report bundle to run once, hourly, daily, weekly, or monthly or set the range under **Schedule Recurrence Range**.
12. Specify the **Notification** that should be sent when the report bundle runs from the available options:
    - **Default Notifications** - to send default notifications. Click **+** to add more **Recipients**.
    - **Custom Notifications** - to send notifications to specific email addresses. Use the edit icon to add more **Recipients**.
    - **Copy to a remote directory** - to copy the report bundle to a remote directory.
13. Specify the Event/CMDB **Attribute**, **Operator**, and **Value**. Click **+** to add more, if required.
14. Click **OK**.
    The report bundle will run at the time you scheduled.

Scheduling Reports Using a Workflow

Follow these steps to schedule a report by using a workflow.

- Step 1 - Create Appropriate Roles for Users
- Step 2 - Map Users to Appropriate Roles
- Step 3 - Request the Report to be Scheduled
- Step 4 - Approve the Report Scheduling Request
- Step 5 - View the Report Scheduling Request Status

Step 1 - Create Appropriate Roles for Users

Complete these steps to create a role that will require report scheduling approval.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Report Schedule** option is not checked.
4. Make sure the **Activation > Report Schedule** option is not checked.
5. Save the role definition.

Complete these steps to create a role that can approve report scheduling requests.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.

3. Make sure the **Approver > Report Schedule** option is checked.
4. Make sure the **Activation > Report Schedule** option is not checked.
5. Save the role definition.

Step 2 - Map Users to Appropriate Roles

1. Go to **CMDB > Users**.
2. Select a user from the table and click **Edit**.
3. In the Edit User dialog box, select the **System Admin** option, and click the **Edit** icon.
4. Select the **Requestor** or **Approver** role as appropriate.

Step 3 - Request Report to be Scheduled

1. Go to **RESOURCES > Reports**.
2. Select a report, then select **More > Schedule**. The Create New Request dialog box opens.
3. If the role requires approval, select an approver from the **Approver** drop-down list.
4. Click **Submit**.
5. The approver will receive an email with a link to log back in to FortiSIEM and approve the request.

Step 4 - Approve the Report Scheduling Request

1. Login to FortiSIEM using a role that can approve a report being scheduled .
2. Click **Approval**. The table in the **TASKS** page lists pending requests.
3. To process the requests, scroll to the right-hand end of the row.
4. From the drop-down list, select **Approve** or **Reject**.
   - If you select **Approve**, the Approve Request dialog box opens. You can choose whether the request is valid **Until** or **For the date and time listed in the time stamp field**. You can click the time stamp field to choose a different date and time.
   - If you choose **Reject**, the Reject Request dialog box opens where you can enter a reason for the rejection.
5. If you choose **Approve**, the report will now be scheduled.

Step 5 - View Report Scheduling Request Status

Complete this step to see the status of your report schedule activation requests.

1. Login to FortiSIEM using the same account as in Step 3.
2. Click **Request**. The table in the **TASKS** page shows the status of requests.

Importing and Exporting Reports

Importing a Report

1. Go to **RESOURCES > Reports** and select the folder where you want to import the report.
2. Open the **More** drop-down list and select **Import**.
3. Click **Choose File** and browse to the report file to import.
4. Click **Import**.

Exporting a Report Definition

1. Go to **RESOURCES > Reports** and select the folder where you want to export a report definition.
2. Select a report definition in the main panel.
3. Open the **More** drop-down list and select **Export**.

Exporting Report Results

Complete these steps to export Reports in PDF, RTF, or CSV format:

1. Go to **RESOURCES** tab and select the report under **Reports** folder from the left panel.
2. Select the reports and click **Run** to view the results under **ANALYTICS** tab.
3. Go to **Actions** and select **Export Result**.
4. Optional - Enter any **User Notes** about this report.
5. Select the **Output Format** for the report as CSV, RTF or PDF.
6. Select the **Time Zone** for which the report is to be generated. If the devices are in a different Timezone from the Supervisor, then you can choose the time zone of the devices while configuring the PDF or RTF report.
7. Select the **Template** if PDF or RTF format is selected:
   - **Defined** - to use the default template defined for this report defined under **RESOURCES** > **Reports**.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear on choosing this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**. See Designing a Report Template for the steps to customize the report template.
8. Click **Generate** to create the report.
9. Click **View** to open and save the report.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- The value for that object marked for data obfuscation is obfuscated. For example, if IP is marked for data obfuscation, the IP address is obfuscated. In earlier versions of FortiSIEM, raw events were completely obfuscated.
- CSV Export feature is disabled.

Rules

FortiSIEM continuously monitors your IT infrastructure and provides information to analyze performance, availability, and security. There may also be situations in which you want to receive alerts when exceptional, suspicious, or potential failure conditions arise. You can accomplish this using rules that define the conditions to watch out for, and which trigger an incident when those conditions arise. You can configure a notification policy that will send email and SNMP alerts that the incident has occurred. FortiSIEM includes over 500 system-defined rules, which you can see in **RESOURCES > Rules**, but you can also create your own rules as described in the topics in this section.

Viewing Rules

FortiSIEM includes a large set of rules for Availability, Performance, Change, Security, and Beaconing groups in addition to the rules that you can define for your system.

Complete these steps to view all system and user-defined rules:

1. Go to **RESOURCES** > **Rules**.
2. Use the **System** drop-down menu of the Rules list pane to filter rules by Organization.
3. Select any rule in the Rules list to view related information in the lower pane.

   All rules have two information tabs:

Tabs	Description
Summary	This tab provides an overview of the rule logic, its status, and notification settings.
Test Results	If you are testing a rule, you can view the results here. **Note**: Active rules cannot be tested. You must deactivate a rule before testing.

Creating Rules

Creating a new rule involves defining the attributes of the incident that is triggered by the rule, as well as the triggering conditions and any exceptions or clear conditions. You can also create a rule by cloning an existing rule using the **Clone** button and editing it.

Note: Do not use certain keywords in sub-pattern names - `regexp`.

- Creating a Rule
- Defining Rule Conditions
- Defining the Incident Generated by a Rule
- Defining Rule Exceptions
- Defining Clear Conditions
- Defining an Incident Title

Creating a Rule

Complete these steps to create a rule:

1. Go to **RESOURCES** > **Rules**.
2. Select the group where you want to add the new rule.
3. Click **New** to create a new rule.

Settings	Guidelines
Step 1: General	
Rule Name	Enter a name for the new Rule.
Description	Enter a description of the new Rule.
Event Type	The name you enter in the Rule Type field is replicated in the Event Type field.
Remediation Note	Enter the **Remediation** script. Make sure that the Remediation script for your scenario is defined. Check the existing Remediation scripts under **ADMIN** > **Settings** > **General** > **Notification Policy** > **Action** column. If your device is not in the list, add the needed Remediation script.
Step 2: Define Conditions	
Conditions	Click **Condition** to create the rule conditions. See Defining Rule Conditions.
Step 3: Define Actions	
Severity	Select a **Severity** to associate with the incident triggered by the rule.
Category	Select the **Category** of incidents to be triggered by the rule.
Subcategory	Select the **Subcategory** from the available list based on the selected incident **Category**. To add custom subcategories, follow the steps under Setting Rule Subcategory.
Technique	Select any techniques from the available **Technique** list. You can choose to select

Settings	Guidelines
	zero, one, or multiple techniques. The Tactics row will update itself based on the techniques selected.
Action	Click the edit icon to define the incident (Incident Attributes and Triggered Attributes) that will be generated by this rule. You must have at least one incident defined before you can save your rule.
Exception	Click the edit icon to define any **Exceptions** for the rule. See Defining Rule Exceptions.
Tag	Click the drop-down list icon to view the tag list. If no tags appear, it means no tags have been created. From the drop-down list, select any tags you wish to associate with the rule. From Incidents View (by Time, by Device, by Incident), tags are displayed in the **Tag** column. See Tags for more information.
Update Status on Summary Dashboard	Add a check mark to the **Update Status on Summary Dashboard** checkbox to add this rule update in the Summary Dashboard, under the **DASHBOARD** tab.
Notification	Enter a **Notification** frequency for how often you want notifications to be sent when an incident is triggered by this rule.
Impacts	Select the **Impacts** of the incident triggered by this rule from the drop-down.
Watch List	Click the edit icon to add the rule you want to add to the watch list. **Note:** The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
Clear	Click the edit icon to define any **Clear** conditions for the rule. See Defining Clear Conditions.

4. Click **Save**.
   Your new rule will be saved to the group you selected in an inactive state. Before you activate the rule, you should test it.

Defining Rule Conditions

Rule conditions define the event attributes and thresholds that will trigger an incident. Rule conditions are built from sub-patterns of event attribute filters and aggregation functions. You can specify more than one subpattern and the relationships and constraints between them.

Specifying a Subpattern

A subpattern defines the characteristics of events that will cause a rule to trigger an incident. A subpattern involves defining event attributes that will be monitored, and then defining the threshold values for aggregations of event attributes that will trigger an incident.

Event Filters

Event filter criteria determine which event attributes and values will be monitored by the rule, and are set in a way that is similar to the way you set event attributes for structured historical searches and real time searches.

Event Aggregation

While you could have a rule that triggers an incident on a single instance of a particular event, it is more likely that you will want your rule to trigger an incident when some number of events have been found that meet your event filter criteria.

Group By Attributes

This determines which event attributes will be used to group the events before the group constraints are applied, in a way that is similar to the way the Group By attribute is used to aggregate the results of structured searches.

Aggregate Conditions

The group aggregation conditions set the threshold at which some aggregation of events will trigger a rule to create an incident. You create an aggregation condition by using the **Expression Builder** to set a function, and then enter the **Operator** and **Value** for the aggregation condition. Examples of Group By and Aggregate Conditions Settings are shown below:

Scenario	Group By Attributes	Aggregate Conditions
10 or more events	none	**COUNT(Matched events) >= 10**
Connections to 100 or more distinct destination IPs from the same source IP	**Source IP**	**COUNT (DISTINCT Destination IP) >= 100**
Connections to 100 or more distinct destination IPs from the same source IP on the same destination port	**Source IP,Destination Port**	**COUNT (DISTINCT destination IP) >= 100**
Average CPU Utilization on the same server > 95% over 3 samples	**Host IP**	**COUNT (Matched Events) >= 3 AND AVG(CPU Util) > 95**
Logins from the same source workstation to 5 or more accounts on the same target server	**Source IP**, **Destination IP**	**COUNT(DISTINCT user) >= 5**

Setting the Relationship between Subpatterns

If you have more than one sub-pattern, you must specify the relationship between them with these operators.

Operator	Meaning
AND	**Sub-pattern P1 AND Sub-pattern P2** means both sub-patterns P1 and P2 have to occur

Operator	Meaning
OR	**Sub-pattern P1 OR Sub-pattern P2** means either P1 or P2 have to occur
FOLLOWED-BY	**Sub-pattern P1 FOLLOWED-BY Sub-pattern P2** means P1 has to be followed by P2 in time
AND-NOT	**Sub-pattern P1 AND-NOT Sub-pattern P2** means P1 must occur while P2 must not; the time order between P1 and P2 is not important
NOT-FOLLOWED-BY	**Sub-pattern P1 NOT-FOLLOWED-BY P2** means P1 must occur and P2 must not occur after P1

Setting Inter-subpattern Constraints

You may want to relate attributes of a sub-pattern to the corresponding attributes of another sub-pattern, in a way that is similar to a JOIN operation in an SQL, by using the relationship operators **<**, **>**, **<=**, **>=**, **=**, **!=**.

Examples of inter-subpattern relationships and constraints

Scenario	Sub-pattern P1 - filter	P1 - Group-by attribute set	P1 Group constraint	Sub-pattern P2 filter	P2-group-by attribute	P2 group constraint	Inter-P1-P2 relationships	Inter-P1-P2 constraints
5 login failures from the same source to a server not followed by a successful logon from the same source to the same server	Event type = Login Success	Source IP, Destination IP	COUNT (Matched Event) >= 5	Event type = Login failure	Source IP, Destination IP	COUNT (Matched Event) > 0	P1 NOT_ FOLLOWED_BY P2	P1's Source IP = P2's Source IP
An security attack to a server followed by the server	Event type = Attack	Destination IP	COUNT (Matched Event) > 0	Event Type = Connection Attempted	Source IP	COUNT (DISTINCT Destination IP) > 100	P1 FOLLOWED_BY P2	P1's Destination IP = P2's Source IP

Scenario	Sub-pattern P1 - filter	P1 - Group-by attribute set	P1 Group constraint	Sub-pattern P2 filter	P2- group-by attribute	P2 group constraint	Inter-P1-P2 relationships	Inter-P1-P2 constraints
scanning the network, that is, attempting to communicate to 100 distinct destination IP addresses in 5 minute time windows								
Average CPU > 95% over 3 sample on a server AND Ping loss > 75%	Event Type = CPU_Stat	Host IP	COUNT (Matched Event) >= 3 AND AVG (cpuUtil) > 95	Event Type = PING Stat	Host IP	pingLossPct > 75	P1 AND P2	P1's Host IP = P2's Host IP

Defining the Incident Generated by a Rule

Defining an incident involves setting attributes for the incident based on the subpatterns you created as conditions for the rule, and then setting attributes for the incident that will be used in analytics and reports.

Note: You must have at least one incident defined before you can save your rule.

1. Select the rule you want to define an incident for.
2. Click **Edit**and go to **Step 2: Define Condition**.
3. Select a **Subpattern** from the drop-down list and click the edit icon to define the conditions for the rule. See Defining Rule Conditions.
   Define attributes for the incident based on the **Filter**, **Aggregate**, and **Group By** attributes you set for your subpatterns. Typically, you will set the Incident attributes to be the same as the Group By attributes in the subpattern:
   a. Select the **Attribute** you want to add to Incident.
   b. Select a **Subpattern**.
   c. This will populate values from the **Group By** attributes in the subpattern to the **Filter** menu.
   d. In the **Filter** menu, select the attribute you want to set as equivalent to the **Event Attribute**.

4. In **Step 3: Define Action**, provide values for the **Severity**, **Category**, **Subcategory**, **Dashboard**, **Notification**, **Impacts**, and **Watch List** fields as described in Creating a Rule. For information on exceptions, see Defining Rule Exceptions.
5. Click the **Action** edit icon to define the incident events and triggered attributes in the **Generate Incident for** dialog box. This dialog box is is pre-populated with typical attributes you would want included in an incident report.
6. Under **Triggered Attributes**, select the attributes from the triggering events that you want to include in Dashboards and Analytics for this event.
7. Click **Save**.

Defining Rule Exceptions

Once you activate a rule, it continuously monitors your IT infrastructure for conditions that would trigger an event. However, you may also want to define exceptions to those conditions. For example, you may know that a server will be going down for maintenance during a specific time period and you don't want your **Server Down - No Ping Response** rule to trigger an incident for it.

1. In **RESOURCES** > **Rules**, select the rule you want to add the exception to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. Next to **Exceptions**, click **Edit**.
4. Select an **Attribute** and **Operator**, and enter a **Value**, for the conditions that will prevent an incident from being generated.
   The values in the Attribute menu are from the **Event Attributes** associated with the incident definition.
5. Click the **+** icon to set an effective time period for the exception.
   You can set effective time periods for single and recurring events, and for durations of time from hours to days.
6. Enter any **Notes** about the exception.
7. Click **Save**.

Defining Clear Conditions

Clear conditions specify conditions in which incidents will have their status changed from **Active** to **Cleared**. You can set the time period that must elapse for the clear condition to occur, and then set the conditions based on the triggering of the original rule, or on a sub pattern based on the Incident Attributes.

1. In **RESOURCES** > **Rules**, select the rule you want to add the clear condition to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. Next to **Clear Condition**, click **Edit**.
4. Set the **Time Period** that should elapse for the clear condition to go into effect.
5. If you want the clear condition to go into effect based on the firing of the original rule, select t**he Original Rule Does Not Trigger**.
   For example, if you wanted the clear condition to change the status of **Active** incidents to **Cleared** after the original rule had not been triggered for ten minutes, you would set **Cleared Within** to **10 Minutes** and select this option.
6. If you want to base the clear condition on a sub-pattern of the incident attributes, select **the following conditions are met**.
   The incident attributes from your rule will load and the clear condition attributes will be set to match.
7. Define the pattern to use by clicking the **Edit** icon next to the clear sub pattern.
8. Click **Save**.

Defining an Incident Title

Defining an incident title makes it convenient to identify an incident without having to search on incident source, target, and details. You can define titles for both user-defined rules and system rules.

These steps assume you have already created a rule or are editing a system rule.

1. In **RESOURCES** > **Rules**, select the rule you want to add a title to, and click **Edit**.
2. Select **Step 3: Define Action**.
3. You can either enter text for the title or build the title using incident attributes defined for the rule.
   To use the incident attributes to build the title, follow these steps:

   a. Open the drop-down list next to **Insert Attribute**.
      Notice that the list contains all of the attributes defined in the **Incident Attributes** field.

   b. Select an attribute and click the **+** symbol to the right of the **Insert Attribute** list.
      The attribute appears in the **Incident Title** field prefixed by a "`$`" symbol, for example, `$user`.

   c. Repeat the previous step for all of the attributes you want to appear in the title.

   d. You can add text to the **Incident Title** field to make it more meaningful to you, for example: `$user` *created* `$fileName` *on* `$hostName`.
4. Click **Save** when you have finished your edits.

Once the title is defined in a rule definition, FortiSIEM will populate Incident **Title** field for all new instances of the Incidents.

To Display the Incident Title Field

Follow these steps to display the **Incident Title** column in the list of incidents table.

1. Go to **INCIDENTS > List by Time** view.
2. Open the **Actions** drop-down list and select **Change Display Columns**.
3. Select **Incident Title** from the list.
4. Click **Close**.

The **Incident Title** column appears in the incidents table.

Activating and Deactivating a Rule

- Activating a Rule Without a Workflow
- Activating a Rule Using a Workflow
- Activating/Deactivating Multiple Rules

Activating a Rule Without a Workflow

If you have permission to activate a rule, follow these steps: You may also want to deactivate a rule, for example to test it, instead of deleting it from the system.

1. Go to **RESOURCES** > **Rules**.
2. Browse or search to find the rule that you want to activate or deactivate.
3. Select **Active** in the Active column to activate the rule, or clear the **Active** option to deactivate the rule.

Activating a Rule Using a Workflow

Follow these steps to activate a rule by using a workflow.

- Step 1 - Create Appropriate Roles for Users
- Step 2 - Map Users to Appropriate Roles
- Step 3 - Rule to be Activated/Deactivated
- Step 4 - Approve the Rule Activation/Deactivation Request
- Step 5 - View the Rule Activation/Deactivation Request Status

Step 1 - Create Appropriate Roles for Users

Complete these steps to create a role that will require approval for rule activation/deactivation requests.

1. Go to **ADMIN > Settings > Role > Role Management**.
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Rule Activation/Deactivation** option is not checked.
4. Save the role definition.

Complete these steps to create a role that can approve rule activation/deactivation requests.

1. Go to **ADMIN > Settings > Role > Role Management**
2. Click **New** to create a new role or edit an existing role by selecting a role from the table and clicking **Edit**.
3. Make sure the **Approver > Rule Activation/Deactivation** option is checked.
4. Save the role definition.

Step 2 - Map Users to Appropriate Roles

1. Go to **CMDB > Users**.
2. Select a user from the table and click **Edit**.
3. In the Edit User dialog box, select the **System Admin** option, and click the **Edit** icon.
4. Select the **Requestor** or **Approver** role as appropriate.

Step 3 - Request Rule to be Activated/Deactivated

1. Go to **RESOURCES > Rules**.
2. Select a rule, then check or uncheck the active column status as needed. The Create New Request dialog box opens.
3. If the role requires approval, select an approver from the **Approver** drop-down list.
4. Click **Submit**.
5. The approver will receive an email with a link to log back in to FortiSIEM and approve the request.

Step 4 - Approve the Rule Activation/Deactivation Requests

1. Login to FortiSIEM using a role that can approve rule activation/deactivation requests.
2. Click **Approval**. The table in the **TASKS** page lists pending requests.
3. To process the requests, scroll to the right-hand end of the row.

4. From the drop-down list, select **Approve** or **Reject**.
    - If you select **Approve**, the Approve Request dialog box opens. You can choose whether the request is valid **Until** or **For the date and time listed in the time stamp field**. You can click the time stamp field to choose a different date and time.
    - If you choose **Reject**, the Reject Request dialog box opens where you can enter a reason for the rejection.
5. If you choose **Approve**, the rule will be enabled or disabled.

Step 5 - View the Rule Activation/Deactivation Request Status

Complete this step to see the status of your rule activation/deactivation requests.

1. Login to FortiSIEM using the same account as in Step 3.
2. Click **Request**. The table in the **TASKS** page shows the status of requests.

Activating/Deactivating Multiple Rules

If you have permission to activate a rule, follow these steps to activate/deactivate multiple rules with a single click.

1. Go to **RESOURCES** > **Rules**.
2. Click the Edit icon (✎)and select **Multiple Rules**.
3. From the Edit Multiple Rules window, take the following steps:

    A. In the leftmost panel, expand Rules, and rule categories/sub-categories (Availability, Network, etc...) to locate your rule(s) in the middle panel.

    B. In the middle panel, select your rule(s) you wish to make activation/deactivation changes to. You can use Shift-Click to select a group of ascending or descending rules from your first selection. You can also use Ctrl-Click to individually select a group of rules.

    C. Click **>** to add the selected rule(s) for activation/deactivation.
    Note: You can also select a rule in the rightmost panel and click **<** to remove it from the group selection.

    D. When you are done selecting all the rules you wish to make an activation/deactivation change to, in the **Select Actions** panel, take any of the following actions:

    - Select a Severity from the **Severity** drop-down list to change for your selected rules.
    - Select/deselect Active Status for New Org, to make the selected rules active or inactive for new organizations by default.
    - From the **All Status for Existing Orgs** and specific org checkboxes, add a check to the checkbox to make the selected rules for that organization active, or remove the checkmark from a checkbox to make the selected rules inactive for that particular organization.

4. When done, click **Save**.

Testing a Rule

After creating or editing a rule, you should test it to see if it works as expected, before activating.

Note: You can perform rule testing only on the super global organization and not within the local organization.

Complete these steps to test a rule:

1. Go to **RESOURCES** > **Rules**, and deactivate the rule to test.
   Note: If you cannot deactivate a rule for testing, you can clone an inactive version of it.
2. In the **Set Activation Scope** dialog box, deselect the **Activation Status for New Org** and all of the organizations under **Activation Status for This Rule**.
3. Click **Save** to close the **Set Activation Scope** dialog box.
4. Select the rule, and click **Test**.
   This opens the **Rule Debug Events** dialog box.
5. Enter a **Reporting IP** where the synthetic event should originate from.
   If the rule you're testing specifies that the **Reporting IP** should be a member of a group, you should make sure that the Reporting IP you enter here is in that group.
6. Under **Raw Event**, enter the raw event log text that contains the triggering conditions for the rule.
7. Under **Pause**, enter the number of seconds before the next test event will be sent, and click **+** under **Action** to enter additional test events.
   Create as many events as necessary to trigger the rule conditions.
8. Click **Test Rule**.
   If the test succeeds you are now ready to activate the rule.

Exporting and Importing Rule Definitions

Instead of using the user interface to define a rule, you can import rule definitions, or you can export a definition, modify it, and import it back into your FortiSIEM virtual appliance. Rule definitions follow an XML schema.

- Exporting a Rule Definition
- Importing a Rule Definition

Exporting a Rule Definition

Complete these steps to export a Rule Definition:

1. Go to **RESOURCES** > **Rule**.
2. Select the Rule Definition(s) to export from the table.
3. Click **Export** to download and save the Rule Definition.

Importing a Rule Definition

Complete these steps to import a Rule Definition:

1. Go to **RESOURCES** > **Rule**.
2. Select the Rule Definition(s) to import in XML format.
3. Click **Import** to import the Rule Definition.

Network

The Networks page lists the defined networks in your IT infrastructure.

Adding a Network

Complete these steps to add a network:

1. Go to **RESOURCES** > **Networks**.
2. Select a group where you want to add the Network group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information:
   - **Name** - name of the network
   - **Low** - lower IP address of the network IP range
   - **High** - higher IP address of the network IP range
   - **Mask** - Subnet mask
5. Click **Save**.

Modifying a Network

Complete these steps to modify a network:

1. Go to **RESOURCES** > **Networks**.
2. Select the network to modify from the table.
3. Click **Edit**.
4. Modify the required information:
   - **Name** - name of the network
   - **Low** - lower IP address of the network IP range
   - **High** - higher IP address of the network IP range
   - **Mask** - Subnet mask
5. Click **Save**.

Deleting a Network

Complete these steps to delete a network:

1. Go to **RESOURCES** > **Networks**.
2. Select the network to modify from the table.
3. Click **Delete**.
4. Click **Yes** to delete the network or **Remove only from group** to just remove the network from the group.

Watch List

A Watch List is a smart container of similar items such as host names, IP addresses, or user names, that are of significant interest to an administrator and must be watched. Examples of watch lists that are already set up in FortiSIEM are:

- **Frequent Account Lockouts** - users who are frequently locked out
- **Host Scanners** - IP addresses that scan other devices
- **Disk space issues** - hosts with disks that are running out of capacity
- **Denied countries** - countries with an excessive number of access denials at the firewall
- **Blacklisted WLAN endpoints** - Endpoints that have been blacklisted by Wireless IPS systems

Items are added to a watch list dynamically when a rule is triggered, but you can also add items to a watch list manually. When you define a rule, you can also choose a watch list that will be populated with a specific incident attribute, and you can use watch lists as conditions while creating reports, as described in Using a Watch List. You can also define when an entry leaves a watch list - this is time based. For example, if the rule does not trigger for that attribute for defined time-period, then the entry is removed from the watch list. Watch lists are also multi-tenant aware, with organization IDs tracked in relation to watch list items.

The following section provides the procedures to use Watch Lists:

System-defined Watch List

FortiSIEM includes several pre-defined watch lists that are populated by system-defined rules.

Watch list	Description	Attribute Type	Triggering Rules
Accounts Locked	Domain accounts that	User (STRING)	Account Locked: Domain

Watch list	Description	Attribute Type	Triggering Rules
	are locked out frequently		
Application Issues	Applications exhibiting issues	Host Name (STRING)	IIS Virtual Memory Critical SQL Server Low Buffer Cache Hit Ratio SQL Server Low Log Cache Hit Ratio SQL Server Excessive Deadlock SQL Server Excessive Page Read/Write SQL Server Low Free Pages In Buffer Pool SQL Server Excessive Blocking Database Server Disk Latency Critical SQL Server Excessive Full Scan SQL Server scheduled job failed High Oracle Table Scan Usage High Oracle Non-System Table Space Usage Oracle database not backed up for 1 day Exchange Server SMTP Queue High Exchange Server Mailbox Queue High Exchange Server RPC Request High Exchange Server RPC Latency High Oracle DB Low Buffer Cache Hit Ratio Oracle DB Low Library Cache Hit Ratio Oracle DB Low Row Cache Hit Ratio Oracle DB Low Memory Sorts Ratio Oracle DB Alert Log Error Excessively Slow Oracle DB Query Excessively Slow SQL Server DB Query Excessively Slow MySQL DB Query
Availability Issues	Servers, networks or storage devices or Applications that are exhibiting availability issues	Host Name (STRING)	Network Device Degraded - Lossy Ping Response Network Device Down - No Ping Response Server Degraded - Lossy Ping Response Server Down - No Ping Response Server Network Interface Staying Down Network Device Interface Flapping Server Network Interface Flapping Important Process Staying Down Important Process Down

Watch list	Description	Attribute Type	Triggering Rules
			Auto Service Stopped Critical network Interface Staying Down EC2 Instance Down Storage Port Down Oracle Database Instance Down Oracle Listener Port Down MySQL Database Instance Down SQL Server Instance Down Service Staying Down - Slow Response To STM Service Down - No Response to STM Service Staying Down - No Response to STM
DNS Violators	Sources that send excessive DNS traffic or send traffic to unauthorized DNS gateways	Source IP	Excessive End User DNS Queries to Unauthorized DNS servers Excessive End User DNS Queries Excessive Denied End User DNS Queries Excessive Malware Domain Name Queries Excessive uncommon DNS Queries Excessive Repeated DNS Queries To The Same Domain
Denied Countries	Countries that are seeing a high volume of denials on the firewall	Destination Country (STRING)	Excessive Denied Connections From An External Country
Denied Ports	Ports that are seeing a high volume of denies on the firewall	Destination Port (INT)	Excessive Denied Connection To A Port
Environmental Issues	Environmental Devices that are exhibiting issues	Host name (String)	UPS Battery Metrics Critical UPS Battery Status Critical HVAC Temp High HVAC Temp Low HVAC Humidity High HVAC Humidity Low FPC Voltage THD High

Watch list	Description	Attribute Type	Triggering Rules
			FPC Voltage THD Low FPC Current THD High FPC ground current high NetBoz Module Door Open NetBotz Camera Motion Detected Warning APC Trap Critical APC Trap
Hardware Issues	Servers, networks or storage devices that are exhibiting hardware issues	Host Name (String)	Network Device Hardware Warning Network Device Hardware Critical Server Hardware Warning Server Hardware Critical Storage Hardware Warning Storage Hardware Critical Warning NetApp Trap Critical Network Trap
Host Scanners	Hosts that scan other hosts	Source IP	Heavy Half-open TCP Host Scan Heavy Half-open TCP Host Scan On Fixed Port Heavy TCP Host Scan Heavy TCP Host Scan On Fixed Port Heavy UDP Host Scan Heavy UDP Host Scan On Fixed Port Heavy ICMP Ping Sweep Multiple IPS Scans From The Same Src
Mail Violators	End nodes that send too much mail or send mail to unauthorized gateways		Excessive End User Mail to Unauthorized Gateways Excessive End User Mail
Malware Found	Hosts where malware found by Host IPS /AV based systems and the malware is not remedi-	Host Name (String)	Virus found but not remediated Malware found but not remediated Phishing attack found but not remediated Rootkit found Adware process found

Watch list	Description	Attribute Type	Triggering Rules
	ated		
Malware Likely	Hosts that are likely to have malware - detected by network devices and the determination is not as certain as host based detection	Source IP or Destination IP	Excessive Denied Connections From Same Src Suspicious BotNet Like End host DNS Behavior Permitted Blacklisted Source Denied Blacklisted Source Permitted Blacklisted Destination Denied Blacklisted Destination Spam/malicious Mail Attachment found but not remediated Spyware found but not remediated DNS Traffic to Malware Domains Traffic to Emerging Threat Shadow server list Traffic to Emerging Threat RBN list Traffic to Emerging Threat Spamhaus list Traffic to Emerging Threat Dshield list Traffic to Zeus Blocked IP list Permitted traffic from Emerging Threat Shadow server list Permitted traffic from Emerging Threat RBN list Permitted traffic from Emerging Threat Spamhaus list Permitted traffic from Emerging Threat Dshield list Permitted traffic from Zeus Blocked IP list
Port Scanners	Hosts that scan ports on a machine	Source IP	Heavy Half-open TCP Port Scan: Single Destination Heavy Half-open TCP Port Scan: Multiple Destinations Heavy TCP Port Scan: Single Destination Heavy TCP Port Scan: Multiple Destinations Heavy UDP Port Scan: Single Destination Heavy UDP Port Scan: Multiple Destinations
Policy Violators	End nodes exhibiting behavior that is not acceptable in typical Corporate networks	Source IP	P2P Traffic detected IRC Traffic detected P2P Traffic consuming high network bandwidth Tunneled Traffic detected Inappropriate website access Inappropriate website access - multiple categories Inappropriate website access - high volume Inbound clear text password usage Outbound clear text password usage

Watch list	Description	Attribute Type	Triggering Rules
			Remote desktop from Internet VNC From Internet Long lasting VPN session High throughput VPN session Outbound Traffic to Public DNS Servers
Resource Issues	Servers, networks or storage devices that are exhibiting resource issues: CPU, memory, disk space, disk I/O, network I/O, virtualization resources - either at the system level or application level	Host Name (STRING)	High Process CPU: Server High Process CPU: Network High Process Memory: Server High Process Memory: Network Server CPU Warning Server CPU Critical Network CPU Warning Network CPU Critical Server Memory Warning Server Memory Critical Network Memory Warning Network Memory Critical Server Swap Memory Critical Server Disk space Warning Server Disk space Critical Server Disk Latency Warning Server Disk Latency Critical Server Intf Util Warning Server Intf Util Critical Network Intf Util Warning Network Intf Util Critical Network IPS Intf Util Warning Network IPS Intf Util Critical Network Intf Error Warning Network Intf Error Critical Server Intf Error Warning Server Intf Error Critical
			Virtual Machine CPU Warning Virtual Machine CPU Critical Virtual Machine Memory Swapping Warning

Watch list	Description	Attribute Type	Triggering Rules
			Virtual Machine Memory Swapping Critical ESX CPU Warning ESX CPU Critical ESX Memory Warning ESX Memory Critical ESX Disk I/O Warning ESX Disk I/O Critical ESX Network I/O Warning ESX Network I/O Critical Storage CPU Warning Storage CPU Critical NFS Disk space Warning NFS Disk space Critical
			NetApp NFS Read/Write Latency Warning NetApp NFS Read/Write Latency Critical NetApp CIFS Read/Write Latency Warning NetApp CIFS Read/Write Latency Critical NetApp ISCSI Read/Write Latency Warning NetApp ISCSI Read/Write Latency Critical NetApp FCP Read/Write Latency Warning NetApp FCP Read/Write Latency Critical NetApp Volume Read/Write Latency Warning
			NetApp Volume Read/Write Latency Critical EqualLogic Connection Read/Write Latency Warning EqualLogic Connection Read/Write Latency Critical Isilon Protocol Latency Warning
Routing Issues	Network devices exhibiting routing related issues	Host Name (STRING)	OSPF Neighbor Down EIGRP Neighbor down OSPF Neighbor Down
Scanned Hosts	Hosts that are scanned	Destination IP	Half-open TCP DDOS Attack TCP DDOS Attack Excessive Denied Connections to Same Destination

Watch list	Description	Attribute Type	Triggering Rules
Vulnerable Systems	Systems that have high severity vulnerabilities from scanners	Host Name (STRING)	Scanner found severe vulnerability
Wireless LAN Issues	Wireless nodes triggering violations	MAC Address (String)	Rogue or Unsecure AP detected Wireless Host Blacklisted Excessive WLAN Exploits Excessive WLAN Exploits: Same Source

Creating a Watch List

Complete these steps to create a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select an existing group under **Watch Lists** folder or create a new Watch List group.

To create a new Watch List group:

a. Select **Watch Lists** folder from the left panel and click **+** above the **RESOURCES** groups.
b. In the **Create New Watch List** dialog box, select the **Organization** type.
c. Enter the information below:
   - **Group** - name of the Watch List group
   - **Description** - description about the Watch List group
   - **Type** - Watch List type - String, Number, IP, or Date
   - **Case Sensitive** - Select if the group name is case-sensitive
   - **Expired in** - time period in which the items will expire from the watch if there is no activity for that time

To create a new Watch List:

a. Select a Watch List and click **New**.
   In the **Add New Entry** dialog box, the **Watch List** and **Type** values are pre-populated based on the Watch List selection.
b. Enter the information below:
   - **Active** - select whether the Watch List will be active when it is created
   - **Value** - a value for the Watch List
   - **Description** - a description of the Watch List
   - **Expires** - time period in which the items will expire from the watch if there is no activity for that time
c. Click **Save**.

Modifying a Watch List

Complete these steps to modify a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List to modify from the table.
3. Click **Edit** and make the required changes.
4. Click **Save**.

Use the **Delete** button to select and delete any Watch List(s) from the table.

Using a Watch List

- Adding Watch List to a Rule
- Using Watch Lists as Conditions in Rules and Reports

Adding Watch List to a Rule

You can now add your new watch list to a rule, so that when the rule is triggered, items will be added to the watch list.

1. Go to **RESOURCES** > **Rules**.
2. Select the rule where you want to add the watch list, and click **Edit**.
3. Go to the **Step 3: Define Action** page.
4. Click the edit icon for the **Watch List**.
5. For **Incident Attribute**, select the incident information you want to add to the watch list.
   Note: **Watch List Attribute Type Must Match Incident Attribute**- The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
6. Move the watch list you want to add from **Available** to **Selected** list using the right arrow.
7. Click **Save**.
   The **Watch Lists** field value displays "Defined".

Using Watch Lists as Conditions in Rules and Reports

If you want to create a rule that refers to the attributes in a watch list, for example if you want to create a condition in which a **Source IP** listed in your **DNS Violators** watch list will trigger an incident.

1. Go to **RESOURCES** > **Reports** or **Rules** and select the rule or report where you want to use the watch list.
2. Click **Edit**.
3. Go to the **Step 2: Define Condition** page.
4. Under **Conditions** for the report in your rule sub-pattern, enter the watch list attribute you want to filter for in the **Attribute** field.
   For example, **Source IP**.
5. For **Operator**, select **IN**.
6. Click **... Select from CMDB** under **Value**, and browse the folders to select the watch list using the right arrow.
   For example, **DNS Violators**.
7. Click **OK** and continue creating your search criteria or rule sub pattern.

Exporting and Importing Watch Lists

- Exporting Watch Lists
- Importing Watch Lists

Exporting a Watch List

Complete these steps to export a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List(s) to export from the table.
3. Click **Export**.
4. Select the file format as **PDF**, **RTF** or **CSV** and click **Generate**.
   "Export successful" message is displayed.
5. Click **Open Report File** to save the file.

Importing a Watch List

Complete these steps to import a Watch List:

1. Go to **RESOURCES** > **Watch Lists**.
2. Select the Watch List to modify from the table.
3. Click **Import**.
4. Select the file to import in CSV format and click **Import**.

Protocols

The Protocols page lists the protocols used by applications and devices to communicate with the FortiSIEM virtual appliance.

Adding a Protocol

Complete these steps to add a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select a group where you want to add the Network group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information:
   a. **Name** - name of the protocol.
   b. **Description** - description about the protocol.

   c. **Protocol/Port(s)** - select the Protocol and Port from the drop-down.
   d. **Apps Group** - enter the group to associate with the Protocol.
5. Click **Save**.

Modifying a Protocol

Complete these steps to modify a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select the protocol to modify from the table.
3. Click **Edit**.
4. Modify the required information:
   - **Name** - name of the protocol.
   - **Description** - description about the protocol.
   - **Protocol/Port(s)** - protocol and port from the drop-down.
   - **Apps Group** - group to associate with the protocol.
5. Click **Save**.

Deleting a Protocol

Complete these steps to delete a Protocol:

1. Go to **RESOURCES** > **Protocols**.
2. Select the Protocol to delete from the table.
3. Click **Delete**.
4. Click **Yes** to confirm.

Event Types

The Event Types page lists the types of events that are collected for supported devices.

Adding an Event Type

Complete these steps to add an event type:

1. Go to **RESOURCES** > **Event Types**.
2. Select a group to add the new event to, or create a new one.
3. Click **New**.
4. Enter a **Name**, and **Description** for the event type.
5. Select the **Device Type** from the drop-down list to associate with this event type.
6. Select the level of **Severity** associated with this event type.

7. For **CVE IDs**, enter links to any vulnerabilities associated with this event type as cataloged by the National Vulnerability Database.
8. Click **Save**.

Modifying an Event Type

Complete these steps to modify an Event Type:

1. Go to **RESOURCES** > **Event Types**.
2. Select the Event Type to modify from the table.
3. Click **Edit** to modify any settings.
4. Click **Save**.

Deleting an Event Type

Complete these steps to delete an Event Type:

1. Go to **RESOURCES** > **Event Types**.
2. Select the Event Type group from the folder structure on the left panel.
3. Select the Event Type from the table and click **Delete** to delete.
4. Confirm whether to **Remove only from group** or to remove completely by clicking **Yes**.

Working with FortiGuard IOCs

The following sections describe how to work with FortiGuard malware domains, IPs, and URLs.

- Working with FortiGuard Malware Domains
- Working with FortiGuard Malware IPs
- Working with FortiGuard Malware URLs

Working with FortiGuard Malware Domains

The following sections describe how to enable, disable, and setup a proxy for the FortiGuard Malware domain.

- Enabling the FortiGuard IOC Service
- Disabling the FortiGuard IOC Service
- Using a Proxy for the FortiGuard IOC Service

Enabling the FortiGuard IOC Service

To start the FortiGuard IOC service, follow these steps:

1. Go to **RESOURCES > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select an inactive domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Enable IOC Service**.
4. (Optional) Schedule the starting of the service. See Specifying a schedule.
5. Click **Save**.

Disabling the FortiGuard IOC Service

To stop the FortiGuard IOC service, follow these steps:

1. Go to **RESOURCES > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select an active domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Disable IOC Service**.
4. Click **Save**.

Using a Proxy for the FortiGuard IOC Service

Follow these steps to use a proxy for the FortiGuard IOC service:

1. Go to **RESOURCES > Malware Domains** and select the **FortiGuard Malware Domain** folder.
2. Select a domain from the table.
3. Click **More > Update**. In the **Update FortiGuard IOC Service** dialog box, select **Use Proxy**.
4. The **Mode** will be **Proxy**. Provide the following information:
   a. **IP/Host**
   b. **Port**
   c. **User Name**
   d. **Password**
5. Click **Save**.

Working with FortiGuard Malware IPs

For FortiGuard Malware IPs, go to **RESOURCES > Malware IPs**, select the **FortiGuard Malware IP** folder, and repeat the same steps as for **FortiGuard Malware Domains**.

Working with FortiGuard Malware URLs

For FortiGuard Malware URLs, go to **RESOURCES > Malware URLs**, select the **FortiGuard Malware URL** folder, and repeat the same steps as for **FortiGuard Malware Domains**.

Working with AlienVault OTX

This section describes how to configure FortiSIEM to work with AlienVault OTX malware domains, IPs, URLs, and hashes.

Working with AlienVault OTX Malware Domains

- AlienVault OTX Malware Domain Values

Enabling the AlienVault OTX Service

To start the AlienVault OTX service, follow these steps once you have defined the feeds:

1. Go to **RESOURCES > Malware Domains>** select the OTX service you defined.
2. Click **More > Update**. In the **Update AlienVault OTX Service** dialog box, select **Enable AlienVault OTX Service**.
3. (Optional) Schedule the starting of the service. See Specifying a schedule.
4. Click **Save**.

Disabling the AlienVault OTX Service

To stop the AlienVault OTX service, follow these steps:

1. Go to **RESOURCES > Malware Domains** and select the **AlienVault OTX Malware Domain** folder.
2. Click **More > Update**.
3. Disable any schedule you have defined.
4. Click **Save**.

AlienVault OTX Malware Domain Values

Use the following values to configure AlienVault OTX Malware Domains for FortiSIEM.

Parameter	Value
URL	https://otx.alienvault.com
Username	<user> It will prompt you to enter your API user name.
Password	<pwd> It will prompt you to enter your API password.
Plugin Class	com.accelops.service.threatfeed.impl.OTXMalwareDomainUpdateService
Data Format	Select STIX/TAXII Format
Collection	user_AlienVault
Data Update	Select Full

Working with AlienVault OTX Malware IPs

For AlienVault OTX Malware IPs, go to **RESOURCES > Malware IPs,** select the **AlienVault OTX Malware IP** folder, and repeat the same steps as for **AlienVault OTX Malware Domains**.

Use the following values to configure AlienVault OTX Malware IPs for FortiSIEM.

Parameter	Value
URL	https://otx.alienvault.com
Username	<user> It will prompt you to enter your API user name.
Password	<pwd> It will prompt you to enter your API password.
Plugin Class	com.accelops.service.threatfeed.impl.OTXMalwareIPUpdateService
Data Format	Select STIX/TAXII Format
Collection	user_AlienVault
Data Update	Select Full

Working with AlienVault OTX Malware URLs

For AlienVault OTX Malware URLs, go to **RESOURCES > Malware URLs,** select the **AlienVault OTX Malware URL** folder, and repeat the same steps as for **AlienVault OTX Malware Domains**.

Use the following values to configure AlienVault OTX Malware URLs for FortiSIEM.

Parameter	Value
URL	https://otx.alienvault.com
Username	<user> It will prompt you to enter your API user name.
Password	<pwd> It will prompt you to enter your API password.
Plugin Class	com.accelops.service.threatfeed.impl.OTXMalwareUrlUpdateService
Data Format	Select STIX/TAXII Format
Collection	user_AlienVault
Data Update	Select Full

Working with AlienVault OTX Malware Hash

For AlienVault OTX Malware Hash, go to **RESOURCES > Malware Hash,** select the **AlienVault OTX Malware Hash** folder, and repeat the same steps as for **AlienVault OTX Malware Domains**.

Use the following values to configure AlienVault OTX Malware Hash for FortiSIEM.

Parameter	Value
URL	https://otx.alienvault.com
Username	<user> It will prompt you to enter your API user name.
Password	<pwd> It will prompt you to enter your API password.
Plugin Class	com.accelops.service.threatfeed.impl.OTXMalwareHashUpdateService
Data Format	Select STIX/TAXII Format
Collection	user_AlienVault
Data Update	Select Full

Working with ThreatConnect IOCs

ThreatConnect can provide malware IPs, domains, hashes, or URLs which FortiSIEM can use to match in log data The steps are as follows: for each IOC (IP, domain, hash, URL).

1. Discover Collections
2. Create Collection Policy
3. Schedule IOC Download

Since an Organization may subscribe to many Collections (an intelligence source), downloading every IOC for all Collections may result in too much data. Therefore, specifying a Collection Policy is essential.

Download ThreatConnect Malware Domains

1. Go to **RESOURCES > Malware Domains** and select the **ThreatConnect Malware Domain** folder.
2. Click **More > Update**. In the **Update Malware** dialog box, then select **Update via API**.
3. Use your ThreatConnect credentials to complete the **URL**, **User name**, and **Password** fields.
4. **Plugin Class** is provided by default.
5. Select a **Data Format**. In this release, only **STIX-TAXII** is supported.
6. Enter an **Organization** name that is defined in your ThreatConnect account.
7. Define a **Collection**.
8. Click **Discover Collections** to expose all of the collections you are eligible to use.
9. Select a collection policy in the table and click **Edit**.
10. Edit any of the following values in the **Edit Collection Policy** dialog box:
    - **Enabled**: select whether the collection policy is enabled
    - **Collection**: edit the collection name
    - **Tag**: enter an optional user-defined tag for the collection

- **Max False Positive Count**: enter a number where the frequency of an attack produces a false positive on your network.
- **Min Rating**: enter a value between 0 and 5.
- **Confidence**: enter a value between 1 and 100.

11. Click **Save**.
12. Schedule the download. See Specifying a Schedule.
13. Check the folder 5 minutes after the scheduled time. Downloaded results should be displayed – organized by each collection.

Note that FortiSIEM does not provide system rules and reports because ThreatConnect folders are dynamic. The user must create them using the Collection folders.

Download Other ThreatConnect IOCs

For ThreatConnect Malware IP, go to **RESOURCES > Malware IPs**, select the **ThreatConnect Malware IP** folder, and repeat the same steps as for **Malware Domains**.

For ThreatConnect Malware URL, go to **RESOURCES > Malware URLs**, select the **ThreatConnect Malware URL** folder, and repeat the same steps as for **Malware Domains**.

For ThreatConnect Malware hash, go to **RESOURCES > Malware Hash** , select the **ThreatConnect Malware Hash** folder and repeat the same steps as for **Malware Domains**.

Specifying a Schedule

1. Click the **+** icon next to **Schedule**.
2. Enter values for the following options:
   - **Time Range** specifies start time (within the day) and the duration of the scheduling window. Select a UTC time and a corresponding location from the drop-down lists.
   - **Recurrence Pattern** specifies if and how the window will repeat.
     - If you are scheduling for one time only:
       a. Select **Once** for **Recurrence Pattern**.
       b. Select the specific date in **Start From**.
     - If you are scheduling for hourly:
       a. Enter the hourly interval.
       b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.
     - If you are scheduling for **Daily**:
       a. Select the interval of days or **Every weekday**.
       b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.
     - If you are scheduling for **Weekly**:
       a. Select the interval of weeks or select particular days of the week.
       b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.

- If you are scheduling for **Monthly**:
    a. Select the days and months from the drop-down lists.
    b. Select the **Start From** date for **Recurrence Range**, then either **End after** the number of occurrences, and **End by** date, or **No end date** to continue the recurrence forever.

3. Click **Save** to apply the changes.

Malware Domains

The Malware Domains page lists domains that are known to generate spam, host botnets, create DDoS attacks, and generally contain malware. The default groups included in your FortiSIEM deployment, MalwareDomainList, Zeus Domains, and SANS Domains, contain malware domains that are derived from the websites malwaredomainlist.com and isc.sans.edu. Since Malware Domains are constantly changing, FortiSIEM recommends maintaining a dynamically generated list of IP addresses provided by services such as these that is updated on a regular schedule, but you can also add or remove blocked IP addresses from these system-defined groups, and create your own groups based on manual entry of IP addresses or file upload.

The following sections describe Malware Domains:

Adding a Malware Domain

Complete these steps to add a Malware domain:

1. Go to **RESOURCES** > **Malware Domains**.
2. Select a group where you want to add the Malware Domains, or create a new one by clicking **+** above the **RESOURCES** groups. To create a new Malware Domain group:
    a. Select Malware Domain folder and click **+** above the **RESOURCES** groups.
    b. Enter the **Group** name and **Description** of the Malware Domain.
3. Select the Malware Domain group (existing or new) and click **New**.
4. Select the **Domain Name** and **Description** of the Malware domain.
5. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware Domain, see Working with FortiGuard Malware Domains.

Modifying a Malware Domain

Complete these steps to edit a Malware Domain:

1. Go to **RESOURCES** > **Malware Domains**.
2. Select the Malware Domain group on the left panel.
3. Select the Malware Domain from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware Domain, see Working with FortiGuard Malware Domains.

Deleting a Malware Domain

Complete these steps to delete a Malware Domain:

1. Go to **RESOURCES** > **Malware Domains**.
2. Select the Malware Domain on the left panel.
3. Select the Malware Domain from the table and click **Delete**.
4. Click **Yes**.

Malware IPs

The Malware IP Addresses page lists IP addresses that are known to generate spam, host botnets, create DDoS attacks, and generally contain malware. The two default groups included in your FortiSIEM deployment, Emerging Threats and Zeus, contain IP addresses that are derived from the websites rules.emergingthreats.net and zeustracker.abuse.ch. Because malware IP addresses are constantly changing, FortiSIEM recommends maintaining a dynamically generated list of IP addresses provided by services such as these that is updated on a regular schedule, but you can also add or remove blocked IP addresses from these system-defined groups, and create your own groups based on manual entry of IP addresses or file upload.

The following sections describe Malware IPs:

Adding a Malware IP

Complete these steps to add a Malware IPs:

1. Go to **RESOURCES** > **Malware IPs**.
2. Select a group where you want to add the Malware IPs, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the details of the Malware IP.
5. Click **Save**.

To configure a ThreatConnect Malware IP, see Working with ThreatConnect.

To configure a FortiGuard Malware IP, see Working with FortiGuard Malware IPs.

Modifying a Malware IP

Complete these steps to edit a Malware IP:

1. Go to **RESOURCES** > **Malware IPs**.
2. Select the Malware IP group in the left panel.
3. Select the Malware IP from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware IP, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware IP, see Working with FortiGuard Malware IPs.

You can use the **Delete** button to select and remove any Malware IP from the list.

Deleting a Malware IP

Complete these steps to delete a Malware IP:

1. Go to **RESOURCES** > **Malware IPs**.
2. Select the Malware IP group from the folder structure on the left panel.
3. Select the Malware IP from the table and click **Delete** to delete.
4. Click **Yes** to confirm.

Importing Malware IPs

You can import Malware IP information into FortiSIEM from external threat feed websites.

- Prerequisites
- Websites with Built-in Support
- Custom Threat Feed Websites - CSV Data - One-time Manual Import
- Custom Threat Feed Websites - CSV Data - Programmatic Import
- Custom Threat Feed Websites - Non-CSV Data - Programmatic Import
- Custom Threat Feed Websites - STIX Formatted Data and TAXII Import

Prerequisites

Before proceeding, gather the following information about a threat feed web site:

- Website URL
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you may need to understand the format of the data returned by the URL.
  - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator), then a simple integration is possible.
  - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Websites with Built-in Support

The following websites are supported:

- Emerging threat (http://rules.emergingthreats.net)
- Threat Stream Malware IP (https://api.threatstream.com)
- Hail-A-TAXII Malware IP (http://hailataxii.com/)

For Threat Stream Malware IP, the following Malware types are imported:

- Bot IP
- Actor IP
- APT Email
- APT IP
- Bruteforce IP
- Compromised IP
- Malware IP
- DDoS IP
- Phishing email IP
- Phish URL IP
- Scan IP
- Spam IP

To import data from these websites, follow these steps:

1. In the **RESOURCES** > **Malware IPs**, find the website you must import data from.
2. Select the folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will show in the edit box.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - when to start and how often to import. FortiSIEM recommends no more frequent than hourly.
7. Select the type of template you want to create.

Custom Threat Feed Websites - CSV Data - One-time Manual Import

This requires that the data to be imported is already in a file in comma-separated value format. The required format is:

```
Name, Low IP, High IP, Malware Type, Confidence, Severity, ASN, Org, Country ,Description,Data Found(MM/DD/YYYY),Last Seen(MM/DD/YYYY)
```

Although many fields are possible, Name, Low IP, and High IP are required. If High IP is not available, then the High IP field should be set to the Low IP.

1. Select **RESOURCES** > **Malware IPs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware IP Group** dialog box.
3. Enter a **Group** name and add a **Description**.
4. Click **Save** to create the folder under **Malware IPs**.
5. Select the folder just created.
6. Select **More > Update**.
7. Click **Choose File**.
8. Browse to the file you want to import and click **Save**.
   The imported data will appear in the right pane.

Custom Threat Feed Websites - CSV Data - Programmatic Import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in one line.

Although many fields are possible, only Low IP is required. If High IP is not provided, then it is set to Low IP.

Follow these steps:

1. Select **RESOURCES** > **Malware IPs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware IPs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon next to **URL** and provide the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the default class **com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService** is displayed.
      Note: Do not modify this in any case.
   d. Enter the correct **Field Separator** (by default, it is a comma).
   e. Select **CSV** as the **Data Format**.
   f. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, then choose 3 in the **Position** column.
7. Click **Save**.

8. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will show on the right pane after some time.

Custom Threat Feed Websites - Non-CSV Data - Programmatic Import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, write a Java plugin class by modifying the default system provided one.

After the class has been written and fully tested for correctness, follow these steps.

1. Select **RESOURCES** > **Malware IPs**.
2. Click on the "**+**" button on the left navigation tree to bring up the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**.
4. Click **Save** to create the folder under **Malware IPs**.
5. Select the folder just created.
6. Select **More** > **Update** > **Update via API**.
7. Click the edit icon and:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the custom Java class for this case.
   d. Select 'Custom' as the **Data Format**.
   e. Click **Save**.
8. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will display on the right pane after some time.

Custom Threat Feed Websites - STIX Formatted Data and TAXII Import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Select **RESOURCES** > **Malware IPs**.
2. Click on the "**+**" button on the left navigation tree to bring up the **Create New Malware IP Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware IPs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. Select 'STIX-TAXII' as the **Data Format**.
   d. For **Plugin Class**, choose **com.accelops.service.threatfeed.impl.StixMalwareIPUpdateService** and **Full**.
   e. Click **Save**.
7. Select a import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import to get new data from the website.
   The imported data will show on the right pane after some time.

Malware URLs

The Malware URLs page lists URLs that are known to host malware. The Threat Stream Blocked URL group is included in your FortiSIEM deployment.

The following sections describe Malware URLs:

Adding a Malware URL

Complete these steps to add a Malware URL:

1. Go to **RESOURCES** > **Malware URLs**.
2. Select a group where you want to add the Malware URL, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the following information about the Malware URL:
   - URL
   - Malware Type
   - Confidence
   - Description
   - Last Seen
5. Click **Save**.

To configure a ThreatConnect Malware Domain, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware URL, see Working with FortiGuard Malware URLs.

Modifying a Malware URL

Complete these steps to edit a Malware URL:

1. Go to **RESOURCES** > **Malware URLs**.
2. Select the Malware URL group from the folder structure on the left panel.
3. Select the Malware URL from the table and click **Edit** to modify the settings.
4. Click **Save**.

To configure a ThreatConnect Malware URL, see Working with ThreatConnect IOCs.

To configure a FortiGuard Malware URL, see Working with FortiGuard Malware URLs.

You can use the **Delete** button to select and remove any Malware URL from the list.

Deleting a Malware URL

Complete these steps to delete a Malware URL:

1. Go to **RESOURCES** > **Malware URLs**.
2. Select the Malware URL group from the folder structure on the left panel.
3. Select the Malware URL from the table and click **Delete** to delete.
4. Click **Yes** to confirm.

Importing Malware URLs

This section describes how to import Malware URL information into FortiSIEM from external threat feed websites.

- Prerequisites
- Threat Feed Websites with Built-in Support
- Custom Threat Feed Websites - CSV Data - One-time Manual Import
- Custom Threat Feed Websites - CSV Data - GUI Import
- Custom Threat Feed Websites - Non-CSV Data - Programmatic Import
- Custom Threat Feed Websites - STIX Formatted Data and TAXII Import

Prerequisites

Before proceeding, gather the following information about a threat feed web site:

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you may need to understand the format of the data returned by the URL.
  - If the data is in comma-separated value (CSV) format, then a simple integration is possible. Note that the separator need not be a comma but could be any separator.
  - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Threat Feed Websites with Built-in Support

The following websites are supported:

- Threat Stream Malware URL (https://api.threatstream.com)
- FortiSandbox Malware URL
- Hail-A-TAXII Malware IP (http://hailataxii.com/)

To import data from these websites, follow these steps:

1. In the **RESOURCES** > **Malware URLs**, find the website you must import data from.
2. Select the folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will show in the edit box.
5. Enter a **Schedule** by clicking the **+** icon.

6. Enter the schedule parameters: when to start and how often to import. FortiSIEM recommends no more frequent than hourly.

Custom Threat Feed Websites - CSV Data - One-time Manual Import

This requires that the data to be imported is already in a file in comma-separated value format. The required format is:

```
URL, Malware Type, Confidence, Description,Last Seen(MM/DD/YYYY)
```

1. Select **RESOURCES** > **Malware URLs**.
2. Click the + button on the left navigation tree to open the **Create New Malware URL Group** dialog.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **Import from a CSV file**.
6. Click **Choose File**; enter the file name and click **Upload**.
   The imported data will show on the right pane.

Custom Threat Feed Websites - CSV Data - GUI Import

This requires that the web site data has the following structure:

- The file is in a comma-separated value format (the separator can be any special character such as space, tab, hash, dollar sign, etc.).
- One line has only one entry.

Follow these steps:

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog box.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon next to **URL** and:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the default class **com.accelops.service.threatfeed.impl.ThreatstreamMalwareUrlUpdateService** is shown. Do not modify this value for this case.
   d. Enter the correct **Field Separator** (by default it is a comma).
   e. Set **Data Format** to **CSV**.
   f. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
   g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example if the URL is in third position, then choose 3 in the **Position** column.
   h. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane.

Custom Threat Feed Websites - Non-CSV Data - Programmatic Import

This is the most general case where the website data format is not CSV. In this case, write a Java plugin by modifying the default class provided by the system.

After the class has been written and fully tested for correctness, follow these steps:

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog.
3. Enter the **Group** name and add a **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, enter the name of the custom Java plugin class.
    d. Select **Custom** as the **Data Format**.
    e. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
    f. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane.

Custom Threat Feed Websites - STIX Formatted Data and TAXII Import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Select **RESOURCES** > **Malware URLs**.
2. Click the **+** button on the left navigation tree to open the **Create New Malware URL Group** dialog box.
3. Enter **Group** and add **Description**. Click **Save** to create the folder under **Malware URLs**.
4. Select the folder just created.
5. Select **More** > **Update** > **Update via API**.
6. Click the edit icon and:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. Do not edit the name of the **Plugin Class**.
    d. Select **STIX-TAXII** as the **Data Format**.
    e. Enter the name of the STIX-TAXII **Collection**.
    f. Select **Full** as the **Data Update** value. Existing data will be overwritten.
    g. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will display on the right pane.

Malware Processes

The following sections describe Malware Processes:

Creating a Malware Process Group

Complete these steps to add a Malware Process group:

1. Go to **RESOURCES** and select **Malware Processes**.
2. Click **+** above the **RESOURCES** groups.
3. Enter a group **Name** and **Description** in the **Create New Malware Process Group** dialog box.
4. Choose processes to include by expanding the tree in the **Folders** panel.
5. Select processes from the **Items** panel and move them to the **Selections** panel.
6. Click **Save**.

Adding a Malware Process

Complete these steps to add a Malware Processes:

1. Go to **RESOURCES** > **Malware Processes**.
2. Select a group where you want to add the Malware Processes.
3. Click **New**.
4. Enter the **Process Name** and **Description** of the Malware Process.
5. Click **Save**.

Complete these steps to import Malware processes from a CSV file:

1. Go to **RESOURCES** > **Malware Processes**.
2. Click **More** > **Update** > **Import from a CSV file**.
3. Click **Choose File** to select the CSV file.
4. Click **Import**.

Modifying a Malware Process

Complete these steps to edit a Malware Process:

1. Go to **RESOURCES** > **Malware Processes**.
2. Select the Malware Process group from the folder structure on the left panel.
3. Select the Malware Process from the table and click **Edit** to modify the settings.
4. Click **Save**.

Deleting a Malware Process

Complete these steps to delete a Malware Process:

1. Go to **RESOURCES** > **Malware Processes**.
2. Select the Malware Process group from the folder structure on the left panel.
3. Select the Malware Process from the table and click **Delete** to delete.
4. Confirm whether to **Remove only from group** by clicking **Yes** or **No**.

Country Groups

The Country Groups page contains a list of all of the country names in the FortiSIEM geolocation database. You can also create folders that represent different organizations of countries for use in analytics.

Creating a Country Group

Complete these steps to add a Country Group:

1. Go to **RESOURCES** > **Country Group**.
2. Click **+** above the **RESOURCES** groups.
3. Enter a group **Name** and **Description** in the **Create New Country Group** dialog box.
4. Choose countries to include by expanding the tree in the **Folders** panel, selecting countries from the **Items** panel, and moving them to the **Selections** panel.
5. Click **Save**.

Adding a Country Group

Complete these steps to add a Country Group:

1. Go to **RESOURCES** > **Country Group**.
2. Select a group where you want to add the Country Group, or create a new one by clicking **+** above the **RESOURCES** groups.
3. Click **New**.
4. Enter the **Country Name** and **Description** of the Country Group.
5. Click **Save**.

Modifying a Country Group

Complete these steps to edit a Country Group:

1. Go to **RESOURCES** > **Country Groups**.
2. Select a Country Group from the left panel.
3. Select the Country Group from the table and click **Edit** to modify the settings.
4. Click **Save**.

Deleting a Country Group

Complete these steps to delete a Country Group:

1. Go to **RESOURCES** > **Country Groups**.
2. Select a Country Group from the left panel.
3. Select **-** above the Resource groups.
4. Confirm whether to **Remove only from group** or to remove the group completely by clicking **Yes**.

Changing the Home Country

Many rules and reports use the My Home CMDB Object as defined in **RESOURCES** > **Country Groups** > **My Home**.

By default, this is set to **United States of America**.

Complete these steps to change your home country:

1. Go to **RESOURCES** > **Country Groups**.
2. Select **My Home** from the left panel.
3. Click the Edit icon (✎) at the top left panel.
4. From the **Edit Country Group : My Home** window, take the following steps:
   a. In the leftmost panel, expand **Country Groups** and select a country group folder.
   b. In the middle panel, select a country.
   c. Click **>** to add the selected country to your My Home.
   Note: You can also select a country in the rightmost panel and click **<** to remove it from My Home.
5. Click **Save**.

Malware Hash

Use the **Malware Hash** page to define a list of malware files and their hash functions. When FortiSIEM monitors a directory, it generates these directory events:

Directory Event	Generated by This Action
PH_DEV_MON_CUST_FILE_CREATE	New file creation
PH_DEV_MON_CUST_FILE_SCAN	Directory is scanned
PH_DEV_MON_CUST_FILE_CHANGE_CONTENT	Changes in file content

When FortiSIEM scans a file and collects its hash, it uses the system rule `Malware Hash Check` to check the list of malware hashes. FortiSIEM will then trigger an alert if a match is found.

The following sections describe Malware Hashes:

Adding a Malware Hash

Complete these steps to add a Malware Hash:

1. Go to **RESOURCES** > **Malware Hash**.
2. Select a group where you want to add the Malware Hash, or create a new group by clicking **+** above the **RESOURCES** groups.
3. Click **New** and add the information related to the Malware Hash.
4. Click **Save**.

To add a ThreatConnect Malware Hash, see Working with ThreatConnect.

Modifying a Malware Hash

Complete these steps to edit a Malware Hash:

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the Malware Hash group from the folder structure on the left panel.
3. Select the Malware Hash from the table and click **Edit** to modify the settings.
4. Click **Save**.

To modify a ThreatConnect Malware Hash, see Working with ThreatConnect.

You can use the **Delete** button to select and remove any Malware Hash from the list.

Updating User-defined Malware Hash

System defined groups are updated by its own service:

- Threat Stream Malware Hash
- FortiSandbox Malware Hash

You can update the Malware Hash using the following options:

- Import from a CSV File
- Update via API

Prerequisites:

Before proceeding, gather the following information about a threat feed web site.

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you must understand the format of the data returned by the URL.
  - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator, then a simple integration is possible.)
  - If the data is any other format, for example, XML, then some code must be written for integration using the framework provided by FortiSIEM.

Import from a CSV File

Custom Websites - CSV Data - One-time Manual Import

Instead of manually adding Malware Hashes to a group individually, you can upload a CSV file with multiple entries. This requires that the data to be imported is already in a file in a comma-separated value format.

```
Botnet Name, Algorithm, Hash Code, Controller IP, Malware Type, Confidence, Severity,
Asn, Org, Country, Description, Data Found(MM/DD/YYYY), Last Seen(MM/DD/YYYY), High
IP, Malware Type, Confidence, Severity, ASN, Org, Country, Description, Data Found
(MM/DD/YYYY), Last Seen(MM/DD/YYYY)
```

Note: Although many fields are possible, only Botnet Name, Algorithm, and Hash Code are required.

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the group from the left panel or create a new group by clicking the **+** icon above the list of RESOURCES groups.
3. Select **More** > **Update**.
4. Select **Import from a CSV file** and choose the file to import.
5. Click **Import**.

Update via API

This section describes how to import Malware Hash information into FortiSIEM from external threat feed websites. Malware Hashes are used by malware to hide their own identity.

Updating System Defined Malware Hash Group

The following websites are supported:

- Threat Stream Open Proxy (https://api.threatstream.com)
- Threat Stream TOR Node (https://api.threatstream.com)

Complete these steps to import data from these websites:

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the folder and find the website you want to import data from.

3. Click **More** > **Update**.
4. Select **Update via API**.
   The link will be displayed in the URL field or else manually enter the URL and details.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - **Start Time** and **Recurrence Pattern**. FortiSIEM recommends no more frequent than hourly.
7. Click **Save**.
   You can use the edit icon to modify or delete icon to remove a **Schedule**.

Custom Threat Feed Websites - CSV Data - Programmatic Import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in a single line.

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Click the edit icon near **URL**.
6. Enter the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the default class '**com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService**' is shown. Do not modify this in any case.
   d. Enter the correct **Field Separator** (by default it is a comma).
   e. Select **CSV** as the **Data Format**.
   f. Select **Data Update** as **Full**.
   g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
   h. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane after some time.

Custom Threat Feed Websites - Non-CSV Data - Programmatic Import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, write a Java plugin class by modifying the default system provided one.

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.

3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.
6. Enter the following information:
   a. Enter the **URL** of the website.

   b. Enter **User Name** and **Password** (optional).

   c. For **Plugin Class**, the custom Java class in this case.

   d. Select **Custom** as the **Data Format**.

      - Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
      - Select **Full** as the **Data Update** value. Existing data will be overwritten. Select **Incremental** to preserve the existing data.

      For **STIX-TAXII**:

      - Enter the name of the STIX-TAXII **Collection**.
      - Select **Full** as the **Data Update** value. Existing data will be overwritten.

   e. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will display in the table after some time.

Custom Threat Feed Websites - Non-CSV Data -STIX Formatted Data and TAXII Import

In this case, the threat feed data is available formatted as STIX and follows the TAXII protocol.

1. Go to **RESOURCES** > **Malware Hash**.
2. Select the folder or click **+** to add a new group under **Malware Hash** folder.
3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.
6. Enter the following information:
   a. Enter the **URL** of the website.
   b. Enter **User Name** and **Password** (optional).
   c. For **Plugin Class**, the custom Java class in this case.
   d. Enter the name of the STIX-TAXII **Collection**.
   e. Select **STIX-TAXII** as the **Data Format**.
   f. Select **Data Update** as **Full**.
   g. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule**. Select when to start the import and how often to import new data from the website.
   The imported data will display in the table after some time.

Default Password

The Default Password page contains a list of default vendor credentials. These well-known credentials should never be used in production. During device discovery FortiSIEM checks if the device credentials are still set to default, The system rule `Default Password Detected by System` triggers an incident if they are.

This is a sample raw event log for a default password incident:

```
<174>Oct 20   22:50:03   [PH_AUDIT_DEFAULT_PWD_MATCH]:[phEventCategory]=2,[appTrans-
portProto]=SNMP,[reptModel]=Firewall-1   SPLAT,[srcIpAddr]=192.168.19.195,[phCustId]=1,[ses-
sionId]=0f8bdee2b6a265c4bd075fc777ed,[procName]=AppServer,[reptVendor]=Checkpoint,
[hostIpAddr]=172.16.0.1,[hostName]=SJ-QA-F-Lnx-CHK,[eventSeverity]=PHL_INFO,[user]=,[phLo-
gDetail]=Default password matches for   the same composite key (Vendor, Model, Access
method, User Name, Password)
```

The following sections describe Default Passwords:

Adding a Default Password

Complete these steps to add a default password:

1. Go to **RESOURCES** > **Default Password**.
2. Select a group where you want to add the default password, or create a new group by clicking **+** above the **RESOURCE** groups.
3. Click **New**.
4. Select the **Vendor** and **Model** of the device for which you want to enter a default password.
5. Select the **Access Protocol** that is used to connect to the device from the drop-down.
6. Enter the default **User Name** and **Password** for the device.
7. Click **Save**.

Modifying a Default Password

Complete these steps to edit a default password:

1. Go to **RESOURCES** > **Default Password**.
2. Select the default password group from the folder structure on the left panel.
3. Select the default password from the table and click **Edit** to modify the settings.
4. Click **Save**.

Use the **Delete** button to select and remove any default password(s) from the list.

Importing and Exporting a Default Password

The procedures below describe how to import and export a Default Password.

Importing Default Password

Instead of manually adding default passwords to a user-defined or system group individually, you can upload a CSV file with multiple entries into a group.

You must format the file with these fields: `Vendor,Model,Access Protocol,User Name,Password`

For example: `Microsoft,Windows,WMI,Administrator,Administrator`

1. Go to **RESOURCES** > **Default Password**.
2. Select the Default Password group where you want to import the new password from the folder structure.
3. Click **Import** and select the CSV file.
4. Click **Import**.

Exporting Default Password

Complete these steps to export a default password from a Group to a CSV File.

1. Go to **RESOURCES** > **Default Password**.
2. Select the Default Password group from where you want to export the Default Password from the folder structure.
3. Select the Default Password from the table and click **Export**.
4. Click **Generate**.
   'Export successful' message is displayed.
5. Click **Open Report File** and save the report.

Anonymity Network

An anonymity network is used to hide one's network identity, and is typically used by malware to hide its originating IP address. Enterprise network traffic should not be originating from or destined to Anonymity network.

When FortiSIEM discovers traffic destined to or originating from anonymity networks, it triggers these rules:

- Inbound Traffic from Tor Network
- Outbound Traffic to Tor Network
- Inbound Traffic from Open Proxies
- Outbound Traffic to Open Proxies

Adding Anonymity Networks

FortiSIEM provides two default (system-defined) groups for Anonymity Networks:

- **Open Proxies**: A set of open proxies in the internet. This is a static group.
- **Tor Nodes**: This group is dynamically updated from https://check.torproject.org/exit-addresses. To schedule regular updates for this group, click the group name, then click **Update** and provide updated scheduling information.

Complete these steps to add Anonymity Networks:

1. Go to **RESOURCES**> **Anonymity Network** folder on the left panel.
2. Select **Open Proxies** or **Tor Nodes** folder or click **+** to add a new group.
3. Click **New**.
4. Enter **IP**, **Port**, and **Country** information about the anonymity network.
5. Click the **Calendar** icon to select the **Date Found** and **Last Seen**.
6. Click **Save**.

Adding Anonymity Networks to Watch Lists

You can easily add an anonymity network IP address to your watch lists. Hover your mouse cursor over the anonymity network IP address until the icon for the **Options** menu appears, and then select **Add to Watchlist**.

Modifying Anonymity Networks

Complete these steps to edit an Anonymity Network:

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the Anonymity Network group from the folder structure on the left panel.
3. Select the Anonymity Network from the table and click **Edit** to modify the settings.
4. Click **Save**.

You can use the **Delete** button to select and remove any Anonymity Network from the list.

Updating Anonymity Networks

This section describes how to update Anonymity Network information in FortiSIEM from external threat feed websites.

You can update the Anonymity Network information in the following ways:

- Import from a CSV File
- Update via API

Prerequisites:

Before proceeding, gather the following information about a threat feed web site.

- Website URL.
- Credentials required to access the website (optional).
- If the website is not supported by FortiSIEM, you must understand the format of the data returned by the URL.
  - If the data is in the comma-separated value format (the separator need not be a comma but could be any separator, then a simple integration is possible.)

- If the data is any other format, for example, XML, then some code needs to be written for integration using the FortiSIEM provided framework.

Import from a CSV File

Custom Websites - CSV Data - One-time Manual Import

Instead of manually adding anonymity networks to a group individually, you can upload a CSV file with multiple entries. This requires that the data to be imported is already in a file in comma-separated value format.

```
IP, Port, Malware Type, Confidence, Severity, Asn, Org, Country, Description, Data
Found(MM/DD/YYYY), Last Seen(MM/DD/YYYY)
```

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the group from the left panel or create a new group by clicking the **+** icon above the list of RESOURCES groups.
3. Select **More** > **Update**.
4. Select **Import from a CSV file** and choose the file to import.
5. Click **Import**.

Update via API

This section describes how to import anonymity networks information into FortiSIEM from external threat feed websites. Anonymity networks are used by malware to hide their own identity.

Websites with Built-in Support

The following websites are supported:

- Threat Stream Open Proxy (https://api.threatstream.com)
- Threat Stream TOR Node (https://api.threatstream.com)

Complete these steps to import data from these websites:

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the folder and find the website you must import data from.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Enter a **Schedule** by clicking the **+** icon.
6. Enter the schedule parameters - **Start Time** and **Recurrence Pattern**. FortiSIEM recommends no more frequent than hourly.
7. Click **Save**.
   You can use the edit icon to modify or delete icon to remove a **Schedule**.

Custom Websites - CSV Data - Programmatic Import

This requires that the web site data is:

- a file in comma-separated value format (separator can be any special character such as space, tab, hash, dollar etc.).
- one entry is in a single line.

Note: Although many fields are possible, only the IP is required.

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the folder or click **+** to add a new group under **Anonymity Network** folder.
3. Click **More** > **Update**.
4. Select **Update via API**. The link will be displayed in the URL field or else manually enter the URL and details.
5. Click the edit icon near **URL**.
6. Enter the following information:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the default class `com.accelops.service.threatfeed.impl.ThreatFeedWithMappingPolicyService` is shown. **Do not modify this in this case.**
    d. Enter the correct **Field Separator** (by default it is a comma).
    e. Select **CSV** as the **Data Format**.
    f. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.
    g. Enter the **Data Mapping** by choosing the mapped field and the corresponding position in the website data. For example, if the IP is in third position, choose 3 in the **Position** column. Click **+** if you must add more rows.
    h. Click **Save**.
7. Select an import schedule by clicking **+** on the **Schedule Summary**. Select when to start the import and how often to import new data from the website.
   The imported data will show on the right pane after some time.

New Websites - Non-CSV Data - Programmatic Import

This is the most general case where the website data format does not satisfy the previous conditions. In this case, you have to write a Java plugin class by modifying the default system provided one. After the class has been written and fully tested for correctness, follow these steps.

1. Go to **RESOURCES** > **Anonymity Network**.
2. Select the folder or click **+** to add a new group under **Anonymity Network** folder.
3. Click **More** > **Update**.
4. Select **Update via API**.
5. Click the edit icon near **URL**.
6. Enter the following information:
    a. Enter the **URL** of the website.
    b. Enter **User Name** and **Password** (optional).
    c. For **Plugin Class**, the custom Java class in this case.
    d. Enter the correct **Field Separator** (by default it is a comma).
    e. Select **Custom** or **STIX-TAXII** as the **Data Format**.
        - **STIX-TAXII** - provide the name of the **Collection**. Select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.

   - **Custom** - select **Data Update** as **Full** to overwrite the existing data or **Incremental** to retain the existing data.

   f. Click **Save**.

7. Select an import schedule by clicking **+** on the **Schedule Summary**. Select when to start the import and how often to import new data from the website.
   The imported data will display in the table after some time.

User Agents

The User Agent page lists common and uncommon user agents in HTTP communications. The traditional use case for a user agent is to detect browser types so the server can return an optimized page. However, user agents are often misused by malware, and are used to communicate the identity of the client to the BotNet controller over HTTP(S). FortiSIEM monitors HTTP(S) logs and the system rule Blacklist User Agent Match uses regular expression matching to detect blacklisted user agents.

Adding User Agents

Complete these steps to add a User Agent:

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group where you want to add the new user agent from the folder structure on the left panel. To create a new User Agent group, click **+** above the **Resources** tree.
3. Click **New**.
4. Enter the **User Agent** using regular expression notation.
5. Click **Save**.

Modifying User Agents

Complete these steps to edit a User Agent:

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group from the folder structure on the left panel.
3. Select the User Agent from the table and click **Edit** to modify the settings.
4. Click **Save**.

You can use the **Delete** button to select and remove any User Agent from the list.

Importing and Exporting User Agents

The procedures below describe how to import and export User Agents.

Importing User Agents

Instead of manually adding User Agents to a user-defined or system group individually, you can upload a CSV file with multiple entries into a group.

Note: You must format the User Agent password with regular expression notation: *User Agent (regular expression)*

Complete these steps to import User Agents to a Group from a CSV File.

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group where you want to import the new User Agents from the folder structure.
3. Click **Import** and select the CSV file.
4. Click **Import**.

Exporting User Agents

Complete these steps to export User Agents from a Group to a CSV File.

1. Go to **RESOURCES** > **User Agents**.
2. Select the **User Agent** group from where you want to export the User Agents from the folder structure.
3. Select the User Agent from the table and click **Export**.
4. Click **Generate**.
   If the export is successful, an "Export successful" message is displayed.
5. Click **Open Report File** and save the report.

Remediations

Remediation can be performed either on an ad hoc basis or by using a Notification Policy. A Notification Policy directs the system to take a Remediation action when an Incident occurs. To invoke a Remediation, do the following:

- Make sure the Remediation script for your scenario is defined.
- Check the existing Remediation scripts. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**, then choose **Run Remediation/Script** in the **Action** section of the Notification Policy dialog box. See Adding Incident Notification settings.
- If your device is not in the list, add the needed Remediation script.

The system-defined and custom Remediations are listed under **RESOURCES** > **Remediations**. The following sections describe how to create and manage custom Remediations.

- Adding Remediations
- Modifying Remediations
- Deleting Remediations

Adding Remediations

Complete these steps to create a new custom Remediation. You can also select any existing Remediation to **Clone** and customize.

1. Go to **RESOURCES** > **Remediations**.
2. Click **New**.

3. Enter the **Name** of the Remediation.
4. Select the **Device Type** to which this Remediation will be applied.
5. Select the **Protocol** as SSH, HTTP, HTTPS or MS_WMI for the device type.
6. Enter the Remediation **Script Name**.
7. Enter the Remediation **Script Content**.
8. Add any **Description** related to this Remediation.
9. Click **Save**.
   The Remediation will be available in the list along with the system-defined Remediations.

Modifying Remediations

Note that you cannot modify any system-defined Remediations.

Complete these steps to modify a custom Remediation:

1. Go to **RESOURCES** > **Remediations**.
2. Select a custom Remediation from the list.
3. Click **Edit** and modify the remediation settings.
4. Click **Save**.
   The updated Remediation will be available in the list along with the system-defined Remediations.

Deleting Remediations

Note that you cannot remove any system-defined Remediations.

Complete these steps to delete a custom Remediation(s).

1. Go to **RESOURCES** > **Remediations**.
2. Select the custom Remediation to delete from the list.
3. Click **Delete**.
4. Click **Yes** to confirm.
   These Remediation(s) will be deleted from the list.

Working with Cases

FortiSIEM allows you to create and assign cases for IT infrastructure tasks, and create tickets. You can see all tickets that have been created under the CASES tab and use filter controls to view tickets by assignees, organization, priority, and other attributes.

The following topics provide instructions for ticket related operations:

Creating a Ticket

FortiSIEM has a built-in ticketing system. A ticket can be created from the following:

- CASES tab
- INCIDENTS tab
- Via Incident Notification Policy

Creating a Ticket from the CASES Tab

To create a ticket from the CASES tab:

1. Go to **CASES**.
2. Click **New**.
3. In the **New Ticket** dialog box, enter the following information:

Settings	Guidelines
Summary	[Required] Summary information about the ticket.
State	State is automatically created by the system once the ticket is created. This can be modified from New to other values later.
Assignee	Click the edit icon to select a user from the list of Users.
Escalation	Escalation policy.
Priority	[Required] Priority of the ticket - High,

Settings	Guidelines
	Medium, or Low.
Due Date	Due date for the ticket.
Attachment	Click the edit icon to select and upload or delete any files related to the ticket.
CC	Email IDs to copy the ticket details to.
Notes	Any description of the ticket.

4. Click **Save**.
   A unique ID is automatically assigned to the ticket.
5. Select the ticket from the list to display tabs for the **Detail**, **Action History**, and **Evidence** information in the lower pane.

Creating a Ticket from the INCIDENTS Tab

To create a ticket from any specific Incident:

1. Go to **INCIDENTS** > **List View**.
2. Select the incident and click the **Actions** drop-down menu to select **Create Case**.
   The Incident details are automatically pulled to the new ticket creation window.
3. Enter the following information for the new ticket:

Settings	Guidelines
Assignee	Click the edit icon to select a user from the list of Users.
Priority	[Required] Priority of the ticket - High, Medium, or Low.
Due Date	Due date for the ticket.
Attachment	Click the edit icon to select and upload or delete any files related to the ticket.
CC	Email IDs of the users who will receive copies of the ticket details.

4. Click **Save**.

Creating a Ticket via Incident Notification Policy

To create a ticket automatically when an Incident triggers:

1. Go to **ADMIN** > **Settings** > **General** > **Notification Policy**.
2. Click **New** and select **Create Case when an incident is created**.
3. Click the edit icon for this setting and add the following details:

Settings	Guidelines
Escalation	Select an escalation policy from the drop-down list. See Escalation Settings.
Expires in	Time after which the ticket expires.
Priority	[Required] Priority of the ticket - High, Medium, or Low.
Assignee	Click the edit icon and assign this ticket to a user in the **Users** group. The user can belong to any Organization.

4. Click **Save**.

Editing a Ticket

The **Edit** option under **CASES** allows you to edit any ticket settings except the **Ticket ID**.

Complete these steps to edit an existing ticket:

1. Go to **CASES** and select a ticket to edit.
2. Click **Edit**.
3. In the **Edit Ticket** dialog box, modify the ticket information.
4. Click **Save**.
   The modified ticket appears in the table.

Managing Cases

You can perform the following operations from the CASES tab:

- Viewing a Ticket
- Searching a Ticket
- Escalating a Ticket
- Exporting a Ticket

Viewing a Ticket

The Ticket Dashboard displays the total number of:

- **New** - tickets in New state.
- **Assigned** - tickets that are Assigned.
- **High** - tickets in high priority state.
- **Overdue** - tickets that crossed the Due Date.
- **Late** - tickets that elapsed more than half of the Due Date but not yet overdue.
- **Closed** - tickets that are closed
- **MTTR** - mean time to repair

Understanding Ticket Settings

The **CASES** tab displays all of the tickets raised in the system in a tabular format with the following information:

Settings	Description
Elapsed	Percentage of time elapsed since the ticket was created. If the time is beyond Due Date, this field displays the "Overdue" status.
State	Current status of the ticket.
Priority	Priority of the ticket - High, Medium or Low.
Ticket ID	Unique ID assigned to the ticket automatically by the system during creation.
Organization	Organization of the reporting device.
Summary	Summary information about the ticket.
Incident ID	Unique ID of the incident in the incident database.
Assignee	User assigned to the ticket.
Creator	User who created the ticket.
Resolution Time	The time to resolve the incident in the external ticketing system.
Due Date	The date by which the ticket should be resolved.
Creation Date	Date when the ticket was created.

For any selected ticket, the Incident and event details are displayed in the **Detail** and **Action History** sections.

Settings	Description
Detail	
Assignee	The user to whom the ticket is assigned.
Close code	The reason for closing the ticket. Choose one of the following from the drop-down list: **Solved (Workaround)**, **Solved (Permanent)**, **Not Solved (Not Reproducible)**, **Not Solved (Expensive)**, **Closed (Resolved by Caller)**
Closed date	The date when the ticket was closed
Creator	User who created the ticket.
Escalation Policies	Escalation policy for the incident tickets.
Priority	The priority assigned tothe ticket: LOW, MEDIUM, or HIGH.
State	Current status of the ticket.
Ticket ID	Unique ID assigned to the ticket automatically by the system during creation.
CC	Email address(es) of the users who will receive a copy of the ticket details.
Close Note	Any description you want to enter when closing the ticket.
Creation Date	Date when the ticket was created.
Elapsed	Percentage of time elapsed since the ticket was created. If the time is beyond Due Date, this field displays the "Overdue" status.
Incident ID	Unique ID of the incident in the incident database.
Resolution Time	The time when the ticket was resolved in the ticketing system.
Summary	Summary information about the ticket.

Settings	Description
Time Zone	The time zone in which the ticket was created.
Action History	
Incident Name	Name of the rule that triggered the incident.
Incident Target	IP or host name where the incident occurred.
Incident Detail	Event attributes that triggered the incident.
Incident ID	To find the events that triggered the incident for the Case, click **Triggering Events**.
Evidence	
Attachments	List of files related to the ticket.
Triggering Event	List of events that triggered the incident for the Case.

Viewing Incident Details

To see the incident details related to a ticket:

1. Go to the **CASES** tab.
2. Select the ticket from the list. You can find the Incident ID from the **Detail** section and the Incident name, target and details from the **Action History** section.
3. Click the **Incident ID** under **Detail** section to open the details under the **INCIDENTS** tab.

Viewing Events that Triggered the Incident

To see the events that triggered the Incident for a ticket:

1. Go to the **CASES** tab.
2. Select the ticket from the list.
3. Click **Action History-List**. The events appear in the **Case action** section. Or you can click **Evidence > Triggering Event** to view the event details.

Creating a Ticket Escalation Policy

To create a ticket escalation policy, follow the steps here.

Searching a Ticket

You can use various attributes mentioned in the table below from the search filter to find more information about any ticket.

Complete these steps to search a ticket:

1. Go to the **CASES** tab.
2. Click the **Add Filter** search field to select any known filter from the drop-down with reference to the table below.
3. Based on the selection, new fields appear including the condition and value fields.

Settings	Guidelines
Time Range	Search any ticket created during a specific time range. Use **LAST** to find the tickets from the last number of days, hours and/or minutes or **FROM** to choose a range of dates and time from the Calendar.
State	Select the state of the ticket from the drop-down list: New, Assigned, Closed, In Progress, or Reopened.
Elapsed	Search using the time elapsed since the ticket was created.
Assignee	Search any ticket by entering the assignee of the ticket.
Creator	Search any ticket using the creator of the ticket.
Priority	Search any ticket by entering the priority: High, Medium, or Low.
Organization	Search any ticket by entering the Organization to which the ticket applies.
Ticket ID	Search any ticket using the Ticket ID auto-generated by the system.
Incident ID	Search any ticket using the Incident ID associated with the ticket.
Summary	Search any ticket using any known information included in the Ticket Summary.

4. Select the check mark to display the results.
   The results are displayed in the table. Select any Ticket to display the **Detail** and **Action History** in the lower pane.

Escalating a Ticket

Complete these steps to escalate a ticket:

1. Go to the **CASES** tab.
2. Click the **Add Filter** search field to select and open a ticket using filters.
   The table displays the tickets matching the filter criteria.
3. Click **Edit** button to open the ticket settings.
4. Select the Escalation type from the drop-down and click **Save**.

Refer to Ticket Escalation Settings for more information about related settings.

Exporting a Ticket

You can export all or selected tickets using filters to a PDF or CSV report.

Complete these steps to export a ticket:

1. Go to the **CASES** tab.
2. Click **Add Filter** search field to search any ticket using filters.
   The table displays the tickets matching the filter criteria.
3. Select one or more tickets from the list and click the **Export** button.
4. In the **Export Report** dialog box, select the following:
   a. Report Option: Select **Summary for all tickets** or **Detailed report for selected tickets**.
   b. User Notes (optional): Description related to the exported document.
   c. Output Format: PDF or CSV.
5. Click **Generate**.
   "Export Successful" message is displayed.
6. Click **View** to download and save the report.

Working with Incidents

When a correlation rule triggers, an incident is created in FortiSIEM. This section describes how to view and manage Incidents in FortiSIEM. There are three views:

- **Overview**: This view provides a "top down" view of the various types of Incidents and impacted hosts.
- **List View**: This tabular view enables the user to search incidents and take actions.
- **Risk View**: This view organizes impacted entities (Devices, Users) by Risk based on the triggered incidents.
- **Incident Explorer View**: This view helps users to correlate Actors (IP, Host, User) across multiple incidents, without creating multiple reports in separate tabs.
- **MITRE ATT&CK View**This view classifies security events detected by FortiSIEM into MITRE ATT&CK categories. **Note**: Previously this was Attack View.
- **UEBA View**: This view monitors the AI alerts obtained from FortiInsight.

FortiSIEM can cross-correlate incident data and perform lookups on selected external ticketing/work flow systems. See Filtering in the Incident Explorer View and Lookups Via External Websites.

FortiSIEM can also be configured to collect this host vulnerability data to preform CVE-Based IPS False Positive Analysis.

Overview View

The Overview view provides a "top down" view of various types of Incidents and impacted hosts. Go to **INCIDENTS** > **Overview** to see this view. Overview can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Overview** from the **Incident Home** drop-down list.

The panel is divided into three sections:

- **Incidents by Category** – displays Incident Counts By Function and Severity.
- **Top Incidents** – displays the Top Incidents sorted first by Severity and then Count.
- **Top Impacted Hosts** – displays Top impacted hosts by Severity or Risk Score.

To change the incident time range, choose the **Time Range** option on the top right. For Service provider installations, choose the appropriate Organizations on top right. By default, the data combined for all Organizations and the Organization is shown next to each host. This view will automatically refresh every minute by default. The refresh menu on top bar allows the user to disable the automatic refresh or choose a different refresh interval.

Incidents by Category

This pane shows the number of unique Security, Performance, Availability, and Change incidents that have triggered in the specified time range.

To drill into a specific category, click the number and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Incidents

This pane shows the Top Incidents, first by Severity and then by Count.

- Each box represents an Incident.
- The color of the box title reflects the Incident Severity.
- The number reflects the unique incidents that has triggered in the chosen time window.
- The entries inside the box represent the IP address and host names appearing in either the Incident Source or Incident Target.
- Boxes are ordered left to right by Incident Severity and then unique incident count. That means that Red colored boxes (High Severity) appear first, then Yellow (Medium Severity), and finally Green (Low Severity). Within boxes of the same color, boxes with a higher number of Incident counts appear first. You can scroll to the right.

To drill down, click the number in the left side bar or each host and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Impacted Hosts by Severity

This pane shows the Top Impacted Hosts, first by Severity and then by Count.

- Each box represents an impacted host (where an Incident has occurred during the specified time window).
- The color of the box title reflects the maximum of Severity over all Incidents.
- The number on the left of the box reflects the unique incidents that have triggered on the host in the chosen time window.
- The entries inside the box represent the incidents that have triggered for that host.
- Boxes are ordered left to right by Incident Severity and then unique incident count. That means that the Red colored boxes (High Severity) appear first, then Yellow (Medium Severity), and finally Green (Low Severity). Within boxes of the same color, boxes with a higher number of Incident counts appear first. You can scroll to the right.

To drill down, click the number in the left side bar or each incident and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

Top Impacted Hosts by Risk Score

This pane shows the Top Impacted Hosts, first by Risk Score.

- Each Box represents an impacted host (where an Incident has occurred during the specified time window).
- The color of the box title reflects the Risk Score (80 and above is Red, 50-79 is Yellow, and less than 50 is Green).
- The number on the left of the box reflects the risk score.
- The entries inside the box represent the incidents that have triggered for that host.
- Boxes are ordered left to right by Risk Score. That means that Red colored boxes (High Risk) appear first, then Yellow colored boxes (Medium Risk), and Green colored boxes (Low Risk).
- You can scroll to the right.

To drill down, click the number in the left side bar or each incident and the matching incidents are displayed in a separate Incident List View. To return to the main view, click the **<** button. From this View, you can initiate the same actions as described in Incidents List View.

List View

This tabular view enables the user to search incidents and take actions.

- Viewing Incidents
- Acting on Incidents

Viewing Incidents

To see this view, click **INCIDENTS** in the FortiSIEM header. By default, the **List by Time** view opens. The **INCIDENTS** view also allows you to filter data by device and by incident.

You can set **INCIDENTS** as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list. You can filter the **INCIDENTS** view further by choosing **List – by Time**, **List – by Device**, or **List – by Incident** from the **Incident Home** drop down list.

An incident's status can be one of the following:

- **Active**: An ongoing incident.
- **Manually Cleared**: Cleared manually by a user - the incident is no longer active.
- **Auto Cleared**: Automatically cleared by the system when the rule clearing condition is met. Rule clearance logic can be set in the rule definition.
- **System Cleared**: Cleared by the system. All non-security related incidents are cleared from the system every night at midnight local time, and will show a status of **System Cleared**.
- **Externally Cleared**: Cleared in the external ticketing system.

The resolution for an incident can be:

- **Open**
- **True Positive**, or
- **False Positive**

When an **Incident Status** is **Active**, Incident Resolution is **Open**. When an Incident is **Cleared**, then the user can set the **Incident Resolution** to be **True Positive** or **False Positive**. If you are changing the **Incident Resolution** to be **True Positive** or **False Positive**, then you must **Clear** the Incident.

The following sections describe the three views that are available through the **INCIDENTS** view:

- List by Time View
- List by Device View
- List by Incident View

List by Time View

The **List by Time** view displays a table of the incidents which have been active in the last 2 hours. The **Last Occurred** column contains the incidents sorted by time, with the most recent first. By default, the view refreshes automatically every minute. The refresh menu on the top bar allows the user to disable automatic refresh or choose a different refresh interval.

Unique to the **List by Time** view is a list of five time range buttons (15m 1h 1d 7d 30d) which appear above the paginator. They allow you to filter data by the last 15 minutes, 1 hour, 1 day, 7 days, or 30 days.

The following attributes are shown for each incident:

- Severity - High (Red), MEDIUM (Yellow), or LOW (Green).
- Last Occurred - last time this incident occurred.
- Incident - name of the incident.
- Tactics - name of the tactic involved with the incident.
- Technique - name of the technique involved with the incident.
- Reporting - set of devices that is reporting the incident.
- Source - source of the incident (host name or IP address).
- Target - target of the incident (host name or IP address or user).
- Detail - other incident details, for example, Counts, Average CPU utilization, file name, and so on.

To see the incident details, click the incident. A bottom panel appears that shows more details about the incident:

- **Details** - includes the full list of incident attributes that are not shown in the top pane.

Column	Description
Biz Service	Impacted biz services to which either the incident source or target belongs.
Category	Category of incidents triggered.
Cleared Reason	For manually cleared incidents, this displays the reason the incident was cleared.
Cleared Time	Time when the incident was cleared.
Cleared User	User who cleared the incident.
Count	Number of times this incident has occurred with the same incident source and target criteria.
Detail	Event attributes that triggered the incident.
Event Type	Event type associated with this incident. All incidents with the same name have the same Incident Type.
External Cleared Time	Time when the incident was resolved in an external ticketing system.
External Resolve Time	Resolution time in an external ticketing system.
External Ticket ID	ID of a ticket in an external ticketing system such as ServiceNow, ConnectWise, etc.
External Ticket State	State of a ticket in an external ticketing system.
External Ticket Type	Type of the external ticketing system (ServiceNow, ConnectWise, Salesforce, Remedy).

Column	Description
External User	External user assigned to a ticket in an external ticketing system.
First Occurred	The first time that the incident was triggered.
Incident	Name of the rule that triggered the incident. Use the drop-down list near the Incident if you must add this incident to filter.
Incident Comments	Comments added by the user.
Incident ID	Unique ID of the incident in the Incident database.
Incident Status	An incident's status can be one of the following: • **Active**: An ongoing incident. • **Manually Cleared**: Cleared manually by a user - the incident is no longer active. • **Auto Cleared**: Automatically cleared by the system when the rule clearing condition is met. Rule clearance logic can be set in the rule definition. • **System Cleared**: Cleared by the system. All non-security related incidents are cleared from the system every night at midnight local time, and will show a status of **System Cleared**. • **Externally Cleared**: Cleared in the external ticketing system.
Incident Title	A system default title or a user-defined title for an incident.
Last Occurred	The last time when the incident was triggered.
Notification Recipients	User who was notified about the incident.
Notification Status	Status of the Notification: Success or Fail.
Organization	Organization of the reporting device (for Service Provider installations).
Reporting	Reporting device.
Reporting Device Status	Status of the device: Approved or Pending. You must approve devices for the incidents to trigger, but they will still be monitored.
Reporting IP	IP addresses of the devices reporting the incident.
Resolution	The resolution for an incident can be: • **Open** (not defined or not known whether the incident is True Positive or False Positive) • **True Positive**, or • **False Positive**

Column	Description
	When an **Incident Status** is **Active**, Incident Resolution is **Open**. When an Incident is **Cleared**, then the user can set the **Incident Resolution** to be **True Positive** or **False Positive**. If you are changing the **Incident Resolution** to be **True Positive** or **False Positive**, then you must **Clear** the Incident.
Severity	Incident Severity is an integer in the range 0-10 (0-4 is set as Low, 5-8 as Medium, and 9-10 as High).
Severity Category	Incident Severity Category: High, Medium or Low.
Source	Source IP or host name that triggered the incident.
Subcategory	Subcategory of the triggered incident. To add custom subcategories to an incident category, see here.
Tactics	Name of the tactics involved with the incident.
Tag	Name of the tag involved with the rule that triggered the incident.
Target	IP or host name where the incident occurred.
Technique	Name of the technique involved with the incident.
Ticket ID	ID of the ticket if created in FortiSIEM.
Ticket Status	Status of any tickets associated with the incident.
Ticket User	User assigned to a ticket if created in FortiSIEM.
View Status	Whether the Incident has been Read or Not.

- **Events** - this displays the set of events that triggered the incident. If an incident involves multiple sub-patterns, select the sub-pattern to see the events belonging to that sub-pattern. For **Raw Event Log** column, click **Show Details** from the drop-down to see the parsed fields for that event.
- **Rule** - this displays the **Definition of Rule that Triggered the Incident** and the **Triggered Event Attributes**.

To close the incident details pane, click the highlighted incident.

List by Device View

The upper pane of the **List by Device** view lists the devices that are experiencing incidents. In the list, the device can be identified by either an IP or a host name. The name of the device is followed by the number of incidents in parentheses. Click the device name to see the incidents associated with the device. The lower portion of the view contains the same features and functionality as the **List by Time** view.

List by Incident View

The upper pane of the **List by Incident** view lists the incidents detected by FortiSIEM. The name of the incident is followed by the number of incidents in parentheses. Click the incident name to see the incidents associated with the device. The lower portion of the view contains the same features and functionality as the **List by Time** view.

Acting on Incidents

The **Actions** menu provides a list of actions that can be taken on incidents. To see a Location View of the incidents, select **Locations** from the **Actions** menu. FortiSIEM has a built in database of locations of public IP addresses. Private IP address locations can be defined in **ADMIN** > **Settings** > **Discovery** > **Location**.

To change the incident attribute display columns in the List View, select **Change Display Columns** from the **Actions** menu, select the desired attributes and click **Close**.

You can perform the following operations using the **Actions** menu:

- Changing the Severity of an Incident
- Searching Incidents
- Searching for MITRE ATT&CK Incidents
- Clearing One or More Incidents
- Clearing All Incidents from the Incident View
- Disabling One or More Rules
- Adding or Editing Comments for One or More Incidents
- Exporting One or More Incidents into a PDF, RTF, or CSV File
- Fine Tuning a Rule Triggering an Incident
- Creating an Exception for the Rule
- Creating Event Dropping Rules
- Creating a Ticket
- Emailing Incidents
- Creating a Remediation Action
- Show Ticket History

Changing the Severity of an Incident

1. Select the incident.
2. Select **Change Severity** from the **Actions** menu.
3. Select **Change to HIGH**, **MEDIUM**, or **LOW**.

Searching Incidents

1. Select **Search** from the **Actions** menu.
2. In the left pane, click an Incident attribute (for example, Function). All possible values of the selected attribute with a count next to it is shown (for example, Security, Availability and Performance for Function).
3. Select any value (for example, Performance) and the right pane updates with the relevant incidents.
4. Click and select other Incident Attributes to refine the Search or click **X** to cancel the selection.

Changing the Time Range for the Search

1. Select **Search** from the **Actions** menu.
2. Near the top of the left panel, click the time value.
3. Click **Relative** or **Absolute**:
   - If you click **Relative**, adjust the time value in the **Last** field.
   - If you click **Absolute** enter a time range. If you select **Always Prior**, enter a time period prior to the current time.

Saving the Search Criteria

Once you have performed your search, follow these steps to save the search criteria:

1. Click the **Save** icon (💾)which appears above the list of incident attributes, and to the right of **Search**.
2. In the **Save Search Filter under by Time as** dialog box, enter a name for the filter or accept the default. The default will be a time stamp value such as `Search Filters - 12/17/2019 17:04:59`.

The filter will appear in the **Search** (🔍 Search ▾) drop-down list, for example:

- When saving a filter based on the List by Time View, it displays in the **Search** drop-down list.
- When saving a filter based on the List by Device View, it displays in the **Search** drop-down list.
- When saving a filter based on the List by Incident View, it displays in the **Search** drop-down list.

Searching for MITRE ATT&CK Incidents

To find incidents that fall into any of the MITRE ATT&CK categories, follow these steps:

1. Select **Search**from the **Actions** menu.
2. Click **Tactics** or **Technique** in the left pane.
   The total number of security incidents will appear under the selected MITRE ATT&CK category.
3. Select one or more checkboxes next to the categories of interest.
   The incidents associated with the category are displayed.

For more information on MITRE ATT&CK views and MITRE ATT&CK categories, see MITRE ATT&CK View.

Clearing One or More Incidents

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Clear Incident** from the **Actions** menu.
5. Select whether the **Resolution** is **True Positive** or **False Positive**.
6. Enter a **Reason** for clearing.
7. Click **OK**.

Clearing All Incidents from the Incident View

You can remove all occurrences of selected incidents from the Incident View. This action can potentially span multiple pages.

1. Search for specific incidents and move them into the right pane.
2. Select **Clear All Incidents in View** from the **Actions** menu.
3. Select whether the **Resolution** is **True Positive** or **False Positive**.
4. Enter a **Reason** for clearing.
5. Click **OK**.

Disabling One or More Rules

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Disable Rule** from the **Actions** menu.
5. For Service Provider installations, select the Organizations for which to disable the rule.
6. Click **OK**.

Adding or Editing Comments for One or More Incidents

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Edit Comment** from the **Actions** menu.
5. Enter or edit the comment in the edit box.
6. Click **OK**.

Exporting One or More Incidents into a PDF, RTF or CSV File

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold the **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Export** from the **Actions** menu.
5. Enter or edit the comment in the edit box.
6. Select the **Output Format** and **Maximum Rows**.
7. Click **Generate**.
   A file will be downloaded in your browser.

Fine Tuning a Rule Triggering an Incident

1. Select an incident.
2. Select **Edit Rule** from the **Actions** menu.
3. In the **Edit Rule** dialog box, make the required changes.
4. Click **OK**.

Creating an Exception for the Rule

1. Select an incident.
2. Select **Edit Rule Exception** from the **Actions** menu.
3. In the **Edit Rule Exception** dialog box, make the required changes:
    a. For Service provider deployments, select the Organizations for which the exception will apply.
    b. Select the exception criteria:
        i. For incident attribute based exceptions, select the incident attributes for which rule will not trigger.
        ii. For time based exceptions, select the time for which rule will not trigger.
        iii. Select AND/OR between the two criteria.
        iv. Add Notes.
    c. Click **Save**.

Creating Event Dropping Rules

Event Dropping Rules may need to be created to prevent an incident from triggering. To create such a rule:

1. Select an incident.
2. Select **Event Dropping Rule** from the **Actions** menu.
3. In the **Event Dropping Rule** dialog box, enter the event dropping criteria:
    a. **Organization** - For Service provider deployments, select the organizations for which the exception will apply.
    b. **Reporting Device** - Select the device whose reported events will be dropped.
    c. **Event Type** - Select the matching event types.
    d. **Source IP** - Select the matching source IP address in the event.
    e. **Destination IP** - Select the matching destination IP address in the event.
    f. **Action** - Choose to drop the events completely or store them in the event database. If you store events, you can select the following actions:
        - Do not trigger rules
        - Drop attributes (Click the edit icon to open the selection window and select the attributes to drop)
    g. **Regex filter** - Select a regex filter to match the raw event log.
    h. **Description** - Add a description for the drop rule.
4. Click **Save**.
   The Rule will be appear in **ADMIN** > **Settings** > **Event Handling** > **Dropping**.

Creating a Ticket

See Creating a ticket from the INCIDENTS tab.

Emailing Incidents

Incidents can be emailed to one or more recipients. Make sure that Email settings are defined in **ADMIN** > **Settings** > **System** > **Email**. Note that email notification from the Incident page is somewhat ad hoc and must be manually setup by the user after the incident has triggered. To define an automatic notification, create an Incident Notification Policy in **ADMIN** > **Settings** > **Notification Policy**. To email one or more incidents on demand:

1. Search for specific incidents and move them into the right pane.
2. Select the first incident.
3. Press and hold **Shift** key and select the last incident – all incidents between the first and the last are highlighted.
4. Select **Notify via Email** from the **Actions** menu and enter the following information:
    a. Send To – a list of receiver email addresses, separated by commas.
    b. Email template – Choose an email template. You can use the default email template, or create your own in **ADMIN** > **Settings** > **System** > **Email** > **Incident Email Template**.

Creating a Remediation Action

Incidents can be mitigated by deploying a mitigation script, for example, blocking an IP in a firewall or disabling a user in Active Directory. Note that this type of incident mitigation from the Incident page is somewhat ad hoc and must be manually setup by the user after the incident has triggered.

To define an automatic remediation, create an Incident Notification Policy in **ADMIN > Settings > General > Notification Policy**. Click **New**, and in the Notification Policy dialog box, select **Run Remediation/Script** in the **Action** section. To create a remediation action:

1. Select an incident.
2. Select **Remediate Incident** from the **Actions** menu.
3. Choose the **Enforce On** devices – the script will run on those devices. Make sure that FortiSIEM has working credentials for these devices defined in **ADMIN** > **Setup** > **Credentials**.
4. Choose the **Remediation** script from the drop-down menu.
5. Choose the node on which the remediation will **Run On** from the drop-down list.
6. Click **Run**. If the user does not have permission to run remediation, a Create New Request window will appear. Take the following actions:
7. In the **Approver** drop-down list, select an approver. Fortinet recommends selecting all approvers to better ensure a response.
8. In the **Type** drop-down list, ensure Remediation Request is selected.
9. In the **Justification** field, enter an explanation why you want to run a remediation.
10. Click **Submit**. An email with the your request will be sent to all selected approvers. Approvers will receive a pending task notification in the FortiSIEM console, where they can resolve the request.
11. If you receive an email with an approval, repeat steps 1 through 6 before the expiration. If you received a rejection or received approval that has expired, repeat steps 1-10 if you wish to try again.

Show Ticket History

1. Select an incident.
2. Select **Show Ticket History** from the **Actions** menu.
3. The Ticket History dialog box opens and displays the following information:

Field	Description
Detail:	

Field	Description
Incident ID	The unique ID of the incident in the incident database.
Due Date	The date by which the ticket should be resolved.
Escalation Policy	The escalation policy defined for the incident.
Attachment	The list of files related to the incident.
Action History:	
Created at	The time when the incident was created.
Incident Name	The name of the rule that triggered the incident.
Incident Target	The IP or host name where the incident occurred.
Incident Detail	The event attributes that triggered the incident.
Incident ID	The unique ID of the incident in the incident database.

Risk View

Risk view displays the Devices and Users ordered by Risk. Risk is calculated based on the triggering incidents using a proprietary algorithm that incorporates asset criticality, incident severity, frequency of incident occurrence, and vulnerabilities found. Risk is only computed for devices in CMDB, private IP addresses, and users found in logs or discovered via LDAP.

Go to **INCIDENTS** > **Risk** to see this view. Risk can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Risk** from the **Incident Home** drop-down list.

Devices and Users are categorized by Risk as follows:

- Devices - number of devices with Risk
- Users - number of users with Risk
- High Risk - number of devices and users with high risk
- Medium Risk - number of devices and users with medium risk
- Low Risk - number of devices and users with low risk

To see only the above categories of devices and users in the Risk View, click any of the five categories above.

The Risk View displays the following:

- Device or User name
- Current Risk - Current value, up or down versus the same period

- 24 Hour Risk Trend
- Incidents in Last 24 hours

To drill down, click one row and the incidents that led to this risk are shown in a time line format. You can select an incident, and select any action from the **Actions** menu. The actions are similar to those described for the List View.

Explorer View

The Incident Explorer view allows you to correlate Actors (IP, Host, User) across multiple incidents, without creating multiple reports in separate tabs. Incident trends, Actor and Incident detail are displayed on the same page. You can choose an actor and see all the incidents that actor is part of. You can then choose a time range and narrow down the incidents. Time ranges, Actors, and Incidents can be chosen in any order. Each time a selection is made, the rest of the dashboard updates to reflect that selection.

To open the Incident Explorer view, click **INCIDENTS**, then click the Explorer icon (📊 Explorer). Explorer can set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **Explorer** from the **Incident Home** drop-down list.

The Incident Explorer view is divided into three layers:

- The top layer displays the Incident Trend graph. The graph displays the incident counts over time, organized by severity, then by count.

  Each bar in the graph represents the number of incidents at a given time. The colors used in the bars reflects the Incident Severity. Red colored boxes (High Severity) appear first then Yellow (Medium Severity), and finally Green (Low Severity). The numbers in the bars reflect the number of unique incidents that triggered in the chosen time window.
- The middle layer displays panels for Incidents, Hosts, IPs, and Users. You can filter the items in the panels by Category, Status, and Time Range. See “Filtering in the Incident Explorer” for more information.
- The bottom layer displays the Incidents Table with these headings: Severity, Last Occurred, Incident, Reporting, Source, Target, Detail, Incident Status, and Resolution. Click an incident row to get more detail.

  Drill down is available from the Reporting, Target, Detail, Resolution columns.

The following tables describe the drill down options available for each column.

Reporting Options

Option	Description
Quick Info	Displays the quick information about the device.
Device Health	Availability, Performance, and Security health reports for the device.
Related Incidents	Switches to List view and displays related incidents.

Option	Description
Add to Filter	Switches to List view. Open the drop-down list next to the Reporting column for the desired incident and select **Add to Filter**. Add to Filter modifies the search on the current tab by including this constraint.

Target Options

Option	Description
Quick Info	Displays the quick information about the device.
External Lookup	Looks up external threat intelligence websites about likely malicious Indicators of Compromise (IOCs).
Device Health	Availability, Performance, and Security health reports for the device.
Related Incidents	Switches to List view and displays related incidents.
Related Real Time Events	Switches to the **ANALYTICS** tab and displays related real time events.
Related Historical Events	Switches to the **ANALYTICS** tab and displays related historical events.
Add to Filter	Switches to List view. Open the drop-down list next to the **Reporting** column for the desired incident and select **Add to Filter**. **Add to Filter** modifies the search on the current tab by including this constraint.
Add to Application Group	Opens the IP Application Group Mapping Definition dialog box where you can choose the group where you want to add the incident.

Detail Options

Displays other incident details, such as Counts, Average CPU utilization, file name, and so on.

Resolution Options

Option	Description
Set Resolution to Open	Sets the resolution status to Open (not defined or not known whether the incident is True Positive or False Positive).
Set Resolution to True Positive	Sets the incident resolution status to True Positive.
Set Resolution to False Positive	Sets the incident resolution status to False Positive. If you are changing the Resolution to False Positive, you must clear the incident at the same time.

To leave the Incident Explorer View, click the **List** icon or select **Actions > Show in Incident List View**, if an incident is already selected.

Using the Incident Explorer View

Click any of the bars in the **Incident Trend** graph. The corresponding Incidents, IP addresses, Hosts and Users are displayed in the panels. The corresponding incidents are also displayed in the **Incident Table**.

Click any of the items in the Incident, IP, Host, or User panels. The corresponding bar is displayed in the **Incident Trend** graph and corresponding incidents are displayed in the **Incident Table**.

Click multiple items in the **Incident Trend** graph and in the panels. Your selections will be ANDed together and the results displayed in the **Incident Table**.

Click any incident in the **Incident Table**. Details on the event that triggered the incident will open beneath the **Incident Table**.

Filtering in the Incident Explorer View

You can filter the incident data by incident category, whether the incident is active or cleared, and the time range when the incident occurred.

- The **Category** drop–down list allows you to filter on unique **Security**, **Performance**, **Availability**, and **Change** incidents that have triggered in the specified time range.
- The **Status** drop-down list allows you to filter on **Active** and/or **Cleared** incidents.
- The **Time Range** dialog box allows you to choose a relative or absolute time range. For **Relative**, enter a numerical value and then either **Minutes**, **Hours**, or **Days** from the drop-down list. For **Absolute**, use the calendar dialog to specify **From** and **To** dates.

MITRE ATT&CK® View

The following sections describe the three views that are available through the **MITRE ATT&CK** view:

- Rule Coverage View
- Incident Coverage View
- MITRE ATT&CK Incident Explorer View

Rule Coverage View

The Rule Coverage View provides an overview of the tactics and techniques that FortiSIEM covers as defined by MITRE Corporation. Go to **INCIDENTS** > **MITRE ATT&CK®** > **Rule Coverage** to see this view. Rule Coverage can be set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **MITRE ATT&CK - Rule Coverage** from the **Incident Home** drop-down list.

The following table briefly describes the attack (tactic) categories. See https://attack.mitre.org/matrices/enterprise/ for more detailed information.

Category (Tactic)	Description
Reconnaissance	The adversary is trying to gather information they can use to plan future operations.
Resource Development	The adversary is trying to establish resources they can use to support operations.
Initial Access	The adversary is trying to get into your network.
Execution	The adversary is trying to run malicious code.
Persistence	The adversary is trying to maintain their foothold.
Privilege Escalation	The adversary is trying to gain higher-level permissions.
Defense Evasion	The adversary is trying to avoid being detected.
Credential Access	The adversary is trying to steal account names and passwords.
Discovery	The adversary is trying to figure out your environment.
Lateral Movement	The adversary is trying to move through your environment.
Collection	The adversary is trying to gather data of interest to their goal.
Command and Control	The adversary is trying to communicate with compromised systems to control them.
Exfiltration	The adversary is trying to steal data.
Impact	The adversary is trying to manipulate, interrupt, or destroy your systems and data.

Using the Rule Coverage View

To open the Rule Coverage View, go to **INCIDENTS** > **MITRE ATT&CK®** > **Rule Coverage View**. The top row displays the number of rules and the percentage of MITRE techniques that FortiSIEM covers. In the main row header, the bolded number that appears under each tactic indicates the number of rules that are covered under it. Clicking a tactic here will show all the rules that belong to it. Each tactic cell also lists the number of major techniques (Tech) and sub-techniques (Sub-Tech) related to the involved tactic. All major techniques related to a tactic are listed underneath their respective tactic column. Tactics and techniques covered by FortiSIEM rules are indicated by a light yellow background. You can hover your mouse cursor over any major technique to view the following information:

- Total number of rules covered by the technique (security category)
- The number of rules covered by each sub-technique (if applicable)

Left clicking on any technique will bring up a small menu, allowing you to select **Detail** or **Show Rules**.

Clicking on **Detail** will provide you with details about the major techniques and sub-techniques.

Clicking on **Show Rules** will display all the rules associated with the specific technique as provided in the following table:

Note: Clicking a tactic displays the rules information for all related techniques.

Note 2: Click the Columns drop-down list to select which headings you want to display.

Heading	Description
Status	Provides information on whether a rule is enabled (checkmark), or is disabled ("X").
Name	The name of the rule is listed. You can left click on a rule to bring up the following selectable options: • **Show in Resources > Rule** - view/edit the selected rule on the Rules page. • **Rule Summary** - view the rule summary description.
Tactics	The tactic involved with the rule is listed here.
Techniques	The involved technique is listed here. You can click on the technique link to get detailed information from the attack.mitre.org site.
Description	Detailed information about the technique is provided here.
Exceptions	Any rule exceptions are listed here.

Searching Techniques in Rule Coverage View

A technique search field is available in the upper left corner. You can enter your query in the **Search technique...** field. Results are shown in real-time as you enter your query. A drop-down filter next to the **Search technique...** field is available. Your choices are:

- Show All - all techniques are highlighted. The "Show All" text appears when Show Covered and Show Not Covered are both selected.
- Show Covered - only techniques covered by FortiSIEM are displayed.
- Show Not Covered - only techniques not covered by FortiSIEM are displayed.

Incident Coverage View

The Incident Coverage View provides an overview of the security incidents detected by FortiSIEM that fall under the tactics and techniques as defined by MITRE Corporation. Go to **INCIDENTS** > **MITRE ATT&CK®** > **Incident Coverage** to see this view. Incident Coverage can be set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **MITRE ATT&CK - Incident Coverage** from the **Incident Home** drop-down list.

The table in Rule Coverage View briefly describes the attack (tactic) categories also shown in Incident Coverage View.

Using the Incident Coverage View

To open the Incident Coverage View, go to **INCIDENTS** > **MITRE ATT&CK®** > **Incident Coverage View**.The top row displays the number of incidents detected by FortiSIEM in the time range specified. In the main row header, the bolded number that appears under each tactic indicates the number of incidents associated with a specific tactic. Clicking a tactic will show all related detected incidents. Each tactic cell also lists the number of major techniques (Tech) and sub-techniques (Sub-Tech) related to the involved tactic/incidents. All major techniques related to a tactic are listed underneath their respective tactic column. Tactics and techniques covered by FortiSIEM rules are indicated by a light yellow background. You can hover your mouse cursor over any major technique to view the following information:

- Total number of incidents triggered by this technique
- The number of incidents triggered by each sub-technique (if applicable)

Left clicking on any technique will bring up a small menu, allowing you to select **Detail** or **Show Incidents**.

Clicking on **Detail** will provide you with details about the major technique and sub-techniques.

Clicking on **Show Incidents** will display all the incidents associated with the specific technique. It also provides the following Incident information:

Note: Click the Columns drop-down list to select which headings you want to display.

Heading	Description
Severity Category	The severity/category of the incident is listed.
Last Occurred	The date and time when the incident last occurred is listed.
Event Type	The event type triggering the incident is displayed.
Event Name	The event name of the incident is displayed. Clicking on it will bring up a drop-down list with the following options:

Heading	Description
	• Show in Incident List View - displays the incident in Incident List View. • Rule Summary - displays the **Rule Pattern Definitions** that triggered the incident. • Triggering Events - displays the **Event Details** that triggered the event, including triggered event attributes.
Tactics	The tactic involved with the rule is listed here.
Technique	The involved technique is listed here. You can click on the technique link to get detailed information from the attack.mitre.org site.
Reporting	The device that reported the incident is listed.
Source	Source information from the triggered incident is listed. For example, the TCP/UDP Port involved with a protocol tunneling technique is provided.
Target	The object targeted in the incident is listed. For example, the target user in a steal or forge kerberos tickets incident is listed.
Detail	Additional information about the incident is provided here. For example, the command involved, service involved, or registry key is listed, if relevant.
Incident ID	The incident ID is listed.

Searching Techniques in Incident Coverage View

A technique search field is available in the upper left corner. You can enter your query in the **Search technique...** field. Results are shown in real-time as you enter your query. A drop-down filter next to the **Search technique...** field is available. Your choices are:

- Show All - all techniques are displayed. The "Show All" text appears when Show Triggered and Show Not Triggered are both selected.
- Show Triggered - only techniques with triggered incidents are displayed.
- Show Not Triggered - only techniques with no triggered incidents are displayed.

Filtering in Incident Coverage View

You can filter the incident data by attack category, whether the incident is active or cleared, and the time range when the incident occurred.

- The **Status** drop-down list allows you to filter on **Active** and/or **Cleared** incidents.
- The **Time Range** dialog box allows you to choose a relative or absolute time range. For relative times, enter a numerical value and then either **Minutes**, **Hours**, or **Days** from the drop-down list. For absolute times, use the cal-

endar dialog to specify **From** and **To** dates.

- For MSP deployments, the 👤▾ drop-down list allows you to filter incidents based on organizations.

MITRE ATT&CK Incident Explorer View

The MITRE ATT&CK Incident Explorer View maps security incidents detected by FortiSIEM into attack categories defined by MITRE Corporation (MITRE ATT&CK). Go to **INCIDENTS** > **MITRE ATT&CK®** > **Incident Explorer** to see this view. The MITRE ATT&CK Incident Explorer can be set as the default view by selecting **User Profile > UI Settings** then choosing **Incidents** from the **Home** drop-down list and **MITRE ATT&CK - Incident Explorer** from the **Incident Home** drop-down list.

The table in Rule Coverage View briefly describes the attack (tactic) categories shown in MITRE ATT&CK Incident Explorer View.

Using the MITRE ATT&CK Incident Explorer View

To open the MITRE ATT&CK Incident Explorer View, go to **INCIDENTS** > **MITRE ATT&CK®** > **Incident Explorer**. The table at the top of the MITRE ATT&CK Incident Explorer View displays the devices experiencing the security incidents and the MITRE ATT&CK categories into which the incidents fall. The circles in the table indicate:

- Number - The number in the middle of the circle indicates the number of incidents in that category. Click the number to get more detail on the incidents. See Getting Detailed Information on an Incident.
- Size - The size of the circle is relative to the number of incidents.
- Color - The color of the circle indicates the severity of the incident: Red=HIGH severity, Yellow=MEDIUM severity, and Green=LOW severity.

Filtering in the MITRE ATT&CK Incident Explorer View

You can filter the incident data by attack category, whether the incident is active or cleared, and the time range when the incident occurred.

- The **Tactics** drop–down list allows you to filter on one or more of the attack categories. You can also display **All** of the categories.
- The **Status** drop-down list allows you to filter on **Active** and/or **Cleared** incidents.
- The **Time Range** dialog box allows you to choose a relative or absolute time range. For relative times, enter a numerical value and then either **Minutes**, **Hours**, or **Days** from the drop-down list. For absolute times, use the calendar dialog to specify **From** and **To** dates.
- For MSP deployments, the 👤▾ drop-down list allows you to filter incidents based on organizations.

Getting Detailed Information on an Incident

The lower pane of the MITRE ATT&CK Incident Explorer View provides a table with more detailed information about a security incident. You can populate the table in any of these ways:

- Click a device to see all of the incidents associated with the device.
- Open the **Tactics** drop-down list and choose one of the attack categories. All of the incidents associated with the selected category or categories are displayed. You can also choose to display **All** of the categories.

- Click the number in the middle of the circle. All of the incidents associated with the selected device and category are displayed.
- Click an incident and all of the actions in the **Action** drop-down list that you can perform on the event become available. See Acting on Incidents.

For more information on the column headings that appear in the lower pane of the Incident Explorer View, see Viewing Incidents.

Displaying Triggering Events for an Incident

Click an incident in the lower table to display its triggering events. Another pane opens below the Incident table. It displays information related to the event that triggered the incident, such as **Host Name**, **Host IP**, and so on.

UEBA View

The UEBA view monitors AI alerts obtained from FortiInsight. To configure what data appears in the UEBA view, see UEBA Settings. The UEBA view is divided into these layers:

- Incident Trend Chart
- Attribute List
- Related Incidents
- Triggering Events

The **Actions** drop-down list displays the operations you can perform on selected incidents. For descriptions of the operations, see Acting on Incidents.

Incidents in the UEBA View can be filtered by activity status or time range. See Filtering in the UEBA View.

Incident Trend Chart

The Incident Trend Chart displays frequency of incidents over time. You can click the bars in the chart to filter both the chart and the attribute list. The attribute lists will update based on the time and severity category of the bar.

Attribute List

The Attribute List table provides the following information about the AI alerts received from FortiInsight:

Attribute	Description
Incident	The name of the incident that was detected. The incident name is defined in Setting Tags.
Host	The host name or IP address where the alert originated.
Application	The name of the application that is the source of the incident.

Attribute	Description
User	The Windows Agent user. This user is specified in Setting UEBA Higher Risk Entities.
Tag	The tag used to categorize the alert. The tag is defined in Setting Tags.
Activity	The description of the activity which raised the alert.

Related Incidents

The Related Incidents table provides additional information on the incidents selected in the Attribute List table.

Attribute	Description
Severity Category	The severity of the incident: **HIGH**, **MEDIUM**, or **LOW**. You can change the severity value in the **Actions** drop-down list.
Last Occurred	The date and time when the incident was last detected.
Incident	The name of the incident.
Tag	The tag used to categorize the alert.
Host Name	The host name or IP address of the host where the alert originated.
User	The Windows Agent user.
Application	The name of the application that is the source of the incident.
Resource	A resource name, typically a file path.
Activity	The description of the activity which raised the alert.

Triggering Events

The **Triggering Events** layer is typically hidden. Click an incident in the **Related Incidents** table to display its triggering events.

These display options are available above the table:

- **Subpattern: FIN** - Indicates that only FIN events are displayed.
- **Wrap Raw Events** - Select to display the full log event in the table.
- **Show Event Type** - Select to display the event type only.
- **Show Raw Event Only** - Select to display the full log event only.

The following table describes incidents in the Triggering Events table.

Attribute	Description
Event Receive Time	The date and time when the event was received.
Host Name	The IP address or host name that was the source of the event.
Domain	The Windows domain that was the source of the event.
User	The Windows Agent user.
Tag Name	The tag used to categorize the alert.
Process Name	The name of the process producing the event.
Activity Name	The description of the activity which raised the alert.
Resource Name	A resource name, typically a file path.

Filtering in the UEBA View

Use the **Status** button in the upper right corner of the UEBA View to filter the display for active or cleared incidents, or both. Use the **Time Range** button to filter the display for incidents within a specific time range:

- **Status** - Use the drop-down list to display **Active** incidents, **Cleared** incidents, or both.
- **Time Range** - Filter the incidents according to a time range:
  - If you click **Relative**, adjust the time value in the **Last** field.
  - If you click **Absolute** enter a time range.

Lookups Via External Websites (e.g. VirusTotal)

Indicators of Compromise (IOC) can be transmitted via external IPs, domain names, URLs, and file hashes.

When a security incident is triggered due to a potentially malicious IOC, you may want to consult an external threat intelligence website to get more information about the IOC. If the website can confidently say that the IOC is malware, then you can take corrective action, such as blocking the IOC. On the other hand, if the website says that the IOC is safe, then you can mark the IOC as a false positive.

There are two types of external lookups:

- Some websites accept an IOC as a parameter in the URL and the website will respond with information about the IOC. In many of these cases, the IOC information in the web page cannot be parsed programmatically, and user must manually determine whether the IOC is malware. For example, see https://www.talosintelligence.com/reputation_center/lookup?search=8.8.8.8.
- Other websites, such as VirusTotal, RiskIQ, and FortiGuard have APIs. FortiSIEM can analyze the data from these websites and present the results in an easily understandable format for user. **Note:** VirusTotal supports domain, URL, and file hash lookups. RiskIQ supports IP and domain lookups. FortiGuard supports IP, domain, URL and file hash lookups.

FortiSIEM supports all three types of lookups. External Website lookups can be performed only from the **Incident List View**.

Prerequisites

Complete these steps before performing external lookups:

1. External lookups that accept an IOC in the URL must be defined in **ADMIN > Settings > System > Lookup**. See Lookup Settings for more information.
2. VirusTotal, RiskIQ, and FortiGuard integrations must be defined in **ADMIN > Settings > General > External Integration**. This involves setting credentials.
   See VirusTotal Integration, RiskIQ Integration, and FortiGuard Integration for more information.

Performing an External Lookup on VirusTotal, RiskIQ, and/or FortiGuard

Follow these steps to perform an external lookup on VirusTotal, RiskIQ, and/or FortiGuard.

1. Go to **INCIDENTS** and click the **List** view.
2. Select an incident from the table.
3. Drill down on either the **Source**, **Target**, **Detail** or **Reporting IP** columns and choose **External Lookup**. FortiSIEM will identify IP, Domain, URL and file hash fields for lookup.
4. Choose one of the following and click **Lookup**.
   a. An External website that accepts IP in the URL
   b. **VirusTotal**, **RiskIQ**, and/or **FortiGuard**
5. For the first case (4a), the page opens in a different tab in the browser.
6. For the second case (4b), FortiSIEM collects information about the IOC from the websites using the API, makes a conclusion as to whether it is Safe/Malware/Not Sure, and presents the data in the **Result** tab.
7. If a FortiGuard result is determined to possibly be malicious, you can click on **Malicious** to get more details as to why FortiGuard flagged the incident as malicious.
8. Based on the information about the IOC, you can click on the **Action** tab and take any of the following actions.

   a. **Update Comment**: You can update Incident comment based on the website findings. Enter an optional comment about the incident and click **Add Summary**, then **Apply**. The comment will appear in the **Incident Comment** panel in the **Details** tab when you select the incident in the **List** view.
   b. **Resolve Incident**: You can resolve the incident. Choose **Open**, **True Positive**, **False Positive**, or In **Progress**. Click **Apply**, and the selection will appear in the Resolution column for that incident.
      - If you choose **False Positive**, you have the option of providing a reason for your choice. You also have the option to **Create a False Positive in ThreatConnect**. Clicking this option will respond with a message describing whether the creation was successful. This option assumes that you

have created a malware configuration for ThreatConnect. You can configure IPs, domains, hash, or URLs for ThreatConnect. See Working with ThreatConnect IOCs.

c. **Create Rule Exception**: If it is a false positive, then you can create a rule exception. Click the edit icon to create an exception to the rule. For more information on using the **Edit Rule Exception** dialog box, see Creating an exception for the rule.
d. **Set Incident Severity**: You can change the incident severity. Open the drop-down list and choose **Change to LOW**, **Change to MEDIUM**, or **Change to HIGH**.
e. **Remediate Incident**: You can remediate the Incident, e.g. block the malware domain. Click the edit icon to remediate the incident. For more information on using the **Run Remediation** feature, see Creating a Remediation action.
f. **Run External Integration**: You can create a ticket in an external ticketing system. Click the edit icon to choose an integration policy from the drop-down list. Click **OK**.

9. Click **Close**.

CVE-Based IPS False Positive Analysis

Network Intrusion Prevention Sensors (IPS) trigger alerts based on network traffic. When an IPS sees traffic matching an attack signature, it generates an alert. Some of these attacks correspond to host vulnerabilities and have an associated CVE number. Most organizations run vulnerability scanning tools to scan their servers for vulnerabilities. If FortiSIEM is configured to collect this host vulnerability data, it can combine the IPS signature to CVE mapping, and Host to CVE mapping to detect if an IPS Alert is false positive.

- Requirements
- False Positive Detection Logic
- Running an IPS False Positive Test
- Consequences of Running the IPS False Positive Test

Requirements

- Currently, FortiSIEM applies this logic on Incidents but not events. All important IPS events trigger some rule in FortiSIEM.
- FortiSIEM IPS rules must be written with a **Signature Id** and **Event Type** in the group by conditions. All built-in rules have been enhanced with this requirement starting with release 5.3.0.
- The primary source of IPS Signature to CVE mapping is FortiSIEM CMDB. These mappings are part of the FortiSIEM knowledge base and upgraded with every release. For FortiGate IPS signatures, FortiSIEM can also pull this information from FortiGuard Services via an API. The FortiGuard IOC license must be enabled in FortiSIEM.
- The source of Host to CVE mapping is Vulnerability scanners. FortiSIEM currently supports Qualys, Rapid7, Nessus and Tenable scanners. Make sure FortiSIEM is configured to collect this data at least once a day.

False Positive Detection Logic

Recall that for this detection logic to work, IPS-related incidents must have **Signature Id** and **Component Event Type** configured (for example, see the built-in **High Severity Outbound Permitted IPS Exploit** rule). The test is performed separately for both internal (for example, RFC-1918 address space) **Incident Source** and **Incident Target IPs**, as it does not make sense to perform tests for Internet addresses.

After the incident triggers, the associated CVEs for the Incident Event Type are first looked up. The primary source is the CMDB. If the CMDB does not have this information, then external websites are looked up. In the current release, only Fortinet IPS signatures are looked up using **Signature Id** in the FortiGuard database.

If associated CVEs are found, then another CMDB lookup is performed to see if the Host (in **Incident Source** or **Target**) is vulnerable to the CVEs. CMDB collects Host Vulnerability information from vulnerability scan data.

There are four detection outcomes:

- **Vulnerable** - this can result if ALL the following are true:
    a. IP is internal and,
    b. Event type to CVE mapping is found and,
    c. Host has been scanned for vulnerabilities in the last 2 weeks and,
    d. At least one CVE in (b) is found in the list of current vulnerabilities in (c).
- **Not Vulnerable** - this can result if ALL the following are true:
    a. IP is internal and,
    b. Event type to CVE mapping is found and,
    c. Host has been scanned for vulnerabilities in the last 2 weeks and,
    d. None of the CVEs in (b) are found in the list of current vulnerabilities in (c).
- **Insufficient Information** - this can result any of these cases:
    a. Even type to CVE mapping is not found or,
    b. Host has not been scanned in the last 2 weeks.
- **Not Needed** - this case is true if the IP is external.

An Incident is False positive if either of the following cases is true

- **Source Detection Status** is not **Not Needed** and Destination is **Not Vulnerable** or vice-versa
- Both **Source** and **Target** are **Not Vulnerable**

An Incident is True positive when either **Source** or **Destination** is **Vulnerable**.

Running an IPS False Positive Test

This test can be run on-demand or automatically when an Incident triggers. First you need to set up an Integration.

1. Go to **ADMIN > Settings > General > External Integration**.
2. Click **New**.
3. Set **Type = Incident**, **Direction = Outbound**, **Vendor = “FortiSIEM Attach CVE Check"**.
4. Click **Save**.

To Run the IPS False Positive Test On-Demand on an IPS Incident

1. Go to **INCIDENTS > List By Time**.
2. Select one incident. Make sure that the **Signature Id** and **Component Event Type** are configured in the **Incident Detail**.
3. Click **Action** and select **Run External Integration**.
4. Select the specific integration and click **OK**.

The IPS False positive test can be automated so that it runs automatically when the Incident triggers for the first time. To do this, create an **Incident Notification Policy**. The IPS Attack CVE Check will run as an **Incident Action**.

1. Go to **ADMIN > Settings > General > Notification Policy**.
2. Select an existing notification policy to edit, or click **New** to create one.
3. In the **Action** section, select **Invoke an Integration Policy**, then select the policy.
4. Save the policy.

Consequences of Running the IPS False Positive Test

When you run the integration policy, the following results can occur:

- The **Incident Comment** is updated with the detection status.
- The **Incident Status** is determined based on the following cases:
    a. False Positive Case: the **Incident Severity** is set to **Low** and the Incident is cleared.
    b. True Positive Case: the **Incident Severity** is set to **High** and a Case is opened.
    c. In all other cases, the **Incident Status** remains unchanged.

Working with Analytics

FortiSIEM search functionality includes real time and historical search of information that has been collected from your IT infrastructure. With real time search, you can see events as they happen, while historical search is based on information stored in the event database. Both types of search include simple keyword searching, and structured searches that let you search based on specific event attributes and values, and then group the results by attributes.

Note: If Data Obfuscation is turned on for a FortiSIEM user:

- The value for that object marked for data obfuscation is obfuscated. For example, if IP is marked for data obfuscation, the IP address is obfuscated. In earlier versions of FortiSIEM, raw events were completely obfuscated.
- CSV Export feature is disabled.

The following sections provide information about the operations under **ANALYTICS** tab:

- Running a Built-in Search
- Understanding Search Components
- Viewing Historical Search Results
- Viewing Real-time Search Result
- Using Nested Queries
- Searches Using Pre-computed Results
- Saving Search Results
- Viewing Saved Search Results
- Exporting Search Results
- Emailing Search Results
- Creating a Rule from Search

Running a Built-in Search

FortiSIEM provides a number of built-in reports.

Complete these steps to run an built-in report:

1. Go to **ANALYTICS** tab.
2. From the folder drop-down list on the left, select **Shortcuts** or the **Reports** folder.
   - **Shortcuts** folder contains a few quick reports.
   - **Reports** folder contains the entire collection of built-in reports.
     You can search for a specific report in both of these collections by entering keywords in the Search box.
3. Select a specific report and click **>**.
4. If you are generating the report from **Shortcuts**, select whether you want to run the report in the currently selected tab or a new tab.
   Note: Running search in the currently selected tab discards the existing results displayed on that tab.
   The query will run and display the results.
   Note: You can also run the reports from **RESOURCES** > **Reports** folder. See here.
5. Click **Apply & Run**.

Search can be performed in two modes:

- Real time mode – from current time onwards. This mode runs only built-in searches that have no aggregation (for example, **Shortcuts** > **Raw Messages**). Note that every time you re-run this query, the displayed results will change.
- Historical mode – for previous time periods. Any query can be run in this mode. Note that the displayed search results will not change if you re-run this query for Absolute time range.

To run a real-time search

1. Click the **Edit Filters and Time Range** edit box.
   The filter conditions are displayed for the selected built-in query. See Understanding Search Components.
2. For **Time Range**, select **Real-time**.
3. Click **Apply & Run**.

To run a historical search

1. Click the **Edit Filters and Time Range** edit box.
   The filter conditions are displayed for the selected built-in query. See Understanding Search Components.
2. For **Time**, select **Relative** or **Absolute** option.
   a. For **Relative** option, the query will run for a duration in the past, starting from current time. Select the value and time scale in (**Minutes**/**Hours**/**Days**).
   b. For **Absolute** option, the query will run for a specific time window in the past. There are two ways to specify this:
      i. Using two explicitly defined time epochs.
      ii. Using **Always prior** option to define time-periods like last 1 week or last 2 months. If you are interested in re-running the same report on a daily basis, then you do not have to change the time period.
3. For **Event Source**, select **Online** or **Archive** option.
   a. For **Online** option, the query will check the configured online source.
   b. For **Archive** option, the query will check the configured archive source.
4. For **Trend Interval**, select **Auto**, **Hourly**, **Daily**, or **Weekly**. When you include a trend event attribute for a chart, such as **Event Receive Hour**, **Event Receive Daily**, or **Event Receive Weekly**, pick the appropriate configuration so your chart appears correctly.
5. Click **Apply & Run**.

Understanding Search Components

To perform a well-defined search, see the following sections:

- Specifying Search Filters – this specifies which data will be included in the Search.
- Specifying Search Time Window – only events that have been received by FortiSIEM within this time window will be part of the search.
- Specifying Trend Interval - specifies events that occur hourly, daily or weekly in trend charts.
- Specifying Event Search Source - only the selected source will be searched.

- Specifying Aggregations and Display Fields – this specifies how the data will be grouped and which fields will be displayed in the search result.
- Specifying Organizations for a Service Provider Deployment – only events belonging to this organization will be included in the Search.
- Run Multiple Searches Simultaneously – multiple real-time or historical searches can run simultaneously.
- Examples of Operators in Expressions

Specifying Search Filters

Complete these steps to specify search filters:

1. Click the **Edit Filters and Time Range** edit box.
2. Specify a filter condition:
    a. **Event Keyword** - Enter any related keyword for search.
    b. **Event Attribute** - Choose an event attribute from the drop-down list or build an expression using the expression builder. Only those event attributes based on the event type will be displayed.
        i. **Operator** - Choose the operator from the drop-down list.
        ii. **Value** - Enter a value in the edit box, or choose from CMDB, or build an expression using the expression builder, or select from Report.
    c. **CMDB Attribute** - Select a **Target** from the drop-down list. In the table, enter the CMDB attributes you want to search on.
        a. Select the **Attribute**.
        b. Select the **Operator**--the most common operators are IN and NOT IN.
        c. Click in the **Value** field and select **Select from Report** or **Select from CMDB**.
3. If more than one filter condition is needed, then click **+** under **Row**.
    a. Specify the AND/OR operator under **Next**.
    b. Specify the next filter condition. When you click in the **Attribute** field, FortiSIEM will display only those attributes that can be used with the previous attribute.
    c. Apply parenthesis if needed to prioritize filter evaluation by clicking **+** on the **Paren** icon.

    Note that the rows can be deleted by clicking the **-** under **Row** and the parenthesis can be deleted by clicking **-** under **Paren**.

Specifying Search Time Window

Complete these steps to specify search filters and time window:

1. Click the **Edit Filters and Time Range** edit box.
2. Specify the time window:
    a. **Real-time mode** – only from the current time onwards.
    b. **Historical mode** – for previous time periods that have already occurred. Select **Relative** or **Absolute** option.
        - For the **Relative** option, the query will run for a duration in the past, starting from current time. Choose the time scale (Minutes/Hours/Days) and the quantity.
        - For the **Absolute** option, the query will run for a specific time window in the past. There are two ways to specify this:

- Using two explicitly defined time epochs.
- Using Always prior option to define time-periods such as the previous week or the previous two months. If you are interested in re-running the same report on a daily basis, then you do not have to change the time period.

The **ANALYTICS** view also provides a list of five time range buttons (15m 1h 1d 7d 30d) which appear to the left of the paginator. They allow you to filter data by the last 15 minutes, 1 hour, 1 day, 7 days, or 30 days.

Specifying Trend Interval

Complete these steps to specify the trend interval.

1. From the **Edit Filters and Time Range** edit box, specify the Trend Interval:
   a. **Auto** - (Default) Query is handled normally.
   b. **Hourly** - Select this configuration for proper chart display if you want to check the data hourly.
   c. **Daily** - Select this configuration for proper chart display if you want to check the data daily.
   d. **Weekly** - Select this configuration for proper chart display if you want to check the data weekly.

Specifying Event Search Source

Complete these steps to specify the event source for search:

1. Specify the source:
   a. **Online** - search online only.
   b. **Archive** - search archive only.

Specifying Aggregations and Display Fields

The following sections describe how to aggregate data using Group By fields and how to apply display conditions.

- Specifying Group By and Display Fields
- Specifying Display Conditions for Aggregated Search
- Saving Group By and Display Fields and Display Conditions
- Loading Group By and Display Fields and Display Conditions

Specifying Group By and Display Fields

If you want to specify an non-aggregated search (without Group By fields), then complete these steps:

1. Click the **Change Display Fields** drop-down list icon (☰ ▾) to create a display column.
2. Under the **Group By and Display Fields** section, enter an attribute:
   a. For a non-aggregated search, choose the event attribute from the drop-down list. If the attribute is not on the list, then enter a part of the attribute name to see some matches (for example, entering “IP” will display “Source IP” which is not on the list).
3. Optionally, select the **Order** of display as **ASC** (ascending) or **DESC** (descending) if the search result needs to show the results ordered by this column. Choose this order carefully. If multiple columns have **Order** specified,

then the system will order the column that appears first and then go on to the other columns in order of appearance in the **Display Column** page.

4. If you want a column heading to display differently than the attribute, choose the desired name as **Display As**.
5. The search results are displayed in the order of the columns. You can alter the position of a column by clicking the **Move** up and down arrows.

If you want to specify an aggregated search (with Group By fields), then complete these steps:

1. Click the **Change Display Fields** drop-down list icon (☰ ▾) to create a display column.
2. Under the **Group By and Display Fields** section, enter an attribute:
    a. For aggregated search, enter an event attribute or create an expression using the Expression Builder, described below.
3. Optionally, select the **Order** of display as **ASC** (ascending) or **DESC** (descending) if the search result needs to show the results ordered by this column. Choose this order carefully. If multiple columns have **Order** specified, then the system will order the column that appears first and then go on to the other columns in order of appearance in the **Display Column** page.
4. If you want a column heading to display differently than the attribute, choose the desired name as **Display As**.
5. The search results are displayed in the order of the columns. You can alter the position of a column by clicking the **Move** up and down arrows.

Specifying Display Conditions for Aggregated Search

If you specified an aggregate search with Group By fields, then you can specify certain conditions. Only the events that match these display conditions will be displayed.

In the **Display Conditions** section of the **Group By and Display Fields** dialog box :

1. Choose an **Attribute** from the drop-down list.
2. Choose an **Operator** from the drop-down list.
3. Enter a **Value** for the operator.
4. If you require additional conditions, choose a value from the **Next** drop-down list and click the **+** icon under **Row**.
5. Click the **+** or **-** icons under **Paren** as needed, to add or remove parentheses on a row.

Saving Group By and Display Fields and Display Conditions

To save Group By and Display Fields and Display conditions, complete these steps:

1. Click **Save** in the **Group By and Display Fields** dialog box to save your configuration as a template.
2. Choose a **Scope** from the drop-down list in the **Save Group By and Display Fields as:** dialog box and enter a name for the template.

Loading Group By and Display Fields and Display Conditions

To load Group By and Display Fields and Display conditions, complete these steps:

1. Click **Load** in the **Group By and Display Fields** dialog box if you want to see a list of display fields that can be added to the template. The list can contain system- and user-defined display fields.
2. Click an item in the list, then click **Load**. The **Group By and Display Fields** dialog box closes and you will see the selected item in the list of **Attributes** in the **Group By and Display Fields** section.

Specifying Organizations for a Service Provider Deployment

To specify Organizations in a Service Provider deployment, select the organizations from the **Selection Organizations** drop-down icon (👤 ▾).

Run Multiple Searches Simultaneously

To run multiple real-time or historical searches simultaneously, follow these steps:

1. Click the **Edit Filters and Time Range** edit box.
2. Define the parameters required for the search. See Understanding Search Components.
3. Start the search.
4. Click the **+** button next to the search tab to define another search.
5. Define, then start, another real-time or historical search.

The additional search will appear as a tab next to the **+** button.

Note: real-time searches will pause as you switch between tabs.

Examples of Operators in Expressions

Operator	Argument	Example
COUNT	Matched Events	COUNT (Matched Events)
COUNT DISTINCT	Any non-numerical attribute that is not unique	COUNT DISTINCT (Host Name)
AVG, MAX, MIN, SUM, Pctile95, PctChange	Numerical attribute	AVG (CPU Util), MAX (CPU Util), MIN (CPU Util)
LAST, FIRST	Numerical attribute	LAST (System Uptime), FIRST (System Uptime)
HourOfDay, DayOfWeek	Time attribute	HourOfDay(Event Receive Time), DayOfWeek (Event Receive Time)
DeviceToCMDBAttr	Host name/IP	DeviceToCMDBAttr (Reporting IP : County/Region)

Examples of Expressions

Operators with arguments can be combined with +, -, / and * with parenthesis to form an expression. For a good example, see the built in report “Top Devices By System Uptime Pct” which computes the System Uptime percentage using the expression

100 – (100*SUM(System Down Time)/SUM(Polling Interval)).

Examples of Various Searches

- Non-aggregate search – see **Shortcut** > **Raw Messages**.
- Aggregate search:
    a. Basic – one attribute and one counting expression - **Shortcut** > **Top Event Types**.
    b. Intermediate – three attributes and one counting expression - **Shortcut** > **Top Reporting Devices** and **Event Types**
    c. Advanced – multiple attributes and complex expressions including Device to CMDB attributes:
        i. **Reports** > **Function** > **Performance** > **Top Network Interfaces By Util**
        ii. **Reports** > **Function** > **Availability** > **Top Devices By Business Hours Network Ping Uptime Pct**
        iii. **Reports** > **Incidents By Location and Category**

Viewing Historical Search Results

Historical Search results are displayed in two panes:

- Bottom pane displays the results in tabular view following the definitions in the Display Fields.
- Top pane displays the trends over time:
    - For non-aggregated searches, the trend is for event occurrence and is displayed in a trending bar graph. Each bar captures the number of entries in the table during a particular time window.
    - For aggregated searches, the trend is for any of the (numerical) columns with aggregations. Trends are displayed for the Top 5 entries in the table. For integer values, such as COUNT (Matched Events), you will see a trend bar graph, while for continuous values such as AVG(CPU Utilization), you will see a line chart.

Both the bar and line charts show trends in a stacked manner, one for each row in the table. To see the trend for a specific row, disable all the other entries by deselecting the check box in the first column. To view the trend for a set of entries, you can select the check box corresponding to those entries.

For continuous values, you can toggle between a stacked view and a non-stacked view:

- To show the stacked view, click .
- To show the line chart view, click .

If there are multiple aggregate columns:

- Select a specific column in the **Chart for** in top right to see the Chart for that column.
- Select one column for **Chart for** and another column for **Lower Chart** to see the two charts at the same time – one on +ve Y-axis and one on –ve Y-axis. This generally makes sense when the values are of the same order. For example, AVG(CPU Utilization) and AVG(Memory Utilization) or AVG(Sent Bytes) and AVG(Recv Bytes).

You can visualize the results in other charts by clicking the ▾ drop-down. See FortiSIEM Charts and Views for descriptions of the available charts.

Events in FortiSIEM have an Event Type (like an unique ID) and an Event Name, a short description. When you choose to display Event Type, the Event Name is automatically displayed but Event type is hidden to make room to show other fields. To see the Event Types, click the **Show Event Type** check-box.

Raw events often take many lines to display in a search result. By default, Raw events are truncated and displayed in one line so that user can see many search results in one page. To see the full raw event, click the **Wrap Raw Event** check-box.

Using Search Result Tabs

A search result typically shows many rows. To drill down into a specific value for a specific column, hover over the specific cell and choose **Add to Filter** or **Add to Tab**. **Add to Filter** modifies the search on the current tab by including this constraint. **Add to Tab** on the other hand, gives you the option to keep the current tab intact and add the constraint to a new tab or to a tab of your choice. This enables you to see multiple search results side by side. Click **Add to Tab** and select the tab where the constraint needs to be added. The filter conditions and display columns are copied over to the new tab.

Zooming-in on a Specific Time Window

If you see an unusual pattern (for example, a spike) in the trend chart and want to drill down without providing an exact time range, do one of the following:

- Click the bar – a new search tab is created by duplicating the original search and adding the right time window as seen by hovering on the bar.
- Press and hold the **Shift** key and drag the mouse over a time window. This modifies the time window in the current tab. Click **Apply & Run** to see the results.

Viewing Parsed Raw Events

Hover over a **Raw Event Log** cell and click **Show Details**. The display shows how FortiSIEM parsed that event.

Adding an Attribute to the Filter Criteria in the Search

Complete these steps to add an attribute to the filter criteria in the search:

1. Check the **Filter** column.
2. Click **OK**.
   The Attribute is added to the filter condition.
3. Re-run the query to get the new results.

Adding an Attribute to the Search Display

Complete these steps to add an attribute to the search display:

1. Check the **Display** column.
2. Click **OK**.
   The Attribute is added to the display condition.
3. Re-run the query to get the new results.

Viewing Real-time Search Results

Real-time Search results display matching events that occur from the current time onwards.

The search results are displayed in two panes:

- Bottom pane displays the results in tabular form following the definitions in the **Display Fields**.
  Note that aggregations are not permitted in real-time search. Since results are coming in continuously, the results

scroll and the latest events are displayed at the top.
- Top pane displays the counts of matched events over time.

The following actions are possible while viewing Real-time Search results:

- To pause the search, click **Pause**.
- To restart the real-time search from the point you left off, click **Resume** after **Pause**.
- To fast forward to the current time, click **Fast forward**.
- To clear the result table, click **Clear**.
- To restart the search all over again from the current time, click **Stop** and then **Run**.

In real-time search, only Event Type (like a unique ID) is displayed. Enable **Show Event Type** while running a real-time query. Note that Event Names are not displayed.

Raw events often take many lines to display in a search result. By default, Raw events are truncated and shown in one line so that user can see many search results in one page. To see the full raw event, click the **Wrap Raw Event** check-box.

Viewing Parsed Raw Events

Hover over a **Raw Event Log** cell and click **Show Details**. The display shows how FortiSIEM parses the event.

Adding an Attribute to the Filter Criteria in the Search

Complete these steps to add an attribute to the filter criteria in the search:

1. Check the **Filter** column.
2. Click **OK**.
   The Attribute is added to the filter condition.
3. Re-run the query to get the new results

Adding an Attribute to the Search Display

Complete these steps to add an attribute to the search display:

1. Check the **Display** column.
2. Click **OK**.
   The Attribute is added to the display condition.
3. Re-run the query to get the new results.

Zooming-in on a Specific Time Window

If you see an unusual pattern (for example, a spike) in the trend chart and want to drill down without entering the exact time range, do one of the following:

- Click the bar – a new search tab is created by duplicating the original search and adding the right time window as seen by hovering on the bar
- Press and hold **Shift** key and drag the mouse over a time window – this modifies the time window in the current tab.
  Click **Apply & Run** to see the results.

- When you run the Real-time search, a pop-up will appear asking if you want to stop the Real-time search before proceeding to the Historical Search.

Using Nested Queries

Nested Query functionality enables one query to refer to results from another query. This section describes how to set up and use nested queries for the three supported scenarios:

- Outer CMDB Query, Inner Event Query
- Outer Event Query, Inner Event Query
- Outer Event Query, Inner CMDB Query

Outer CMDB Query, Inner Event Query

The following generalized steps describe how to create a nested query where the outer query targets CMDB and the inner event query targets events.

If you want to reuse an existing query, then skip Step 1 and go to Step 2. Note that for a nested query to work correctly, the data type of the filter attribute in the outer query must "match up" with the data type of one certain display column in the inner query.

Step 1: Construct the Inner Event Query

1. Go to the **ANALYTICS** page.
2. Construct the query and make sure it produces the desired results.
   a. Click the **Edit Filter and Time Range** field and select **Event Attribute** in the query tab.
   b. Set the **Time Range**. For example, you can set it to the last 1 hour. This time period is not important if you use this query as an inner query.
   c. If it has the **Event Source**, then you can set it as Online.
   d. Click **Apply** to save your changes.
   e. Click the **Change Display Fields** icon and enter the attributes you want to display.
   f. Click **Apply & Run**.
3. Click **Action > Save as Report**.
4. Ensure **Save Definition** is checked.

Step 2: Construct the Outer CMDB Query by Referring to the Query in Step 1

1. Go to the **ANALYTICS** page.
2. Click in the Search bar--it will open the **Filter** dialog box.
3. Select **CMDB Attribute**.
4. Select the appropriate target from the drop-down list.
5. Set the query condition.
   a. Select the **Attribute**.
   b. Select the **Operator**--the most common operators are IN and NOT IN.
   c. Click in the **Value** field and select **Select from Report.**
   d. Select the **Report** name, saved in Step 1, Substep 4.

   e. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 2, Sub-step 5a.
   f. Click **OK**.
6. Choose the **Nested Time Range**: the inner report will be run for this time range.
7. Click the **Change Display Fields** icon and choose the attributes you want to display.
8. Click **Apply & Run**.
9. To save the report, click **Actions > Save as Report**. Enter the name of the nested query.

Outer Event Query, Inner Event Query

The following generalized steps describe how to set up and use nested queries for an outer event query and an inner event query.

Step 1: Construct the Inner Event Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field.
   a. Select **Event Attribute** and create the **Filter Condition**.
   b. Set the **Time Range**.
      For example, you can set it to the last 1 hour. This time period is only useful to check if this query produces the desired results. If used as an inner query, time range would be set separately in Step 2 below.
   c. If it has the **Event Source**, then you can set it as Online.
   d. Click **Apply** to save your changes.
   e. Click the **Change Display Fields** icon and enter the attributes you want to display. This query needs to be an aggregate query to be used as an inner query. One of the Group By attributes must match (meaning compatible value sets) an attribute chosen in the outer query in Step 2, Substep 2.d.ii
   f. Click **Apply & Run**.
3. If you are happy with the result, then click **Actions > Save as Report**. Ensure **Save Definition** is checked.

Step 2: Construct the Outer Event Query

1. Go to the **ANALYTICS** page.
2. Click the Edit Filter and Time Range field.
   a. Select **Event Attribute** in the query tab.
   b. Choose an **Attribute**.
   c. Choose an **Operator**. The most common operators are IN and NOT IN.
   d. Click the **Value** field and select **Select from Reports**.
      i. Select the **Report** name, saved in Step 1, Substep 3.
      ii. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 1, Substep 2e.
      iii. Click **OK**.
3. Choose the time ranges.
   a. Choose the time range for outer query.
   b. Choose **Nested Time Range** for the inner query.

   c. If it has the **Event Source**, then you can set it as Online.
4. Click **Apply** to save your changes.
5. Click the **Change Display Fields** icon and enter the attributes you want to display.
6. Click **Apply & Run**.
7. You can save the results by clicking **Actions > Save as Report**. Ensure **Save Definition** is checked.

Outer Event Query, Inner CMDB Event Query

The following generalized steps describe how to set up and use nested queries for an outer event query and an inner CMDB query.

Step 1: Construct the Inner CMDB Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field and select **CMDB Attribute** in the query tab.
   a. Select the appropriate **Target** from the drop-down list.
   b. Set the query condition.
      i. Select the **Attribute**.
      ii. Select the **Operator**
      iii. Click in the **Value** field. Do not select **Select from Report**.
   c. Click **Apply** to save your changes.
3. Click the **Change Display Fields** icon and enter the attributes you want to display.
4. Click **Apply & Run**.
5. If you are happy with the result, then click **Actions > Save as Report**. Ensure **Save Definition** is checked.

Step 2: Construct the Outer Event Query

1. Go to the **ANALYTICS** page.
2. Click the **Edit Filter and Time Range** field and select **Event Attribute** in the query tab.
   a. Choose an **Attribute**.
   b. Choose an **Operator** - the most common operators are IN and NOT IN.
   c. Click in the **Value** field and select **Select from Report**.
      i. Select the **Report** name, saved in Step 1 Substep 5.
      ii. Open the **Attribute** drop-down list and choose the attribute that matches the attribute in Step 1 Substep3.
      iii. Click **OK**.
3. Choose the **Time Range** for outer query.
4. If it has the **Event Source**, then you can set it as Online.
5. Click **Apply** to save your changes.
6. Click the **Change Display Fields** icon and enter the attributes you want to display.
7. Click **Apply & Run**.
8. You can save the results by clicking **Actions > Save as Report**. Ensure **Save Definition** is checked.

Searches Using Pre-computed Results

If you want to run the same search again and again, or you want to run certain pre-defined searches over a large time window, then the search time can be reduced by setting up pre-computation. See Known Issues in the latest What's New for any limitations with pre-computed results.

It is important that search filters, group by, and display parameters and display filters do not change. Otherwise, the pre-computation results will be invalid.

To use this feature, you must complete these steps:

1. Select a Report and turn on pre-computation.
2. Select the Pre-computed result option when running the search.

The following sections provide more information about the pre-computation feature and how to use it.

- Usage Notes
- Setting Up Pre-computation
- Impact of Organization and Roles
- Viewing Pre-computed Results
- Running a GUI Search on Pre-computed Results
- Scheduling a Report Based on Pre-computed Results
- Running a Report Bundle Based on Pre-computed Results
- Scheduling a Report Bundle Based on Pre-computed Results

Usage Notes

1. Currently, pre-computation only works with

- FortiSIEM EventDB
- Elasticsearch

1. Pre-computation is currently supported for Aggregated queries with COUNT, SUM, AVG, MAX, and MIN operators. Raw event queries and nested searches are not supported.
2. If you run a query with pre-computed results, but the search interval is wider than the available pre-computed results, then the results are returned for the pre-computed time interval only. Currently, FortiSIEM does not run a separate search for the missing time window and stitch together the two search results.
3. Pre-computation begins at hourly/daily boundaries. For example, if you set up hourly pre-computation at 2:34 PM, then the first pre-computation will begin at 3:10 PM for the time interval 2:00 PM – 3:00 PM.
4. FortiSIEM does not semantically compare search filters, group by, and display parameters and display filters for two searches. Thus, pre-computed results cannot be used for a cloned search.
5. Pre-computation is set up at a report level and not a report bundle level.
6. For the Service provider case, you must effectively have the same role in all Organizations to be able to use pre-computed results. Examples are
   a. Full Admin for all Organizations.

b. Help desk user for one Organization and Read only user for another Organization. Note that both of these roles have empty data conditions and hence are effectively the same role from a pre-computation perspective.

Setting Up Pre-computation

Only a Super Global user having the Full Admin role can set up pre-computation. This is because only such a user can see all the roles. A Full Admin user for a specific organization cannot set up pre-computation. Follow these steps to set up pre-computation.

1. Log in to FortiSIEM as a Super Global Full Admin user.
2. Go to **RESOURCES > Reports**.
3. Select a **Report**, Click **More** and Select **Pre-compute**.
4. Enter the pre-compute options:
    a. Select the **Enable** option to enable pre-computation. If you do not select **Enable**, then the definition will be there, but pre-computation will stop and all older results will be deleted.
    b. Carefully select the **Organization** and the **Roles** for whom queries will be pre-computed. These selections determine when a user query can use pre-computed results. See Impact of Organization and Roles for more detail.
    Note: If duplicate roles with different names exist, only one role will appear for selection. For example, if you have "Full Admin" and "Full Admin2" with the same permissions, only "Full Admin" would appear for the pre-compute role selection.
    c. Select Pre-computation **Frequency**. A lower frequency provides more accuracy at the expense of more system load and storage. Choose the lowest frequency you can accept.
    d. Select the **Age** in number of days. Pre-computed results older than this age will be deleted.
    e. Check the **Pre-compute history** option if you want the system to automatically run and fill up data from earlier time intervals.
5. Click **OK**.

The system will begin pre-computation on the hour or day boundary. For example, if you set up hourly pre-computation at 2:34 PM, then the first pre-computation will begin at 3:10 PM for the time interval 2:00 PM – 3:00 PM. As another example, if you set up daily pre-computation at 10:00 PM, then the first pre-computation will begin slightly after 12:00 AM midnight for the previous day.

Impact of Organization and Roles

A query definition does not enforce Organization and Role restrictions. When you run a query, you are forced to choose one or more Organizations. The data conditions for your role definition are automatically applied. For example, if you run a Top Event Type query as a Full Admin user for Org1 and Org2, then you get All Event Types for Org1 and Org2. However if you run as a Network Admin for Org2 then you only get Network Event Types for Org2. Your Organization and Role assignments have an effect on the query results as they change the query filters.

If you set up pre-computation for an Organization and a set of Roles, then only the users belonging to the same Organization and having exactly the same Role can use pre-computed results. The only exception is for a Full Admin user who can use any pre-computed result in a query. The examples in the following table illustrate this point.

Pre-computation Definition			
Organization	Role	Who can use pre-computed results	Who cannot use pre-computed results
All Orgs Combined	Full Admin	Super-global users that are Full Admin for all Organizations or have roles without data conditions in some organizations.	Other users, for example, Super Global Network Admins for Org1 and Full Admin for Org2
All Orgs Combined	Network Admin	Super-global users that have the Network Admin role in All Organizations.	
All Orgs Combined	Network Admin, Server Admin	Super-global users that are both Network Admin and Server Admin in All Organizations.	If the user is a Network Admin for Org1 and Server Admin for Org2.
Org1	Full Admin	Full Admin or users with no data constraints belonging to Org1 can use pre-compute results.	Other users, for example, Org1 Network Admins cannot use these pre-computed results.
Org1	Network Admin	Network Admin users belonging to Org1 can use pre-compute results.	
Org1	Network Admin, Server Admin	Users belonging to BOTH Network Admin and Server Admin and belonging to Org1.	If the user belongs to only one role, for example Network Admin only, then the user cannot use pre-computed results.

Viewing Pre-computed Results

Once pre-computation is defined, FortiSIEM will pre-compute on the hour or day boundary.

To see the time slots of pre-computed results:

1. Select a Report.
2. Click **Pre-compute > Results**.
3. Click **Refresh** to get the latest results.
    a. **Time Range From** and **Time Range To** represent the Query Time Window.
    b. **Organization** and **Roles** relate to the query conditions.
    c. **Finish Time** specifies when the pre-computed query finished.

To see the content of a pre-computed result:

1. Select one row and click **View Results**.
2. You will be taken to the **ANALYTICS** tab with the query conditions already provided. You can see the results. The query name will display **(Pre-computed)** appended to the end of the name.
3. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:

   a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
   b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

   All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.

4. If you want to stay in this page and change other conditions, click **Query Filter** search bar and deselect **Pre-compute Settings**.

Running a GUI Search on Pre-computed Results

You can run a search from the GUI on pre-computed results from the **ANALYTICS** page or the **RESOURCES** page.

- From the ANALYTICS Page
- From the RESOURCES Page

From the ANALYTICS Page

1. Load a **Report** and click **>**.
2. If the Report has been pre-computed, then the system will ask you to choose whether you want to use pre-computed results.
   a. If you do not want to use pre-computed results, then remove the check from **Use pre-compute for** and click **OK**. The query will run by searching the database.
   b. If you want to use pre-computed results, then check **Use pre-compute for** and select the Organization/Role combination from the drop-down list and click **OK**. The query will run based on pre-computed results.
3. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:.
   a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
   b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

   All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.

4. If you want to stay in this page and change other conditions, click the **Query Filter** search bar and deselect **Pre-compute Settings**.

From the RESOURCES Page

1. Select a **Report** and click **Run**. A dialog box will open.
2. Select the **Organization** for which you want to run the report. The query result will contain the selected organizations. Note that based on the selected organizations, the pre-compute options below will change.
3. Select **Report Time Range**.
4. Select the pre-compute option if available from the menu.
5. Click **Run**.
6. You will be taken to the **ANALYTICS** tab with the query conditions already provided. You can see the results. The Query name will display **(Pre-computed)** appended at the end of the name.

7. Note that because you are running a pre-computed query, you are allowed to perform only these two operations:.
   a. Change the time range by clicking the **Query Filter** search bar and selecting a different **Time range**.
   b. Load another pre-computed (Organization, Role) combination for the same query by going to the **Query Filter** search bar and selecting a different (Organization, Role) from the **Pre-compute Settings** menu.

   All of the other possible choices, such as Query Filters, Organization Drip down, and Query Group By and Display Fields, are grayed out and unavailable.
8. If you want to stay in this page and change other conditions, click the **Query Filter** search bar and deselect **Pre-compute Settings**.

Scheduling a Report Based on Pre-computed Results

1. Go to the **RESOURCES** page.
2. Select a **Report** and click **More > Schedule**. A dialog box will open.
3. Select the **Organization** for which you want to run the report. Note that based on the selected organizations, the pre-compute options below will change.
   a. If you select **Combine all selected Organizations into one Report**, then the report will contain data from all organizations. You also have the option to select the organizations that you want to include. For pre-compute to work, you must select **All Organizations**.
   b. If you select **Generate separate Report for each selected Organization**, then a separate report will be sent out for each selected organization, Data between organizations will not be mixed in the same report. For pre-compute to work, you must select these Organizations to be pre-computed.
4. Select **Report Time Range**.
5. If you want data to be pre-computed, then select **Pre-compute settings** from the menu. You can select multiple entries for step 3b above.
6. Click **Next** and enter values for the rest of the options in the dialog box.
7. Click **OK**.

The system will run the report based on a schedule. If pre-compute settings are specified then the report results will be based on pre-computed data.

Running a Report Bundle Based on Pre-computed Results

A Report Bundle consists of one or more reports. One or more reports may be set to be pre-computed. If you run the Report Bundle, then the reports set up for pre-computation will have pre-computed results, while other reports will run normally (without pre-computation).

1. Go to **RESOURCES > Reports > Report Bundle**.
2. Select a **Report Bundle**.
3. On top left, select **Export Report Bundle**.
4. In **Pre-compute Settings**, select the Organization and Role combination. Each Report can be pre-computed for multiple Organization and Role combinations. When scheduling a report bundle, a common Organization and Role combination must be chosen that is applicable for ALL pre-computed reports. When Pre-Computation is defined, Filters cannot be selected.
5. Select other setting as usual.
6. Click **OK** to run the Report Bundle.

Scheduling a Report Bundle Based on Pre-computed Results

A **Report Bundle** consists of one or more reports. One or more reports may be set to be pre-computed. If you schedule the Report Bundle, then the reports set up for pre-computation will have pre-computed results, while other reports will run normally (without pre-computation).

1. Go to **RESOURCES > Reports > Report Bundle**.
2. Select a **Report Bundle**.
3. On top left, select **Schedule Report Bundle**.
4. Click **+** to create a schedule.
5. In **Pre-compute Settings**, select the Organization and Role combination. Each Report can be pre-computed for multiple Organization and Role combinations. When scheduling a report bundle, a common Organization and Role combination must be chosen that is applicable for ALL pre-computed reports. When Pre-Computation is defined, Filters cannot be selected.
6. Select other setting as usual.
7. Click **OK** to schedule the Report Bundle.

Saving Search Results

Sometimes you must save a search and/or the search results for later use. With the search result displayed in **ANALYTICS**, complete these steps:

1. From the **Actions** drop-down list, select **Save as Report**.
2. Specify the **Report Name**.
3. Specify whether the Report Definition must be saved. This will allow you to re-run the query at a later time. If you respond "yes", then:
    a. Check **Save Definition**.
    b. Select the report folder in **Save To** where the new report should be saved.
4. Enable **Save Results** if the Report results should be saved and then select the time duration.
   If this option is enabled, the results will be stored under the **Saved Results** folder under the **Folders** icon.
5. Enable **Save Template** if you want to apply a template to your results. Follow the instructions in Designing a PDF Report Template to design the cover page and add sections, subsections, attachments, and so on, to the report.

Viewing Saved Search Results

Complete these steps to view previously saved search results:

1. Go to the **Saved Results** folder by clicking 🗁 ▾.
2. Select the specific entry.
3. Hover over the **Name** cell and choose **View Result** from the drop-down list. (To delete a saved search result, you can choose **Delete**.)
   The results will be displayed.

Exporting Search Results

With the search results displayed under **ANALYTICS**, complete these steps to export:

1. From the **Actions** drop-down list, select **Export Result**.
2. Enter the **User Notes** (optional).
3. Specify the **Output Format** as **PDF**, **RTF**, or **CSV**.
   Files with a large number of rows should be exported in CSV format.
4. Select the **Time Zone** of the data from the drop-down list.
5. Select the Report **Template** if you select **PDF** or **RTF** format:
   - **Defined** - to use the template defined for this report defined under **RESOURCES** > **Reports** or use the system default template for ANALYTICS export.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear when you choose this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**.
     Refer to Designing a Report Template for the steps to design the **Cover Page** and **Table of Contents**.
6. Click **Generate** to generate the report.
7. Click **View** to download the report to the local disk.

Emailing Search Results

You must first configure email settings under **ADMIN** > **Settings** > **System** > **Email**. With the search result displayed in **ANALYTICS** tab, complete these steps to email search results:

1. Go to the **Actions** drop-down list and select **Email Result**.
2. Enter the receiver email address in the **To** field.
3. Enter the **Subject** of the email.
4. Enter any **Description** about the email.
5. Enter any **User Notes** about the search results (optional).
6. Choose the **Output Format** as **PDF**, **RTF**, or **CSV**.
7. Select the **Time Zone** of the data from the drop-down list.
8. Select the Report **Template** if you select **PDF** or **RTF** format:
   - **Defined** - to use the template defined for this report defined under **RESOURCES** > **Reports** or use the system default template for ANALYTICS export.
   - **New** - to create a new custom report template for one-time use. The **Report Design** settings appear when you choose this option. Note that this template will not replace the template defined under **RESOURCES** > **Reports**.
     Refer to Designing a Report Template for the steps to design the **Cover Page** and **Table of Contents**.
9. Click **Send**.

Creating a Rule from Search

With the search result displayed in Analytics, follow the steps below to create a rule:

1. From the **Actions** drop-down list, select **Create Rule**.
2. A rule template is automatically created by copying over important Search parameters:
   a. Rule Sub-pattern Filters contain Search Filter conditions
   b. Rule Sub-pattern Group By contain Search Display conditions
   c. Rule Aggregate Conditions are set to COUNT(Matched Events) >= 1
3. To complete the rule creation, configure the settings under the **Create Rule** window with reference to the following table:

Settings	Guidelines
Rule Name	Enter a name for the new Rule.
Description	Enter a description about the new Rule.
Event Type	The name you enter in the Rule Type field is replicated in the Event Type field.
Remediation Note	Enter the **Remediation** script. Make sure that the Remediation script for your scenario is defined. Check the existing Remediation scripts under **ADMIN** > **Settings** > **General** > **Notification Policy**, and check the **Action** column. If your device is not in the list, add the needed Remediation script.
Condition	Click **Condition** to create the rule conditions. See Defining Rule Conditions.
Severity	Select a **Severity** to associate with the incident triggered by the rule.
Category	Select the **Category** of incidents to be triggered by the rule.
Subcategory	Select the **Subcategory** from the available list based on the selected incident **Category**. To add custom subcategories, follow the steps under Setting Rule Subcategory.
Technqiue	Select any techniques from the available **Technique** list. You can choose to select zero, one, or multiple techniques. The Tactics row will update itself based on the techniques selected.
Action	Click the edit icon to define the incident (Incident Attributes and Triggered Attributes) that will be generated by this rule. You must have at least one incident defined before you can save your rule.
Exception	Click the edit icon to define any **Exceptions** for the rule. See Defining Rule Exceptions.
Tag	Click the drop-down list icon to view the tag list. If no tags appear, it means no tags have been created. From the drop-down list, select any tags you wish to associate with the rule. From Incidents View (by Time, by Device, by Incident), tags are displayed in

Settings	Guidelines
	the **Tag** column. See Tags for more information.
Update Status on Summary Dashboard	Select **Dashboard** to add this report under **DASHBOARD** tab.
Notification	Select a **Notification** frequency for how often you want notifications to be sent when an incident is triggered by this rule.
Impacts	Select the **Impacts** of the incident triggered by this rule from the drop-down.
Watch List	Click the edit icon to add the rule you want to add to the watch list. **Note:** The Type that you set for the watch list must match the Incident Attribute Types for the rule. For example, if your watch list Type is IP, and the Incident Attribute Type for the rule is string, you will not be able to associate the watch list to the rule.
Clear	Click the edit icon to define any **Clear** conditions for the rule. See Defining Clear Conditions.

1. Click **Save**.
   Your new rule will be saved to the group you selected in an inactive state. Before you activate the rule, you should test it.

Working with Dashboards

FortiSIEM collects logs and performance metrics and create Incidents by event correlation and other means. This data can be summarized in Reports. A Dashboard provides a graphical view of these reports. FortiSIEM Dashboards are organized into a two-level hierarchy: Dashboard folders with each folder containing multiple Dashboards.

You can perform various operations from FortiSIEM Dashboards:

- General Operations

A Dashboard can be one of the following six built-in dashboard types:

- Widget Dashboard
- Summary Dashboard
- Business Service Dashboard
- Identity and Location Dashboard
- Interface Usage Dashboard
- PCI Logging Status Dashboard

General Operations

FortiSIEM Dashboard can be used to perform various operations:

- Viewing Built-in Dashboard Folders
- Displaying Only Dashboard Folders of Interest
- Setting a Home Dashboard Folder
- Creating a New Dashboard Folder
- Creating a New Dashboard Under a Folder
- Sharing Dashboard Folders
- Deleting a Dashboard
- Deleting a Dashboard Folder
- Starting Dashboard Slideshow

Viewing Built-in Dashboard Folders

FortiSIEM provides several built-in dashboard folders:

Folder	Dashboard	Type	Description
Amazon Web Services Dashboard	Summary	Summary Dashboard	

Folder	Dashboard	Type	Description
	Performance	Widget Dashboard	
	Login	Widget Dashboard	
	Cloud Trail	Widget Dashboard	
Application Server Dashboard	JBoss	Widget Dashboard	
	WebSphere	Widget Dashboard	
	WebLogic	Widget Dashboard	
	Tomcat	Widget Dashboard	
	GlassFish	Widget Dashboard	
Database Dashboard	Logon	Widget Dashboard	
	System Perf	Widget Dash-	

Folder	Dashboard	Type	Description
		board	
	Oracle Performance	Widget Dashboard	
	SQL Server Performance	Widget Dashboard	
	MySQL Performance	Widget Dashboard	
FortiSIEM Dashboard	Event	Widget Dashboard	
	Audit	Widget Dashboard	
	Incidents	Widget Dashboard	
Fortinet Security Fabric	FortiSandbox	Widget Dashboard	
	FortiGate Threat	Widget Dashboard	
	FortiGate Traffic	Widget Dashboard	

Folder	Dashboard	Type	Description
	FortiMail	Widget Dashboard	
	FortiClient	Widget Dashboard	
	FortiCare 360	Widget Dashboard	
Global FortiSIEM Dashboard	Event	Widget Dashboard	After upgrading, super users in global mode can access the Global FortiSIEM Dashboard. **Note**: This is the same as the FortiSIEM Dashboard.
	Audit	Widget Dashboard	
	Incidents	Widget Dashboard	
Google Apps Dashboard	Logon	Widget Dashboard	
	Audit	Widget Dashboard	

Folder	Dashboard	Type	Description
Identity and Location Dashboard	Identity and Location	Summary Dashboard	
NetApp Dashboard	Overall	Widget Dashboard	
	NFS Perf	Widget Dashboard	
	CISF Perf	Widget Dashboard	
	ISCSI Perf	Widget Dashboard	
Network Dashboard	Summary	Summary Dashboard	
	Hardware	Summary Dashboard	
	Availability	Widget Dashboard	
	Performance	Widget Dashboard	
	Login/Change	Widget Dash-	

Folder	Dashboard	Type	Description
		board	
	Netflow	Widget Dashboard	
	IPSLA	Widget Dashboard	
	VoIP	Widget Dashboard	
	CBQoS	Widget Dashboard	
Office365 Dashboard	Logon	Widget Dashboard	
	Audit	Widget Dashboard	
Salesforce Dashboard	Login	Widget Dashboard	
	Activity	Widget Dashboard	
	Performance	Widget Dashboard	

Folder	Dashboard	Type	Description
Security Dashboard	Perimeter	Widget Dashboard	
	Access	Widget Dashboard	
	Malware	Widget Dashboard	
	Vulnerability	Widget Dashboard	
	Exploits	Widget Dashboard	
	Policy Violation	Widget Dashboard	
Server Dashboard	Summary	Summary Dashboard	
	Hardware	Summary Dashboard	
	Availability	Widget Dashboard	
	Performance	Widget Dash-	

Folder	Dashboard	Type	Description
		board	
	Login	Widget Dashboard	
VMWare Dashboard	VM	Widget Dashboard	
	ESX	Widget Dashboard	
	Cluster	Widget Dashboard	
	Resource Pool	Widget Dashboard	
	Datastore	Widget Dashboard	
	Environment	Widget Dashboard	
	Events	Widget Dashboard	
VNX Dashboard	Processor	Widget Dashboard	

Folder	Dashboard	Type	Description
	Ports	Widget Dashboard	
	LUNs	Widget Dashboard	
	Storage Pool	Widget Dashboard	
Web Server Dashboard	System Performance	Widget Dashboard	
	IIS Performance	Widget Dashboard	
	Apache Performance	Widget Dashboard	
	Access	Widget Dashboard	

Displaying Only Dashboard Folders of Interest

Complete these steps to see only the dashboards folders that are of interest to you:

1. Click the **User Profile** icon () in the upper right corner of the UI.
2. Click the **UI Settings** tab.
3. Select the currently **Visible Dashboards** that you want to hide and click **<**.
4. Click **Save**.

The dashboard folder drop-down list under the **DASHBOARD** tab will display only the selected dashboard folders.

Setting a Home Dashboard Folder

Complete these steps to see a specific dashboard folder when you navigate to the **DASHBOARD** tab:

1. Click the **User Profile** icon (🪪) in the upper right corner of the UI.
2. Click the **UI Settings** tab.
3. Select a **Dashboard Home** from the drop-down list.
4. Click **Save**. Refresh the Web page if it doesn't reload automatically.

Creating a New Dashboard Folder

Complete these steps to create a new dashboard folder:

1. Go to **DASHBOARD** and select **New** from the Dashboard drop-down list.
2. Enter a dashboard **Name**.
3. Select whether you want to share the dashboard.
4. Click **Save**.

Creating a New Dashboard Under a Folder

Note: You can add a dashboard to a built-in dashboard folder.

To create a new dashboard under a dashboard folder:

1. Go to **DASHBOARD** tab.
2. Select the dashboard from the folder drop-down list. The dashboards belonging to the folder will display on the top menu.
3. Click **+** to the right.
4. Enter a dashboard **Name**, select a dashboard **Type**, and add any related **Description** about this dashboard.
5. Click **Save**.

Sharing Dashboard Folders

When you create a new dashboard folder, FortiSIEM gives you the option of sharing the folder, and all of the dashboards in it, with other users.

Note the following rules and restrictions on shared dashboards:

Rules for creating and using shared dashboard folders:

- A user can share only with other users in the same organization.
  - A Super user can share only with other Super users, even if that Super user is in Global mode.
  - Org users can share only with (the same) Org users.
- If a Global/Super user shares a dashboard with another user, the other user can see only this dashboard in Global/Super mode.
- If a Local/Super user shares a dashboard with another user, the other user can see only this dashboard in Local/Super mode.
- If you share with all users in the current Org, then above rules also apply.

Restrictions on shared dashboards:

- Only the user who created the dashboard has Write permission to it, including setting the list of shareable users. The users with whom the dashboards are shared have only Read permission.
- Shared users can view the reports and perform Search and drill down operations on them. If shared users try to change the dashboard in any way, they will be asked to clone the dashboard with a new name. Cloning the dashboard breaks the link with the original dashboard. If the user wants access to the original dashboard, then the user who created the dashboard must share it again.
- For shared dashboards, run the report once, so that all users see the same data.
- A shared dashboard cannot be hidden from view.

Advantages of a shared dashboard folder:

- The dashboard owner can seamlessly propagate changes to the users with whom the dashboard is shared.
- An organization can quickly standardize on a set of dashboards created by experts.
- The report to populate the dashboard is run once if the report is run in inline mode. This uses less system resources

Creating a Shared Dashboard

Complete these steps to create a shared dashboard folder:

1. Go to **DASHBOARD** and click **New** to create a dashboard folder.
2. In the **Create Dashboard Folder** dialog box, enter a **Name** for the dashboard folder.
3. Select the **Everyone in current org** checkbox to share the dashboard folder with everyone in the current organization.
    a. To share with selected users/groups, click the edit icon. Select **Users** (CMDB Users) and/or **AD Groups** from the left column, then select individual users from the middle column and shuttle them to the **Selections** column.
    b. Click **Continue**. The selected users and groups will be able to access the shared dashboard and its contents.
4. Click the edit icon next to **Exclude** to exclude sharing with selected users.
    a. Select **Users** (CMDB Users) and/or **AD Groups** from the left column, then select individual users from the middle column and shuttle them to the **Selections** column.
    b. Click **Continue**. The excluded users will not be able to see or access the shared dashboard folder.
5. Click **Save**. The dashboard folder will have a icon – this indicates that it is a shared folder. At this point, you can create dashboards for the shared dashboard folder. See Creating a new dashboard under a folder.

Cloning a Shared Dashboard Folder

In shared dashboard, you can perform the refresh, drill down, and search operations. If you want to make any other changes, such as add a dashboard, change display settings, or delete the dashboard, then you must clone the shared dashboard folder. Once cloned, the link between the original shared dashboard and the cloned dashboard will be broken. This means that changes to the original shared dashboard will not be reflected in the cloned dashboard.

Complete these steps to clone a dashboard folder.

1. Log in to FortiSIEM.
2. Go to **Dashboard** and select the dashboard folder that has been shared with you from the drop-down list.

3. Any changes you attempt to make, such as add a dashboard, change display settings, or delete the dashboard, will open the **Clone Dashboard Folder** dialog box.
4. Enter a new **Folder Name** in the **Clone Dashboard Folder** dialog box.
5. Click **Save**.

You can now make your own changes to the dashboards in the cloned dashboard folder.

Deleting a Dashboard

Note: Built-in dashboards cannot be deleted.

Complete these steps to delete a user-created dashboard:

1. Go to **DASHBOARD** tab.
2. Select the dashboard folder drop-down list. The dashboards belonging to that folder will display.
3. Select the dashboard to delete from the top menu and click the **x**.

Deleting a Dashboard Folder

Note: Built-in dashboard folders cannot be deleted.

Complete these steps to delete a user-created dashboard folder:

1. Go to **DASHBOARD** tab.
2. Select the dashboard folder from the folder drop-down list and click the **x**.

Starting Dashboard Slideshow

Make sure that you have created the slideshow templates before starting a slideshow. See Dashboard Slideshow Settings.

Complete these steps to start a dashboard slideshow:

1. Go to **DASHBOARD** tab.
2. Click the dashboard folder drop-down list and click **Start Slideshow** to select the configured slideshow. The slideshow starts in full screen mode. To exit full screen mode, click the **Exit Full Screen (Esc)** button.
3. To return to the dashboard page, click ➜ button on the top-right.

Widget Dashboard

A Widget Dashboard displays a graphical view of FortiSIEM reports. The reports can be from CMDB data or Event data. The reports can be Top N type aggregated reports or non-aggregated reports, likely displaying raw messages. Aggregated reports can be displayed in various forms: gadgets, bar, donuts, tables, line, stacked line, scatter plot, heat maps, tree maps, and geo-maps.

- Creating a Widget Dashboard
- Data Source
- Populating a Widget Dashboard
- Modifying Widget Dashboard Layout

Creating a Widget Dashboard

When you create a new dashboard, choose Widget Dashboard as the **Type**.

Data Source

All Event data and CMDB Data can be used to populate a Widget Dashboard.

Populating a Widget Dashboard

You can add up to a maximum of 20 event reports or CMDB reports to a Widget Dashboard. Complete these steps to add a report to a Widget Dashboard:

1. Make sure the report of your choice exists. CMDB Reports can be found in **CMDB** > **CMDB Reports**. Event Reports can be found in **RESOURCES** > **Reports**.
   - If the report exists, then run the report to make sure that data is accurate and the fields you want to see are present. Do not choose too many columns in a dashboard view, as may clutter the dashboard.
   - If the report does not exist, then create the report and **Save** it. You can save it in a folder for easy navigation.
2. Go to **DASHBOARD** tab. Select the dashboard folder from the drop-down list.
3. Click **+** below the dashboard folder drop-down list. Select the report from the menu and click **>** to display it on the dashboard.
   The report will run and the results will be displayed in the Widget Dashboard.

Modifying Widget Dashboard Layout

You can select one of two Widget Dashboard layouts from the **Layout** drop-down list on top-right menu of dashboard:

- **Tile view** - widgets can be of non-uniform size and can be dragged around the dashboard space.
- **Column view** - widgets are arranged in a fixed number of columns (1, 2 or 4) in the dashboard space.

Modifying Widget Information Display

1. Click the tools icon on the top-right of the widget to open the **Settings** page.
   a. To change the title, enter a new **Title**.
   b. To change the chart format, choose a new **Display** from the available choices, only if it is relevant for the report. FortiSIEM Charts and Views describes the available charts.
   c. To change the time duration of the report, choose a different **Time**.

d. To modify the size of the widget, choose a different **Width** and **Height**. Widgets displayed in tabular formats typically take more width and height compared to Single Line view.

e. To display more or fewer entries, choose the appropriate **Result Limit**. Note that a larger result limit may require more width and height.

f. For a Service Provider installed in a Super/Global view, choose the **Organizations** to run the report for. This option is available if you run reports from the Super/Global view.

g. To change the chart refresh interval, select the appropriate **Refresh Interval**. Reports will be re-run periodically at specified refresh intervals.

h. To change the **Trend Interval**, select one of the following from the drop-down list:
Auto - (Default) Query is handled normally.
Hourly - Select this configuration for proper chart display if you want to check the data hourly.
Daily - Select this configuration for proper chart display if you want to check the data daily.
Weekly - Select this configuration for proper chart display if you want to check the data weekly.

i. Select **Display Settings** for the specific **Display** chosen before. FortiSIEM Charts and Views describes the required settings for each of the charts.

2. Click **Save**.

Searching in a Widget Dashboard

You can search data for specific event attributes simultaneously in all the widgets in a dashboard. To do this, click the Filter button on left and select the values. You can search on any field that appears in at least one widget on a dashboard.

For example, if you choose to Filter on IP = 10.1.1.1, then only the entries for Source IP or Destination IP or Host IP = 10.1.1.1 are shown on all the widgets.

Note the following:

- The values you can search are pre-populated by searching through the data in various widgets. You can only search for a value if it is present in any widget on the dashboard.
- Without filters, a dashboard shows pre-computed results – so they load quickly. However, when you search, all the reports in the Widget Dashboard are run in an ad hoc mode. Subsequently, search results may return relatively slowly.

Drill-down into a Widget

To analyze the results shown in a widget further, click the magnifying glass icon on the top-right of the widget. This will take you to the **ANALYTICS** tab. The same query will be re-run slightly differently:

- Time conditions are maintained
- Filter conditions are maintained
- Aggregation conditions are removed and the field values and the raw messages are shown directly

This enables users to better understand the widget results. For example, if a column like AVG(CPU) is high over a time duration, then drill down shows all the individual CPU values over the time duration so that you can quickly go to the time when CPU spiked.

Exporting Widget Dashboard Definition

If you want to create the same dashboard in another FortiSIEM, or share with another user, or create the same dashboard for another Organization in a Service Provider FortiSIEM instance, use the export/import feature.

To export the dashboard definition, click the export button on top-right. The definition will be saved in a file, which then can be imported into another FortiSIEM Widget Dashboard.

Importing a Widget Dashboard

To import a dashboard widget, click the import button on top-right and select the file. The imported file must be exported from another FortiSIEM Widget Dashboard.

Forcing a Refresh

Each widget refreshes according to the **Refresh Interval** specified within the widget. To update the whole dashboard, click the refresh icon on top-right.

Summary Dashboard

A Summary Dashboard displays the metrics for many devices in a spreadsheet format. Unlike the widget dashboard that shows a few metrics in one widget, a Summary Dashboard can simultaneously show many more metrics. This often allows rapid diagnostics. FortiSIEM calculates and maintains these metrics in an in-memory database inside Query Master module.

Note: RBAC for Summary dashboard is controlled by hiding by Device Group and not by Data Condition. If you want to hide a group of devices in Summary dashboard for a role, hide the Device Group in the role. The user should not be able to choose the devices from the Device Group.

- Creating a Summary Dashboard
- Data Source
- Managing Devices in a Summary Dashboard
- Changing Display Columns
- Changing Refresh Interval
- Forcing a Refresh
- Searching a Summary Dashboard

Creating a Summary Dashboard

When you create a new dashboard, choose Summary Dashboard as **Type**.

Data Source

The source of data in a Summary Dashboard is the performance and availability monitoring metrics and incidents. To see the metrics that can be displayed, click the column icon. The left table shows the event types and the middle table shows the available metrics for the selected event type. These metrics can be displayed in a Summary Dashboard. Custom attributes from custom monitoring may also be displayed after they are defined.

In addition to metrics, the following are shown:

- Performance, Availability and Security incident counts
- Performance, Availability and Security Status each derived from respective incident severities

Managing Devices in a Summary Dashboard

When you create a Summary Dashboard for the first time, no devices are displayed.

Complete these steps to add devices to the dashboard:

1. Click the device icon.
2. Choose devices to display from the **Available Devices** list and click the right arrow button.
3. Click **OK**.

If the devices do not display in the dashboard, check the pre-defined filters for **Severity**. You may want to set Severity to **All Severities** to see the device recently added. When there are a large number of devices being monitored, you may want to show only the devices with **Critical + Warning** severity, as they would need attention.

Complete these steps to remove a device from the dashboard:

1. Click the device icon.
2. Choose devices to display from the **Selected Devices** list and click the left arrow button.
3. Click **OK**.

Changing Display Columns

Complete these steps to change the pre-defined set of display columns in the Summary Dashboard:

1. Click the columns icon.
2. To remove a column, choose the column from the **Selected Columns** list and click the left arrow button.
3. To add a new column:
   a. Select an **Event Types** on the left-most tab
   b. Choose the **Columns** from the middle tab corresponding to the selected **Event Types**.
   c. Click right arrow.
4. Click **OK**.

Changing Refresh Interval

Select the refresh interval from the drop-down menu on the top-right menu.

Forcing a Refresh

To update the whole dashboard click the refresh icon on top-right menu.

Searching a Summary Dashboard

You can search for specific devices by entering values in the search field.

1. Select the fields to search by clicking the search icon.
2. Enter the search string in the search field.

You can also filter from the three pre-defined drop-down lists:

- Severity
- Organizations
- Locations

You can set the location property for devices from **ADMIN** > **Settings** > **Discovery** > **Location**.

Business Service Dashboard

In FortiSIEM, you can define a Business Service as a container of Devices (Go to **CMDB** > **Business Services**, then click **New**). A Business Service Dashboard provides an overview of the health of the business service by showing the related Incidents and impacted devices.

- Creating a Business Service Dashboard
- Data Source
- Adding/Removing Business Service to the Dashboard
- Summary View
- Drilldown View
- Filtering Summary View
- Filtering Drilldown View
- Changing Refresh Interval
- Forcing a Refresh

Creating a Business Service Dashboard

When you create a new dashboard, choose Business Service Dashboard as **Type**.

Data Source

The only source of data for this dashboard is incidents triggering for the devices belonging to a Business Service.

Adding/Removing Business Services to the Dashboard

When you create a Business Service Dashboard for the first time, no Business Services are shown.

Complete these steps to add a Business Service to the dashboard:

1. Click the devices icon.
2. Select the Business Services from the **Available Services** Business Service list.
3. Click right arrow to move them to the **Selected Services** list.
4. Click **Save**.

Complete these steps to remove a Business Service from the dashboard:

1. Click the devices icon.
2. Select the Business Services to remove from the **Selected Services** list.
3. Click left arrow to move them back to the **Available Services** list.
4. Click **Save**.

Summary View

Business Service Dashboard has two views: Summary view and Drilldown view. The Summary view is the default view when you access the Dashboard.

The first level Summary view displays:

- Incident Counts By Severity and Top Impacted Devices across all Business Services.
- High and Medium Severity Incident Counts for each Business Service.

Click a specific Business Service in the first level to see the second level Summary view. This displays:

- Devices belonging to the Business Service that has triggered incidents.
- For each device:
  - Device Name
  - Device Type
  - Availability Status
  - Incidents and counts – you can click an Incident to see more details in a pop up. From there, you can take action on an incident (for example, drill down the incident on Incident page).

Drilldown View

Click the **Drilldown** button to display the Drilldown view of Business Services.

The first level Drilldown view displays the Incidents of each Business Service.

Click a specific Business Service in the first level to display the second level Drilldown view. It displays the Summary dashboard view of each device belonging to the selected Business Service.

Click the **Overview** button to get back to the Summary view.

Filtering Summary View

In the first level Summary view, you can filter the information displayed by Incident Severity and Organizations (for Service Provider deployments). Choose the values from the respective drop-down lists.

In the second level Summary view, you can filter the information by Device name and type.

Filtering Drilldown View

In the first level Drilldown view, you can filter the information by Organizations (for Service Provider deployments). Simply choose the values from the drop-down list.

In the second level Drilldown view, you can filter the information by Device name and type.

Changing Refresh Interval

Select the refresh interval from the drop-down menu on top-right.

Forcing a Refresh

To update the whole dashboard, select **Refresh Now** on top-right.

Identity and Location Dashboard

In many situations, you would like to know which user is using an IP address and where the user connected from. The Identity and Location Dashboard provides you an audit trail of this information by providing the linkage between:

- Network Identity - IP address, or MAC address
- User identity - user name, host name, or domain
- Location - a wired switch port, a wireless LAN controller, or VPN gateway

The following sections provide more information about Identity and Location Dashboard:

- Data Source
- Adding to the Data Source
- Viewing Identity and Location Dashboard
- Searching for Specific Information

Data Source

This association is built over time by combining information from the following events:

- **Active Directory logon events** – such as Win-Security-540 and Win-Security-4624 that provide IP Address, User, and Domain information
- **DHCP events** – these provide IP, MAC address, and sometimes host name information. Events include:
  - WIN-DHCP-IP-LEASE-RENEW
  - WIN-DHCP-IP-ASSIGN
  - FortiGate-event-DHCP-response-Request
  - FortiGate-event-DHCP-response-Ack
  - AO-WUA-DHCP-IP-LEASE-RENEW
  - AO-WUA-DHCP-IP-ASSIGN
  - Linux_DHCPACK
  - Generic_DHCPACK
  - Cradlepoint-dhcp-updated
- **VPN logon events** – these provide IP and user information. Events include:
  - ASA-713228
  - Juniper-SecureAccess-Session-Start
  - Cisco-VPN3K-IKE/25
  - ASA-722022
  - ASA-713049-Client-VPN-Logon-success
  - FortiGate-ssl-vpn-session-tunnel-up
  - ASA-113019
- **WLAN logon events** – these provide IP and user information. Events include:
  - Aruba-1014-wlsxNUserEntryCreated,
  - FortiGate-Wireless-Client-IP-Assigned

  - Cisco-WLC-53-bsnDot11StationAssociate
- **Cloud Service logon events** – these provide IP and user information. Events include:
  - AWS-CloudTrail-SIGNIN-ConsoleLogin-Success
  - Google_Apps_login_login_success
  - Salesforce_Login_Success
  - OKTA-USER-AUTH-LOGIN-SUCCESS
  - MS_OFFICE365_UserLoggedIn_Succeeded
- **AAA Authentication events** - these provide IP and user information. Events include:
  - Win-IAS-PassedAuth
  - CisACS_01_PassedAuth
- **FortiSIEM Discovery events** – these provide IP, user, and location information. Events include:
  - PH_DISCOV_HOST_LOCATION
  - PH_DISCOV_CISCO_WLAN_HOST_LOCATION
  - PH_DISCOV_ARUBA_WLAN_HOST_LOCATION
  - PH_DISCOV_GEN_WLAN_HOST_LOCATION

Adding to the Data Source

You can modify the file `/opt/phoenix/config/identityDef.xml` file to add new events. Remember to restart the `phIdentityMaster` and `phIdentityWorker` modules on all nodes after the changes are done.

Viewing Identity and Location Dashboard

Identity and Location Dashboard is a spreadsheed style tabular dashboard that displays the following information:

- **IP Address** - IP address of a host whose identity and location is recorded in this result. You can view IP addresses with country flags in a map by clicking **Locations**.
- **MAC Address** - MAC address of the host
- **User Name** - User associated with this IP Address. Obtained from one of these event types in the Data Source section.
- **Host Name** - Host Name from which IP Address was used. Obtained from one of these event types in the Data Source section.
- **Domain** - Provides context for the User. The Information displayed here depends on the logon event type it was obtained from:
  - Windows Domain Logon: Domain name
  - VPN Logon: reporting IP address of the VPN gateway
  - WLAN Logon: reporting IP address of the WLAN controller
  - AAA Logon: reporting IP of the AAA server
- **VLAN ID** - For hosts directly attached to a switch, this is the VLAN ID of the switch port,
- **Connected to** - For hosts attached to a switch port, this is the switch name, reporting IP address, and interface name,
- **First Seen** - The time at which this entry was first created in the AccelOps Identity and Location database,
- **Last Seen** - The time at which some attribute of this entry was last updated. If there is a conflict, for example, a host acquiring a new IP address because of DHCP, then the original entry is closed and a new entry is created. A closed entry will never be updated.

- **Organization** - Displays the Organization to which the IP address belongs for Service Provider installations in a Super/Global View.

Searching for Specific Information

You can search in two ways:

- **Search single field** - use the search box.
  - For Time Range, choose the time ranges in the time range field on the top right
  - For other fields, select the fields in the Search area and enter the value to be searched
- **Search multiple fields at the same time** – use the Filter area
  - Select the field, enter the searched value and click **OK**. The condition will diaplay on the top
  - Select another field and so on.
  - You can clear a condition by clicking the **x** button.

Using the Interface Dashboard

This dashboard provides an overview of the usage of individual interfaces of Router and Firewall devices. The dashboard has three levels:

- The Top view displays device level metrics in a tabular form.
- Once you select a device in the Top view, the middle table shows the basic interface level metrics such as received and sent bytes.
- You can drill-down and get Application level usage and QoS metrics for a specific device interface. To do this, select a device in the Top view and a specific interface in the middle view.

The following sections provide more information about the Interface Usage Dashboard:

- Data Source
- Adding/Removing Devices and Interfaces to the Dashboard
- Viewing Device Level Metrics
- Viewing Interface Level Metrics
- Viewing Application Usage
- Viewing QoS Statistics
- Drill-down from Widgets
- Modifying Widget Information Display
- Changing Refresh Interval
- Forcing a Refresh

Data Source

This dashboard applies to network devices: Routers/Switches and Firewalls.

- Top View - Device level metrics are sourced from Ping monitoring and SNMP.
- Middle View – Basic interface level metrics are also sourced from SNMP.
  - The sent and receive metrics are available for all network devices implementing MIB2 (RFC 1213).
  - Latency, Jitter, and Loss are available for FortiGate Firewalls/UTM devices via SNMP – see FORTINET-FORTIGATE-MIB: `fgSystem.fgLinkMonitor` (see note below on configuration restriction).
- Bottom View
  - Application Usage is available from Netflow
  - QoS values are available for FortiGate Firewalls/UTM devices via SNMP – see FORTINET-FORTIGATE-MIB: `fgIntf.fgIntfBcs.fgIntfBcInTable.fgIntfBcInEntry` for ingress and `fgIntf.fgIntfBcs.fgIntfBcTable.fgIntfBcEntry` for egress.

Configuring Latency, Jitter and Loss

FortiGate SNMP metrics report Latency, Jitter. and Loss by link ID, which is different from SNMP interface ID. FortiSIEM requires that the user configures the link ID to be identical to SNMP interface ID.

SNMP interface IDs are available by running the SNMP walk command: `snmpwalk –v2c –c<cred> <ip> ifName`. In the output, the integer after `ifName` is the interface ID.

```
#snmpwalk –v2c –cpwd 10.1.1.1 ifName

IF-MIB::ifName.1 = STRING: port1

IF-MIB::ifName.2 = STRING: port2

IF-MIB::ifName.3 = STRING: port3
```

Here the SNMP interface ID of port1 is 1, SNMP interface ID of port2 is 2 and so on.

Use the SNMP interface ID in the `config system virtual-wan-link` command – see the examples below:

This is a basic example where the port, health check members and SNMP index can align naturally, however this is not likely to be the case with all configurations.

```
#config system virtual-wan-link
  set status enable
  config members
    edit 1
      set interface port1
    next
    edit 2
      set interface port2
    next
  end

#config health-check
    edit "HC_Backoffice"
                set server "8.8.8.8"
                set update-static-route disable
                set members 1 2
     next
```

As mentioned, to ensure that the Interface SNMP Index ID corresponds to that of the virtual WAN link and the health check, it is required that SNMP index must align. This example and description shows how to configure a FortiGate for SDWAN monitoring with FortiSIEM.

1. The interface should specify the SNMP index, for example, `105` (`set snmp-index 105`):
   ```
   config system interface
      edit "port4"
         set vdom "root"
         set ip 10.1.31.10 255.255.255.240
         set allowaccess ping https ssh
         set type physical
         set netflow-sampler both
         set inbandwidth 50192
         set outbandwidth 50192
         set ingress-shaping-profile "test_Internal"
         set egress-shaping-profile "test_Internal"
         set alias "MPLS"
          set snmp-index 105
         set preserve-session-route enable
      next
   end
   ```
2. The member ID in the virtual WAN link must be same as the SNMP index associated with the Interface, for example, `105`.
   ```
   config system virtual-wan-link
      set status enable
         config members
            edit 105
               set interface "ha"
               set gateway 10.1.31.1
               set comment "MPLS"
               next
               ……
               ……
         end
   end
   ```
3. The member ID should be added to a health check, again in this example it is `105`.
   ```
   config health-check
      edit "TEST_Backoffice"
            set server "10.10.33.240" "10.10.1.240"
            set interval 5
            set update-cascade-interface disable
            set update-static-route disable
            set members 1 2 105
      next
   end
   ```
4. When monitoring Latency, Jitter and Loss via SNMP it is now possible to identify the Interface it is associated with the health check.
   ```
   [snmpwalk -v2c -c {password} {HostIp} 1.3.6.1.4.1.12356.101.4.9.2.1
   SNMPv2-SMI::enterprises.12356.101.4.9.2.1.3.7 = Gauge32: 105
   SNMPv2-SMI::enterprises.12356.101.4.9.2.1.5.7 = STRING: "20.078" (latency)
   SNMPv2-SMI::enterprises.12356.101.4.9.2.1.6.7 = STRING: "0.736" (Jitter)
   SNMPv2-SMI::enterprises.12356.101.4.9.2.1.9.7 = STRING: "0.000" (Loss)
   ```

Adding/Removing Devices and Interfaces to the Dashboard

When you create an Interface Usage Dashboard for the first time, no devices are displayed.

Complete these steps to add a device to the dashboard:

1. Click the devices icon.
2. Select the Organization and then click the **Firewall** or **Router Switch** folder.
3. Select a device and its interface of interest.
4. Click the right arrow.
5. Click **Save**.

Complete these steps to remove a device from the dashboard:

1. Click the devices icon.
2. Select the **Device/Interface** pair from the selected list.
3. Click the left arrow.
4. Click **Save**.

This dashboard is data driven. That means the dashboard will be populated only if the metrics are present. First, create a Summary dashboard and see if the devices are present in that dashboard and display values. Then, you will see them in this dashboard.

Viewing Device Level Metrics

The Top view displays Device level metrics. The metrics are averaged over three minute intervals. To see the trend, click the trend icon next to the numbers.

Viewing Interface Level Metrics

Once you select a device in the Top view, the middle table displays the interface level metrics for that device. The metrics are averaged over three minute intervals. To see the trend, click the trend icon next to the numbers.

Viewing Application Usage

Complete these steps to see the Application Usage for an interface:

1. Select a device in the Top view.
2. Select an interface in the Middle view.
3. Click the **Application Usage** tab.

Viewing QoS Statistics

Complete these steps to see the QoS Statistics for an interface:

1. Select a device in the Top view.
2. Select an interface for the selected device in the Middle view.
3. Click the **QoS Statistics** tab.

Drill-down from Widgets

Click the magnifying glass icon on a widget. This will take you to the **ANALYTICS** tab with the values populated. From there, you can analyze the data in more depth.

Modifying Widget Information Display

Follow the steps in Widget Dashboard > Modifying widget information display.

Changing Refresh Interval

Select the refresh interval from the drop-down menu on top-right.

Forcing a Refresh

To update the whole dashboard, select the refresh icon on the top-right menu.

PCI Logging Status Dashboard

A PCI Logging Status dashboard provides an overview of which devices in PCI are logging and logging correctly. The devices are displayed by CMDB Device Groups (for example Windows, Linux, Firewalls, and so on) and by Business Units.

- Setting Up Data Source
- Creating a Dashboard
- Analyzing Dashboard Data
- Searching Dashboard Data

Setting Up Data Source

Data source setup includes the following steps:

1. Creating CMDB Devices
2. Assigning Devices to Business Units
3. Assigning Devices to PCI Business Service
4. Specifying the Criteria for Logging Correctly
5. Specifying the Violation Time Limits

Creating CMDB Devices

The devices must be available in CMDB for displaying in the dashboard. This can be done in any of the following ways:

- Manually:
    a. Go to **CMDB** > select the Device Group > click **New**.

- Discovery:
  a. Create the credentials in **ADMIN** > **Setup** > **Credentials**.
  b. Discover in **ADMIN** > **Setup** > **Discovery**.
- Device Import:
  a. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
  b. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
  c. Choose the **File Path** on the Supervisor node and place the CSV file there.
  d. For **Content Mapping**, click the edit icon.
     I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
        i. Enter Source CSV column Name for **Source Column**.
        ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist.
           A. Enter a name for the **Destination Column** of the property from the drop-down list.
           B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
        iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
        iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
        v. Click **OK**.
     II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
  e. Click **Save**.
  f. Select the Instance and click **Run**.

Assigning Devices to Business Units

For the PCI Logging dashboard to display the devices logging and logging correctly by business units, the Business Unit property needs to be set for a device. This can be done in any of the following ways:

- Manually:
  a. Go to **CMDB** > select one or more devices > click **Edit** and set the Business Unit.
  b. Click **Save**.
- Device Import:
  a. Prepare a CSV file containing Device Host Names and Business Unit as two columns. Note that the Device host names must match the host names in CMDB, if they are present.
  b. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
  c. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
  d. Choose the **File Path** on the Supervisor node and place the CSV file there.
  e. For **Content Mapping**, click the edit icon.
     I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
        i. Enter Source CSV column Name for **Source Column**
        ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist

            A. Enter a name for the **Destination Column** of the property from the drop-down list.
            B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
        iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
        iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
        v. Click **OK**.
    II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
f. Click **Save**.
g. Select the instance and click **Run**.

Assigning Devices to PCI Service

Devices in the PCI Logging Status Dashboard belong to the PCI Business Service. Assigning Devices to the PCI Service can be done in any of the following ways:

- Manually:
    a. Go to **CMDB** > **Business Services** > **Compliance** > select the PCI Service > click **Edit** and add **Devices**.
    b. Click **Save**.
- Device Import:
    a. Prepare a CSV file containing Device Host Names and isPCI property. Host names must match the host names in CMDB. The **isPCI Device Property** takes TRUE or FALSE values.
    b. Go to **ADMIN** > **Settings** > **General** > **External Integration**.
    c. Click **New** and choose **Type** as "Device" and **Direction** as "Inbound".
    d. Choose the **File Path** on the Supervisor node and place the CSV file there.
    e. For **Content Mapping**, click the edit icon.
        I. For **Column Mapping**, click **+** and enter the mapping between columns in the **Source** CSV file and the **Destination** CMDB.
            i. Enter Source CSV column Name for **Source Column**
            ii. Check **Create Property if it Does not Exist** to create the new attribute in FortiSIEM if it does not exist
                A. Enter a name for the **Destination Column** of the property from the drop-down list.
                B. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite it's current value.
            iii. If the property exists in the CMDB, select FortiSIEM CMDB attribute for **Destination Column**.
            iv. Select **Overwrite Existing Value** if the property exists in the CMDB, but you want to overwrite its current value.
            v. Click **OK**.
        II. For **Data Mapping**, click **+** and enter the mapping between data values in the external system and the destination CMDB.
    f. Click **Save**.
    g. Select the instance and click **Run**.

Note: Device Import options in Assigning Devices to Business Units and Assigning Devices to PCI Service can be combined. So it is possible to have a single file with three columns: Host Name, Business Unit, and isPCI.

Specifying Criteria for Logging Correctly

To specify a criteria for logging correctly, define the following:

- **Correctly Logging Reports** – these specify the criteria for devices in a device group to be correctly logging Authentication, FIM, and Change events. Reports must be defined separately for each CMDB device group and each functional category: Authentication, FIM, and Change. Several Correctly Logging Reports are pre-defined in **RESOURCES** > **Reports** > **Function** > **Compliance** > **Compliance Logging Policy**.
- **PCI Logging Policy** – these specify whether a CMDB Device Group needs to correctly send logs in the various functional categories: Authentication, FIM, and Change. Currently, these three functional categories are fixed. PCI Logging Policies can be specified in **ADMIN** > **Settings** > **Compliance** > **PCI**. Several PCI Logging Policies are pre-defined.

Complete these steps to customize correctly logging criteria:

1. Define a report in **RESOURCES** > **Reports** > **Function** > **Compliance** > **Compliance Logging Policy**.
2. Create a PCI Logging Policy in **ADMIN** > **Settings** > **Compliance** > **PCI** and specify the new report.

If you create your own correctly logging report, then it must have the following well-defined structure:

- **Group By Criteria** must have Customer ID and Reporting Device Name.
- **Select Clause** must have Customer ID, Reporting Device Name, and Last Event Receive Time.
- **Filtering Criteria** must be specific to the CMDB Device Group (for example: Firewalls, Routers, Windows Server, and so on) and functional logging category (for example: Authentication, FIM, and Change).

Note: It is highly recommended to clone an existing correctly logging report and modify the Filtering Criteria.

Specifying Violation Time Limits

Specify the time duration after which a device is reported to be not logging or not logging correctly. Four properties are defined in **ADMIN** > **Device Support** > **Custom Properties**:

- **lastAuthTimeLimit** - time limit for authentication logs (default 1 day)
- **lastFIMTimeLimit** - time limit for FIM logs (default 1 day)
- **lastChangeTimeLimit** - time limit for authentication log (default 1 day)
- **lastLogTimeLimit** - time limit for sending any log (default 1 day)

Similar to any other device property, you can change the global defaults and set them on a per-device basis.

Creating a Dashboard

Once you setup the data sources following the steps described in Setting up data source, the dashboard must be created manually.

The dashboard is updated nightly at 12:00 am (Supervisor time). At that time, the Supervisor:

- Runs the reports specified in **ADMIN** > **Settings** > **Compliance** > **PCI**.
- Updates the last reporting times.
- Calculates violations using the thresholds defined in **ADMIN** > **Device Support** > **Custom Properties**.

When you open the PCI Logging Status dashboard, the results are displayed from the daily run of previous night.

Analyzing Dashboard Data

The PCI Logging Status Dashboard displays:

- **Logging** - Percentage of PCI devices logging within the time period lastLogTimeLimit (default 1 day).
- **Logging Correctly** - Percentage of PCI devices logging correctly.
- **Logging By Group** - Percentage of PCI devices logging correctly broken down by Device Group.
- **Logging Correctly By Group** - Percentage of PCI devices logging correctly broken down by Device Group.
- **Logging Correctly By Business Unit, Group** - Percentage of PCI devices logging correctly broken down by Device Group.

The displays are color coded as Red, Yellow, and Green according to the tunable thresholds defined in **Dashboard** > **Threshold Setting**. By default:

- Red – less than 50%
- Yellow – between 50% and 80%
- Green – higher than 80%

If you click the entries, the devices in violation are shown in a tabular format along with the last time they reported events in each category.

Searching Dashboard Data

The Dashboard data can be searched by any Device Property, for example a Business Unit defined in **ADMIN** > **Device Support** > **Custom Properties** with Search (check-box) enabled. Click the search field under a specific category and enter the property values. Matches are exact and case sensitive.

Managing Tasks

FortiSIEM supports Data Anonymization to hide Personally Identifiable Information including IP addresses, host names, user names and email addresses in external and internal logs, Incidents, and CMDB records based on the user role for a specific period of time.

After assigning the user to anonymize a role and creating a Data Anonymization approver, the work-flow is as follows:

a. The user creates a de-anonymization request and sends to the approver.
b. The approver receives an email notification.
c. The approver then verifies and accepts the request for a specific period by setting a validity date. (An approver may also reject a request specifying a valid reason.)
d. If approved, the user can see the de-anonymized data until the validity period.
e. After the validity period, the data is hidden again. To de-anonymize the data, create a new request.

The following procedures describe how a user can submit a task request and the Data Anonymization approver approves or rejects.

- Requesting a De-anonymization Request
- Approving a De-anonymization Request

Requesting a De-anonymization Request

You can send a de-anonymization request with justification, to a Data Anonymization approver, to de-anonymize the requested data for a specific period of time.

1. Go to **TASKS** > **Request** tab.
2. Click **New** to create a de-anonymization request.
3. Select the **Approver** from the drop-down to send this request.
4. Select the **Type** of de-anonymization request.
5. Enter the **Justification** for viewing the data.
6. Click **Save** to send the request to the Data Anonymization approver.

Approving a De-anonymization Request

When a user sends a de-anonymization request, the Data Anonymization approver receives an email notification. The approver can see the list of de-anonymization requests under the **Approval** tab on login. The approver then verifies the justification and provides approval.

1. Go to **TASKS** > **Approval** tab.
2. Select the request from the list or search using the search bar and choose the following options from the drop-down list on the right:
   - **Approve** to allow de-anonymization for a specific time period under **Valid Till** or **For** the date and time listed in the time stamp field. You can click the time stamp field to choose a different date and time. The

default time is two days, if no date/time is selected.

- **Reject** to reject the de-anonymization request specifying a valid **Reason**.

3. Click **OK** to send the approval/rejection.
   The user can see the **Status** of this request under the **Request** tab on login.

Note: Fortinet understands that multiple approvers can be selected in a request. Fortinet's behavior in these situations is to acknowledge the approver who first provides approval (or rejection), and ignore any further responses. Furthermore, any approval or rejection is final, meaning it cannot be updated or changed.

If there is an approval for a task, but the another new request for the same task is sent again and another approval is granted, the approval with the shortest expiration takes precedence in this situation.

Appendix

Administrator Tools

This topic describes administration tools and scripts that are included with your FortiSIEM deployment, along with information on where to find and how to use them.

Tool	Description	How to Use It
listElasticEventAttributes.sh	listElasticEventAttributes gathers Elasticsearch event attributes for the number of days specified with the `days` value. This data is provided in a .CSV file that can	Located in `/opt/phoenix/config/javaQueryServer/`. **Usage** `[root@FortiSIEM]#listElasticEventAtributes.sh` *`destURL httpPort(9200)`* `[`*`user passwd`*`]` *`days socketTimeoutInMinute outputFile`*

Tool	Description	How to Use It
	be used to prepare a custom Elastic Search Event Attribute Template file. This file can be uploaded to replace the default Event Attribute template, potentially reducing the number of Event Attributes that Elasticsearch needs to search by default. For information on where to upload the custom file, see Configuring a Native, AWS, or Cloud Elasticsearch database. **Note**: You can change an Event Attribute type per your requirements if the default type is not suitable, but you will need to upload the custom Event Attribute template afterward.	*`destURL`* - The destination URL, normally the Elasticsearch URL. *`httpPort`* - The port number used to connect to Elasticsearch. *`user`* and *`password`* - Use your login username and password to access Elasticsesarch. *days* - The number of days you want this custom configuration to be applied, starting when the custom template is added to your Elasticsearch database configuration. *socketTimeoutInMinute*- The maximum time out period value in minutes for the socket . *`outputFile`* - The name you wish to name your output file. Example: `[root@FortiSIEM javaQueryServer# ./listElasticEventAttributes.sh https://172.30.56.180 9200 "username" "password" 3 10 /tmp/1.csv`
phTools	phTools is a simple tool for starting and stopping backend processes, and for getting change log information. When you upgrade your deployment, for example, you would use phTools to stop all backend	Log in to the FortiSIEM host machine as `root`. **Usage** `[root@FortiSIEM]#phtools` **Commands**: --changelog, --start, --stop, --stats **Target: ALL** `--change-log` also supports

Tool	Description	How to Use It
	processes.	`ERROR, TRACE, INFO,DEBUG, CRITICAL`
TestESSplitter	Run the TestESSplitter tool from a Supervisor or Worker node to export events from ElasticSearch to FortiSIEM eventDB format.	See TestESSplitter in Exporting Events to Files.
TestSegmentReader	Test Segment Reader is used to quickly read data segments in the eventdb through the command line. You can use this to manually inspect data integrity and parsed event attributes.	Log in to the FortiSIEM host machine as `root`. **Usage** `[root@FortiSIEM]#TestSegmentReader <segmentDir>`
phExportESEvent	Used to export event information from FortiSIEM Elasticsearch events to a CSV file.	See phExportESEvent in Exporting Events to Files.
phExportEvent	Used to export event information from FortiSIEM eventDB or Archive location to a CSV file. A script to selectively delete event data per org and time interval	See phExportEvent in Exporting Events to Files.
TestDBPurger	**Use Only to Delete Data for a Single Date**: You	You can find the script at `/opt/phoenix/bin/TestDBPurger`. Run it in terminal mode and follow the instructions.

Tool	Description	How to Use It
	should only use this script to delete data for a single date and organization. If you try to delete data for multiple dates, the script will fail.	

Backing Up and Restoring FortiSIEM Directories and Databases

The following topics are available:

- Backing Up and Restoring SVN
- Backing Up and Restoring the CMDB
- Backing Up and Restoring the Event Database

Backing Up and Restoring SVN

FortiSIEM uses an inbuilt SVN to store network device configuration and installed software versions.

- SVN Backup
- SVN Restore

SVN Backup

The SVN files are stored in `/svn`. Copy the entire directory to another location.

```
# cd /
```

```
# cp -r /svn /<another>/<mount>/<point>
```

SVN Restore

Copy the entire `/svn` from the backup location and rename the directory to `/svn`.

```
# cd /<another>/<mount>/<point>
```

```
# cp -r svn /
```

Backing Up and Restoring the CMDB

The FortiSIEM Configuration Management Database (CMDB) contains discovered information about devices, servers, networks and applications. You should create regular backups of the CMDB that you can use to restore it in the event of database corruption.

- CMDB Backup
- CMDB Restore

CMDB Backup

The database files are stored in `/cmdb/data`. FortiSIEM automatically backs up this data twice daily and the backup files are stored in `/data/archive/cmdb`. To perform a backup, move these files to another location. For example:

```
[root@SaaS-Sup cmdb] #cd /data/archive/cmdb

[root@SaaS-Sup cmdb] #cp phoenixdb* /<another>/<mount>/<point>
```

If your `/data` disk is on an external NFS mount then your CMDB backup is already separate from the VM infrastructure.

```
[root@SaaS-Sup cmdb]# pwd

/data/archive/cmdb

[root@SaaS-Sup cmdb]# ls -lt

total 1213952

-rw-rw-rw- 1 root root 95559457 Apr 20 03:02 phoenixdb_2011-04-20T03-00-01

-rw-rw-rw- 1 root root 93010144 Apr 19 13:04 phoenixdb_2011-04-19T13-00-02

-rw-rw-rw- 1 root root 91142941 Apr 19 03:02 phoenixdb_2011-04-19T03-00-01

-rw-rw-rw- 1 root root 89686080 Apr 18 13:03 phoenixdb_2011-04-18T13-00-02
```

CMDB Restore

If your database becomes corrupted, restore it from backup by performing these steps on you Supervisor node.

1. Stop all processes with this phTools command:
   ```
   #phtools --stop all
   ```
2. Check that all processes have stopped.
   ```
   #phstatus
   ```

   These processes will continue to run, which is expected behavior:

   ```
   phMonitor     1-01:55:17     0          992m        540m
   Apache        1-01:56:45     0          236m        9720
   AppSvr        1-01:56:35     0          3908m       758m
   DBSvr         1-01:57:06     0          383m        6656
   ```
3. Copy the latest `phoenixdb_<timestamp>` file to a directory like `/tmp` on the Supervisor host.
4. Go to `/opt/phoenix/deployment`.
5. Run `db_restore /tmp/phoenixdb_<timestamp>`.
6. When this process completes, reboot the system.
   ```
   #reboot
   ```

Backing Up and Restoring the Event Database

- Event Database Backup
- Event Database Restore

Event Database Backup

The event data is stored in `/data/eventdb`. Since this data can become very large over time, you should use a program such as rsync to incrementally move the data to another location. From version 4.2.1, the rsync program is installed on FortiSIEM by default.

Use this command to back up the eventdb.

```
#rsync -a --progress /data/eventdb /<another>/<mount>/<point>
```

Event Database Restore

To restore eventdb there are two options:

- Mount the directory where the event database was backed up.
- Copy the backup to the **/data/eventdb** directory.

These instructions are for copying the backup to the **/data/eventdb** directory.

1. Stop all running processes.
   #phtools --stop all
2. Check that all processes have stopped.
   #phstatus

   You will see that these processes are still running, which is expected behavior.
   These processes will continue to run, which is expected behavior:

   ```
   phMonitor     1-01:55:17     0            992m         540m
   Apache        1-01:56:45     0            236m         9720
   AppSvr        1-01:56:35     0            3908m        758m
   DBSvr         1-01:57:06     0            383m         6656
   ```
3. Copy the the event DB to the event DB location `/data/eventdb` If you use the `cp` command, it may appear that the command has hung if there is a lot of data to copy.
   ```
   #cp -a /backup/eventdb /data/eventdb
   ```

   Alternatively, you can use rsync and display the process status.

   ```
   #rsync -a --progress /backup/eventdb /data/eventdb
   ```
4. Once complete, restart all processes.
   ```
   #phtools --start all
   ```
5. Check that all processes have started.
   ```
   #phstatus
   ```

Configuring FortiSIEM Application Server for Proxy Connectivity

Follow these steps to configure the FortiSIEM application server to support proxy connectivity for Integrations (for example, Incidents, CMDB, Indicators of Compromise).

1. Edit the Glassfish configuration file using your favorite text editor: `/opt/glassfish/domains/domain1/config/domain.xml`.
2. Replace the `172.30.57.100` host value in the sample configuration to the Proxy Server IP, port and/or username and password in the environment.
3. If no user name and password is required, then remove the `Dhttp.proxyUser` and `Dhttp.proxyPassword` lines from the configuration file..
4. If a proxy exclusion for certain destination hosts is required, then add the `http.nonProxyHosts` configuration option to exclude the proxy server. If this is not required, then delete the line.
5. If the proxy server allows only HTTPS, then add '`s`' to `http`. For example, change `http.proxyHost` to `https.proxyHost`.

The following is a sample configuration:

```
        <jvm-options>-Dhttp.proxyHost=172.30.57.100</jvm-options>
        <jvm-options>-Dhttp.proxyPort=3128</jvm-options>
        <jvm-options>-Dhttp.proxyUser=foobar</jvm-options>
        <jvm-options>-Dhttp.proxyPassword=password</jvm-options>
        <jvm-options>-Dhttp.nonProxyHosts=172.30.59.130|localhost|update.fortiguard.com</jvm-
options>
```

Elasticsearch Usage Notes

Note: AWS Elasticsearch Service is now officially known as AWS OpenSearch Service (See here). References to "AWS Elasticsearch Service" in this documentation can be considered the same as "AWS OpenSearch Service".

Elasticsearch Feature Compatibility

There are 3 distinct Elasticsearch deployments. This table shows the versions and features supported for each deployment type. Please also see the list of Elasticsearch related known issues in Elasticsearch Known Issues in Appendix - Elasticsearch Usage Notes.

Elasticsearch Deployment	API (Insertion and Search)	Supported Data Node Types	Disk Space based Retention	Age based retention (ILM)
Self-Managed (On-Prem or Hosted)	REST	Hot, Warm, Cold	Yes	Yes (6.8 and above)
AWS OpenSearch Service (Previously known as AWS Elasticsearch Service)	REST	N/A	Yes	No
Elastic Cloud	REST	N/A	Yes	No

Merging Small Elasticsearch Indices into a Big Index

In Elasticsearch, you may see older indices with few documents. You may want to merge these smaller indices into a bigger index and create an alias for them, by following these steps.

Elasticsearch reference: https://www.elastic.co/guide/en/elasticsearch/reference/7.13/docs-reindex.html

Notes:

1. Don't merge indices that belong to different organizations together.
2. The naming format for event index is: `fortisiem-event-<Year>.<Month>.<Date>-<OrgId>-<SeqNo>`
3. When merging indices from different days together, make sure to create aliases for the different days to point to the merged index

Steps

1. Create one new index.

```
curl -XPUT '172.30.56.182:9200/fortisiem-event-2021.07.30-3-000001-merged?-
pretty' -H 'Content-Type: application/json' -d'
{
    "settings" : {
        "index" : {
           "number_of_shards" : 1
        }
    }
}
'
```

2. Merge the smaller indices into the new index created in Step 1.

```
curl -XPOST '172.30.56.182:9200/_reindex?pretty' -H 'Content-Type: applic-
ation/json' -d'
{
    "conflicts": "proceed",
    "source": {
        "index": "fortisiem-event-2021.07.30-3-000001,fortisiem-event-
2021.07.29-3-000001"
    },
    "dest": {
        "index": "fortisiem-event-2021.07.30-3-000001-merged",
        "op_type": "create"
    }
}
```

```
'
```

3. Create aliases for all (newly created) merged indices.

```
curl -X POST 'http://172.30.56.182:9200/_aliases' -H 'Content-Type: applic-
ation/json' -d'
{
   "actions":[
      {
         "add":{
            "index":"fortisiem-event-2021.07.30-3-000001-merged",
            "alias":"fortisiem-event-2021.07.30-3"
         }
      }
   ]
}
'
```

4. Delete all old indices.

```
curl -XDELETE http://172.30.56.182:9200/fortisiem-event-2021.07.30-3-000001
curl -XDELETE http://172.30.56.182:9200/fortisiem-event-2021.07.29-3-000001
```

Differences in Analytics Semantics between EventDB and Elasticsearch

FortiSIEM can run on EventDB, its own proprietary NoSQL database, or Elasticsearch. To make analytics work correctly in both environments, it is important to understand the differences. Analytics includes real-time search, historical search, and rule correlation.

FortiSIEM rule correlation and real-time search work identically in both environments, because computation is done in-memory. The database is not used.

However, for historical search, results are obtained from the database and the following differences exist in the area of string comparisons, primarily because of the way Elasticsearch, a third-party product, works.

- Issues
- Example 1 - Matching Event Types
- Example 2 - Matching Raw Messages
- Elasticsearch Support for Regex

Issues

1. EventDB is a sub-string match while Elasticsearch is a word-based match with white space as a delimiter between words. This means that the EventDB will find a match anywhere in the string. For Elasticsearch, you must explicitly include wildcard characters. This affects string operations involving the following operators: =, IN, CONTAIN, REGEXP and their inverse versions: !=, NOT IN, NOT CONTAIN and NOT REGEXP.
2. For Elasticsearch query, if an expression is defined as a display parameter and the expression includes aggregate functions, then the aggregates must be separately added as display parameters. For example, if a user wants to display an expression such as *100 - (100.0 * SUM(System Downtime))/SUM(Polling Interval)*,

then the user must also add *SUM(System Downtime)* and *SUM(Polling Interval)* to the list of display parameters.

3. Sorting does not work for
   - LAST and FIRST operators when the operand is a non-Date type.
   - HourOfDay and DayOfWeek operators
4. When sorting is used for multiple key values, e.g. Group By Source IP, Destination IP, COUNT(*) DESC, then the results are presented by the last attribute (e.g. Destination IP). FortiSIEM EventDB sorts by all the fields taken as a tuple, e.g. (Source IP, Destination IP). See https://www.elastic.co/guide/en/elasticsearch/reference/current/search-aggregations-bucket-terms-aggregation.html
   See also Example 1 - Matching Event Types and Example 2 - Matching Raw Messages
5. Elasticsearch (and lucene) do not support full Perl-compatible regex syntax. https://www.elastic.co/guide/en/elasticsearch/reference/current/regexp-syntax.html
   The table in Elasticsearch Support for Regex lists what is supported and workaround suggestions.

Example 1 - Matching Event Types

Suppose you are trying to match PH_DEV_MON for Event Type:

- In EventDB, you can write any of the following:
  - *EventType CONTAIN PH_DEV_MON*
  - *EventType CONTAIN _DEV_MON*
  - *EventType CONTAIN ph_dev_MON*
  - *EventType CONTAIN _DEV_mon*
- In Elasticsearch, you can write any of the following. Note that since event types do not end with PH_DEV_MON, you have to add the wildcard “.*” at the end.
  - *EventType CONTAIN PH_DEV_MON.**
  - *EventType CONTAIN .*_DEV_MON.**

Suppose you are trying to exactly match PH_DEV_MON_INTF_UTIL for Event Type:

- In EventDB, you can write any of the following:
  - *EventType = PH_DEV_MON_INTF_UTIL*
  - *EventType = ph_dev_mon_intf_util*
  - *EventType = ph_dev_MON_INTF_UTIL*
- In Elasticsearch, you must write:
  - *EventType = PH_DEV_MON_INTF_UTIL*

Example 2 - Matching Raw Messages

REGEX matching using the FortiSIEM eventDB is case insensitive.

Suppose the raw message is:

- *XYZ info=”ABB123CCC”*

To match this raw message:

- In EventDB, you can write any of the following:
  - *Raw Message REGEX bb[0-9]*c*X?*
  - *Raw Message REGEX Abb[0-9]*c*X?"$*
- In Elasticsearch, you can write any of the following:
  - *Raw Message REGEX BB[0-9]*c*X?*
  - *Raw Message REGEX .*BB[0-9]*c*X?*

Elasticsearch Support for Regex

Regex syntax	Elasticsearch support	Workaround (if any)
. ? + * |	Yes	
?? +? *?	No	Not possible
()	Yes	
(?:)	No	Use () instead. Replace (?:com|net|org) with (com|net|org)
[]	Yes	
[^]	Yes	
{}	Yes	
{}?	No	Not possible
^ $	No	Elasticsearch requires full match. Add .* for partial match.
\d \D \w \W \s \S	No	Replace \d with [0-9] Replace \D with [^0-9] Replace \w with [a-zA-Z0-9_] Replace \W with [^a-zA-Z0-9_] Replace \s with [\t \n \r] Replace \S with [^ \t \n \r]
\b \A \Z	No	Not possible
(?i:)	No	Not possible
\1 \2	No	Not possible

Regex syntax	Elasticsearch support	Workaround (if any)
(?=)	No	Not possible
(?!)	No	Not possible
(?#)	No	Not possible
Case sensitive match on keyword attributes	No	If an attribute is not a keyword, it will be stored as lower case in Elasticsearch. Use abc or [aA][bB][cC]
Entire raw message search	No	Elasticsearch tokenizes string attributes using space as tokens. So, it is not possible to search the whole string. Use CONTAIN operator.

Elasticsearch Known Issues

Note: AWS Elasticsearch Service is now officially known as AWS OpenSearch Service. References to "AWS Elasticsearch Service" can be considered the same as "AWS OpenSearch Service".

1. With pre-compute queries via Rollup, sorting on AVG() is not supported by Elasticsearch. See here.
2. Elasticsearch pre-compute is done using the Elasticsearch Rollup API, which requires raw events matching the pre-compute search condition be populated into a separate Elasticsearch index. This operation can become very expensive if a large number of events match the pre-compute search filter condition. Fortinet recommends that the user set up a report for pre-compute only if the search filter conditions for the pre-compute interval result in less than 100K entries. This allows the pre-computed result to exactly match the adhoc report for faster operation. Specifically, follow these steps:
   A. Suppose you want to run a report in pre-compute mode, with the operation running pre-computations hourly. This means the report will be run hourly, and when a user runs for a longer interval, the pre-computed results would be combined to generate the final result.
   B. Check for pre-compute eligibility.
      i. Run the report in adhoc mode for 1 hour by removing group by conditions.
      ii. If the number of rows is less than 100K, then the original report is a candidate for pre-computation.

         Note: This is for Elasticsearch only. If the number of results in #Bii is more than 100K, then the pre-computed results and adhoc results will be different since FortiSIEM caps the number of results retrieved via Rollup API to be less than 100K.
3. AWS Managed Elasticsearch 7.x limits search.max_buckets to 10K. In 6.8 there was no such limit. This may cause Elasticsearch to throw an exception and not return results for aggregated queries. Contact AWS Managed Elasticsearch Support to increase search.max_buckets to a large value (recommended 10M). There is an API to change this value, but this does not work in AWS Managed Elasticsearch. Therefore you must contact AWS Managed Elasticsearch Support before running queries.

   a. For general discussion about search.max_buckets, see here.

   b. For general discussion about this issue, see here.

   c. Elasticsearch does not consistently handle sorting functions when there are NULL values. For example:

      i. AVG(): NULL values are at the bottom.

      ii. MIN(): NULL values are considered to be the largest value possible, so if you choose ASC (respectively DESC) order, NULL values appear at the bottom (respectively top).

      iii. MAX():NULL values are considered to be the smallest value possible, so if you choose ASC (respectively DESC) order, NULL values appear at the top (respectively bottom).

4. Pre-compute queries do not work with the HAVING clause. Currently, the FortiSIEM GUI is preventing this operation. For public discussion about Rollup search and query scripts, see here.

5. The HourOfDay(Event Receive Time) and DayOfWeek(Event Receive Time) calculations are incorrect if Elasticsearch and Supervisor are in different time zones.

6. In Elasticsearch, a non-aggregated query spanning multiple display pages requires 1 open scroll context per shard. This enables the user to visit multiple pages and see the results. Elasticsearch has a (configurable) limit on open scroll contexts. This is defined in `phoenix_config.txt` on the Supervisor node. By default, FortiSIEM limits to 1000 open scroll contexts and each context remains open for 60 seconds, as shown.

   ```
   [BEGIN Elasticsearch]
   ...


   max_open_scroll_context=1000
   scroll_timeout=60000

   ...
   [END Elasticsearch]
   ```

   When the open scroll context limit is reached, Elasticsearch throws an exception and returns partial results. When 80% of the search context limit is reached, FortiSIEM writes a log in `/opt/phoenix/log/javaQueryServer.log`, as shown.

   ```
   com.accelops.elastic.server.task.ChoresTask - [PH_JAVA_QUERYSERVER_WARN]:
   [eventSeverity]=PHL_WARNING,[phEventCategory]=3,[procName]=javaQueryServer,
   [phLogDetail]=node=node236, openContexts=1000, it has 80 percent of available
   search contexts open
   ```

- You can increase `max_open_scroll_context`. However, AWS Elasticsearch does not allow more than 500 open scroll contexts, and will enforce a 500 limit. Be careful in choosing very high `max_open_scroll_context`. It is strongly recommended to use a test instance to experiment with your number prior to production.
- After changing `max_open_scroll_context`, you need to apply Test & Save from the GUI for changes to take effect. This is because `max_open_scroll_context` is a cluster level setting.
- You can change `scroll_timeout`, but after changing this value, you must restart the Java Query Server on the Supervisor for the change to take effect.

  For Elasticsearch discussion forum information on this topic, see here.

7. The maximum number of group by query result is 2,000 by default. You can change the setting in `phoenix_config.txt` on the Supervisor node by taking the following steps.
   a. Change the setting: `aggregation_size=2000`
   b. Restart the JavaQueryServer.

Exporting Events to Files

- phExportESEvent
- phExportEvent
- TestESSplitter

phExportESEvent

You can run the phExportESEvent tool from a Supervisor or Worker node to export events to CSV files. The file will contain these fields:

This code block shows the commands that you can use with `phExportESEvent`, followed by a table that describes them in more detail.

```
phExportESEvent <ESUrl> <ESPort> <ESDeploymentType> "<ESUser>" "<ESPassword>" <ESIndexName> <ReportingDevIp> <destDir> <splitThreads> <LogLevel>
```

pHExportESEvent Command	Description
`ESUrl`	The Elasticsearch URL. Example, http://192.0.2.0.
`ESPort`	The Elasticsearch coordinating node port, e.g. 9200.
`ESType`	Provide the Elasticsearch type. 1: Native 2: AWS Elasticsearch Service 3: Elasticsearch Cloud
`ESUser`	Provide the Elasticsearch username. "" means no username.
`ESPassword`	Provide the Elasticsearch password. "" means no password.
`ESIndexName`	The name of the Elasticsearch index to be exported, for example, `fortisiem-event-2020.06.17-1`.
`ReportDevIp`	The IP address of the report device to be used to select events to export. "" means select all devices.
`destDir`	The export directory: `output_dir`.

pHExportESEvent Command	Description
`splitThreads`	The number of threads to be used for export, e.g., 10.
`logDevel`	The debug level for script output printing: `INFO` or `DEBUG`.

Example Usage

- Native Elasticsearch Deployment Example
- AWS Elasticsearch Service Deployment Example
- Elasticsearch Cloud Deployment Example

Native Elasticsearch Deployment Example

```
phExportESEvent https://192.0.2.0 9200 1 "Joe.123--test" "password" fortisiem-event-
2021.08.05-1-000001 "192.0.2.4" /archive/ 10 INFO
```

AWS Elasticsearch Service Deployment Example

```
phExportESEvent https://search-eesna78-aaaa4ysukru3ui4ayaz2yya3km.us-east-1.es-
.amazonaws.com 443 2 "key" "secret" fortisiem-event-2021.09.29-1 "" /archive/ 10 INFO
```

Elasticsearch Cloud Deployment Example

```
phExportESEvent https://cpaagg33-d11e01.es.us-central1.gcp.cloud.es.io 9243 3
"elastic" "password" fortisiem-event-2021.10.01-1-000001 "" /archive/ 10 INFO
```

Output File Name Format

When exporting events from all devices, the output file name is like `CSVExport_`*`<ES Index Name>`*`_`*`<thread_no>`*

Example: `CSVExport_fortisiem-event-2021.08.30-1_16`

When exporting events from one specific device, the output file name is like `CSVExport_`*`<ES Index Name>`*`_`*`<reportDevIp>`*`_`*`<thread_no>`*

Example: `CSVExport_fortisiem-event-2021.08.30-1_192.168.20.1_10`

Note that each thread will write its own output file and thus if you are using 20 threads, there will be twenty output files. `thread_no` will be empty if you are using only 1 thread to do export.

Example Files

```
$ /opt/phoenix/bin/phExportESEvent http://192.0.2.5 "" "" fortisiem-event-2021.08.30-
1 "" /opt/phoenix/bin/result/ 20 INFO
```

The above command will use 20 threads to export events. The result directory will contain the following files, with each thread having its own file.

```
    -rw-rw-r-- 1 admin admin 9396665 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
    16
```

```
-rw-rw-r-- 1 admin admin 9412763 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
19
-rw-rw-r-- 1 admin admin 9442517 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
17
-rw-rw-r-- 1 admin admin 9433077 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
14
-rw-rw-r-- 1 admin admin 9435935 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_7
-rw-rw-r-- 1 admin admin 9413179 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_9
-rw-rw-r-- 1 admin admin 9363945 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
10
-rw-rw-r-- 1 admin admin 9386964 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
18
-rw-rw-r-- 1 admin admin 9397264 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
13
-rw-rw-r-- 1 admin admin 9436265 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
11
-rw-rw-r-- 1 admin admin 9422549 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_8
-rw-rw-r-- 1 admin admin 9422993 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_4
-rw-rw-r-- 1 admin admin 9416394 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
15
-rw-rw-r-- 1 admin admin 9386560 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_3
-rw-rw-r-- 1 admin admin 9442445 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_5
-rw-rw-r-- 1 admin admin 9355790 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_
12
-rw-rw-r-- 1 admin admin 9396961 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_0
-rw-rw-r-- 1 admin admin 9336639 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_2
-rw-rw-r-- 1 admin admin 9381330 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_6
-rw-rw-r-- 1 admin admin 9371624 Sep  2 14:39 CSVExport_fortisiem-event-2021.08.30-1_1
```

Exported CSV File Content

The following event fields are exported:

"event receive time", "report device IP","report device name", and "raw event message"

Below is sample output:

```
1630359024,192.168.19.1,HOST-192.168.19.1,<134>Jul 11 2008 14:38:23: %ASA-6-302014:
Teardown TCP connection 14374203 for outside:192.168
.1.146/21 to inside:192.168.1.42/42005 duration 0:00:30 bytes 0 SYN Timeout
1630359026,192.168.19.1,HOST-192.168.19.1,<134>Jul 11 2008 14:39:24: %ASA-6-302016:
Teardown UDP connection 14374987 for outside:192.168
.1.126/161 to inside:192.168.1.42/42005 duration 0:02:01 bytes 0
```

```
1630359340,192.168.1.2,Sj-Dev-W-FDR-Web-01,<7>Aug 30 14:35:40 Sj-Dev-W-FDR-Web-01 ker-
nel: [28068]: host clock rate change request 3327 -
> 1619
1630359341,192.168.0.30,HOST-192.168.0.30,"<4>kernel:   ""42 02 40 01 00 00 00 00 10
00 00 00 00 00 00 00 """
1630359341,192.168.0.30,HOST-192.168.0.30,<139>httpd[20001]: [error] [client
192.168.20.43] File does not exist: /var/www/html/favicon.i
co
1630359343,192.168.19.1,HOST-192.168.19.1,<134>Jul 11 2008 17:37:02: %ASA-6-302021:
Teardown ICMP connection for faddr 192.168.20.15/0 g
addr 192.168.19.1/0 laddr 192.168.19.1/0
1630359344,192.168.0.30,HOST-192.168.0.30,<3>kernel: ATAPI device hdc:
1630359345,192.168.0.30,HOST-192.168.0.30,"<3>kernel:   Cannot read medium - incom-
patible format -- (asc=0x30, ascq=0x02)"
1630359349,192.168.0.30,HOST-192.168.0.30,<4>kernel: hdc: packet command error: error-
r=0x54
1630359350,192.168.0.30,HOST-192.168.0.30,<4>kernel: ide: failed opcode was 100
```

phExportEvent

You can run the phExportEvent tool from a Supervisor or Worker node to export events to CSV files. The file will contain these fields:

- Customer Id (applicable to SP license)
- Reporting Device IP
- Reporting Device Name
- Event Received Time
- Raw Message

This code block shows the commands that you can use with `phExportEvent`, followed by a table that describes them in more detail.

```
phExportEvent {--dest DESTINATION_DIR} {--starttime START_TIME | --relstarttime
RELATIVE_START_TIME} {--endtime END_TIME | --relendtime RELATIVE_END_TIME} [--dev
DEVICE_NAME] [--org ORGANIZATION_NAME] [-t TIME_ZONE]
```

pHExportEvent Command	Description
`DESTINATION_ DIR`	Destination directory where the exported event files are saved.

pHExportEvent Command	Description
`START_TIME`	Starting time of events to be exported. The format is YYYY-MM-DD HH:MM:SS {+|-} TZ. If TZ is not given, the local time zone of the machine where the script is running will be used. Example: `2010-03-10 23:00:00 -8` means Pacific Standard Time, 23:00:00 03/10/2010. `2010-07-29 10:20:00 +5:30` means India Standard Time 10:20:00 07/29/2010.
`RELATIVE_ START_ TIME`	This must be used together with `END_TIME`. Starting time of events to be exported is relative backwards to the end time, specified using `--endtime END_TIME`. The format is `{NUM}{d|h|m}` where `NUM` is the number of days or hours or minutes. For example, `-- relstarttime 5d` means the starting time is 5 days prior to the ending time.
`END_TIME`	Ending time of events to be exported. The format is the same as described for `START_TIME`.
`RELATIVE_END_ TIME`	This must be used together with `START_TIME`. Ending time of events to be exported is relative forward to the start time, specified using `START_TIME`. The format is the same that is used for RELATIVE_START_TIME.
`DEVICE_NAME`	Provide the host name or IP address of the device with the events to be exported. Use a comma-separated list to specify multiple IPs or host names, for example, `--dev 10.1.1.1,10.10.10.1,router1,router2`. Host name is case insensitive.
`ORGANIZATION_ NAME`	This is used only for Service Provider deployments. Provide the name of the organization with the events to be exported. To specify multiple organizations, enter a command for each organization, for example, `--org "Public Bank" --org "Private Bank"`. The organization name is case insensitive.
`TIME_ZONE`	Specifies the time zone used to format the event received time in the exported event files. The format is `{+|-}TZ`, for example, `-8` means Pacific Standard Time, `+5:30` means India Standard Time.

TestESSplitter

You can run the TestESSplitter tool from a Supervisor or Worker node to export events from ElasticSearch to FortiSIEM eventDB format. It is located in n `/opt/phoenix/bin/`.

This code block shows the commands you can use with `TestESSplitter` followed by a table that describes them in more detail.

```
TestESSplitter <ESBroker> <ESPort> <ESClusterType> <ESUser> <ESPassword> <IndexName>
<destDir> <splitThreads> <logLevel>
```

Example: `/opt/phoenix/bin/TestESSplitter https://<destination>/ 443 2 elasticuser elasticpassword fortisiem-event-2021.07.13-1-000001 /archivedirectory 10 INFO`

Note: For <*destDir*>, a trailing slash is mandatory. Example: `https://<destDir>`**/**.

TestESSplitter Command	Description
`ESBroker`	The IP of ElasticSearch Co-ordinator node.
`ESPort`	The port used for ElasticSearch.
`ESClusterType`	The ElasticSearch Cluster type. Values are "1" for Native, "2" for Amazon OpenSearch Service (previously known as Amazon Elasticsearch Service), and "3" for Elastic Cloud.
`ESUser`	The ElasticSearch username for authentication.
`ESPassword`	The ElasticSearch password for authentication.
`IndexName`	Provide an Index name. A new Index is created per day. Here is an example index name, `fortisiem-event-2021.05.14-2000-000001` where“fortisiem-event-2021.05.14” is the day and “2000” is the Organization ID. To find a list of indexes, run this command: `curl -XGET '10.10.2.5:9200/_cat/shards?v'` replacing `10.10.2.5` with the IP of a Co-ordinator node.
`destDir`	Destination directory where the exported events are saved in FortiSIEM eventDB format.
`splitThreads`	Number of threads.
`logLevel`	INFO or DEBUG level log messages.

See TestESSplitter Example for an example.

Example Usage

- TestESSplitter Example

TestESSplitter Example

```
[root@fsm]# /opt/phoenix/bin/TestESSplitter 10.10.2.5 "" "" fortisiem-event-
2021.05.14-2000-000001 /root/output 10 INFO

[PH_MODULE_LOG_LEVEL_CHANGE]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=phBaseProcess.cpp,[lineNumber]=675,[oldLogLevel]=2047,[newLogLevel]=424,[phLo-
gDetail]=Module received log level change
```

```
[PH_MODULE_LOCAL_CONFIG_LOADED]:[eventSeverity]=LM_INFO,[procName]=<unknown>,
[fileName]=phConfigLoader.cpp,[lineNumber]=166,[configName]=global,[phLo-
gDetail]=Module loaded local config successfully
[PH_MODULE_LOCAL_CONFIG_LOADED]:[eventSeverity]=LM_INFO,[procName]=<unknown>,
[fileName]=phConfigLoader.cpp,[lineNumber]=166,[configName]=phdatamanager,[phLo-
gDetail]=Module loaded local config successfully
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=phHttpClientPool.cpp,[lineNumber]=46,[phLogDetail]=phHttpClientPool: init host-
s/port/auth/header=10.10.2.5/9200/:****/Content-Type: application/json
*   Trying 10.10.2.5...
* TCP_NODELAY set
* Connected to 10.10.2.5 (10.10.2.5) port 9200 (#0)
> GET / HTTP/1.1
Host: 10.10.2.5:9200
Accept: */*
Content-Type: application/json

< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 530
<
* Connection #0 to host 10.10.2.5 left intact
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1732,[phLogDetail]=Elastic init success:
http://10.10.2.5:9200/
* Found bundle for host 10.10.2.5: 0x18f0870 [can pipeline]
* Re-using existing connection! (#0) with host 10.10.2.5
* Connected to 10.10.2.5 (10.10.2.5) port 9200 (#0)
> GET /_cat/indices/fortisiem-event-2021.05.14-2000-000001?h=pri,rep,docs.count
HTTP/1.1
Host: 10.10.2.5:9200
Accept: */*
Content-Type: application/json
…
…
…
…

<
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 66 for
index fortisiem-event-2021.05.14-2000-000001 slice 1 max 10
* Connection #0 to host 10.10.2.5 left intact
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 61 for
index fortisiem-event-2021.05.14-2000-000001 slice 8 max 10
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
```

```
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 47737
<
* Connection #0 to host 10.10.2.5 left intact
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 53 for
index fortisiem-event-2021.05.14-2000-000001 slice 3 max 10
< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 47178
<
* Connection #0 to host 10.10.2.5 left intact
< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 41910
<
* Connection #0 to host 10.10.2.5 left intact
< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 53258
<
* Connection #0 to host 10.10.2.5 left intact
< HTTP/1.1 200 OK
< content-type: application/json; charset=UTF-8
< content-length: 60587
<
* Connection #0 to host 10.10.2.5 left intact
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 59 for
index fortisiem-event-2021.05.14-2000-000001 slice 4 max 10
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 53 for
index fortisiem-event-2021.05.14-2000-000001 slice 7 max 10
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 68 for
index fortisiem-event-2021.05.14-2000-000001 slice 6 max 10
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=1974,[phLogDetail]=Elastic succeed hits total 46 for
index fortisiem-event-2021.05.14-2000-000001 slice 2 max 10
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
```

```
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=EventLoader.cpp,[lineNumber]=2002,[phLogDetail]=Elastic index query completed 0
seconds
[PH_GENERIC_INFO]:[eventSeverity]=LM_INFO,[procName]=<unknown>,[fileName]-
]=TestESSplitter.cpp,[lineNumber]=82,[phLogDetail]=Events processed for split: 559
3.15
```

The result will be eventDB structured directories and files.

```
[root@fsm]# ls -l /root/output/
total 0
drwx------ 3 root root 22 May 14 15:25 CUSTOMER_2000
[root@fsm]# ls -l /root/output/CUSTOMER_2000/
total 0
drwx------ 3 root root 19 May 14 15:25 internal
[root@fsm]# ls -l /root/output/CUSTOMER_2000/internal/
total 0
drwx------ 3 root root 37 May 14 15:25 18761
[root@fsm]# ls -l /root/output/CUSTOMER_2000/internal/18761/
total 4
drwx------ 12 root root 4096 May 14 15:25 450264-450287-168428094
[root@fsm]# ls -l /root/output/CUSTOMER_2000/internal/18761/450264-450287-168428094/
total 0
drwx------ 3 root root 18 May 14 15:25 seg-1-0-48-1620951010-1620971132
drwx------ 3 root root 18 May 14 15:25 seg-1-1-70-1620950470-1620971172
drwx------ 3 root root 18 May 14 15:25 seg-1-2-35-1620950916-1620971172
drwx------ 3 root root 18 May 14 15:25 seg-1-3-66-1620951819-1620969371
drwx------ 3 root root 18 May 14 15:25 seg-1-4-61-1620950830-1620970642
drwx------ 3 root root 18 May 14 15:25 seg-1-5-59-1620950830-1620971132
drwx------ 3 root root 18 May 14 15:25 seg-1-6-53-1620950482-1620970632
drwx------ 3 root root 18 May 14 15:25 seg-1-7-46-1620951278-1620971182
drwx------ 3 root root 18 May 14 15:25 seg-1-8-53-1620950470-1620970452
drwx------ 3 root root 18 May 14 15:25 seg-1-9-68-1620950650-1620971132
```

Flash to HTML5 GUI Mapping

This section describes the mapping between FortiSIEM Flash-based GUI (available for all AccelOps and FortiSIEM versions up to 5.0.0) and FortiSIEM HTML5-based GUI (available from FortiSIEM version 5.0.0). This mapping enables you to familiarize with AccelOps/FortiSIEM Flash-based GUI to quickly find the corresponding functions in FortiSIEM HTML5-based GUI.

FortiSIEM HTML5-based GUI is similar to the earlier Flash-based GUI. In addition to the Dashboard, Analytics, Incidents, CMDB and Admin tabs from Flash-based GUI, the HTML5-based GUI adds two new tabs - CASES and RESOURCES.

The following tables show the mapping for each tab.

Dashboard

Flash Element	HTML5 Element
Executive Summary	DASHBOARD > Network Dashboard > Summary DASHBOARD > Server Dashboard > Summary DASHBOARD > Storage Dashboard > Summary
Incident Dashboard > Table View	INCIDENTS > List View
Incident Dashboard > Fishbone View	*Currently not available*
Incident Dashboard > Topological View	*Currently not available*
Incident Dashboard > Calendar View	*Currently not available*
Incident Dashboard > Location View	INCIDENTS > List View > Action > Locations
My Dashboard	DASHBOARD > New Dashboard (can be imported)
Summary Dashboard > Biz Service Summary	DASHBOARD > Click **+** to add new Dashboard and choose **Type** as 'Business Service Dashboard'.
Summary Dashboard > All Device	DASHBOARD > Network Dashboard > Summary DASHBOARD > Server Dashboard > Summary DASHBOARD > Storage Dashboard > Summary
Summary Dashboard > Network Device	DASHBOARD > Network Dashboard > Summary
Summary Dashboard > Servers	DASHBOARD > Server Dashboard > Summary
Summary Dashboard > EC2 Systems	DASHBOARD > Amazon Web Services Dashboard > Summary
Summary Dashboard > Azure Systems	*Currently not available as built-in (user can create their own)*
Summary Dashboard > All VMs	DASHBOARD > VMWare Dashboard > VM DASHBOARD > VMWare Dashboard > ESX
Summary Dashboard > My Devices	DASHBOARD > Any customized summary dashboard can be used to manage devices.
Availability / Performance > Hardware	DASHBOARD > Network Dashboard > Hardware

Flash Element	HTML5 Element
Summary	DASHBOARD > Server Dashboard > Hardware
Storage	DASHBOARD > NetApp Dashboard DASHBOARD > VNX Dashboard
Top Monitored Processes	*Currently not available*
Apache Servers	DASHBOARD > Web Server Dashboard
Exchange Servers	*Currently not available as built-in (user can create their own)*
Windows DHCP	*Currently not available as built-in (user can create their own)*
Windows DNS	*Currently not available as built-in (user can create their own)*
IIS Servers	DASHBOARD > Web Server Dashboard
ASP.NET Servers	*Currently not available*
MS Active Directory Servers	*Currently not available*
MS SQL Servers	DASHBOARD > Database Dashboard
Oracle DB Servers	DASHBOARD > Database Dashboard
MySQL Servers	DASHBOARD > Database Dashboard
VoIP Summary	*Currently not available as built-in (user can create their own)*
IPSLA Summary	*Currently not available as built-in (user can create their own)*
STM Summary	*Currently not available as built-in (user can create their own)*
Environmental Dashboard	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Network > Generic	DASHBOARD > Network Dashboard > Availability DASHBOARD > Network Dashboard > Performance DASHBOARD > Network Dashboard > Login/Change DASHBOARD > Network Dashboard > Change

Flash Element	HTML5 Element
Dashboard By Function > Network > Netflow	DASHBOARD > Network Dashboard > Netflow
Dashboard By Function > Network > VoIP	DASHBOARD > Network Dashboard > VoIP
Dashboard By Function > Network > IPSLA	DASHBOARD > Network Dashboard > IPSLA
Dashboard By Function > Server	DASHBOARD > Server Dashboard
Dashboard By Function > Virtualization	DASHBOARD > VMWare Dashboard
Dashboard By Function > Application > Generic	DASHBOARD > Server Dashboard > Availability DASHBOARD > Server Dashboard > Performance
Dashboard By Function > Application > Mail	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Application > Database	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Application > Web	DASHBOARD > Web Server Dashboard
Dashboard By Function > Storage	DASHBOARD > NetApp Dashboard DASHBOARD > VNX Dashboard
Dashboard By Function > Environment	*Currently not available as built-in (user can create their own)*
Dashboard By Function > Event/Log Mgmt	DASHBOARD > FortiSIEM Dashboard
Dashboard By Function > Fortinet Security Fabric	DASHBOARD > Fortinet Security Fabric

Analytics

Flash Element	HTML5 Element
Real Time Search	ANALYTICS
Historical Search	ANALYTICS

Flash Element	HTML5 Element
Reports	RESOURCES > Reports
Generated Reports	ANALYTICS > 🗁 ▾
Identity and Location Report	DASHBOARD > Click **+** to add new Dashboard and choose **Type** as 'Identity and Location Dashboard'.
Rules	RESOURCES > Rules
Audit	*Currently not available*
Incident Notification Policy	ADMIN > Settings > General > Notification
Remediations	RESOURCES > Remediations
Display Column Sets	*Currently not available*
Filter Column Sets	*Currently not available*

Incidents

Flash Element	HTML5 Element
Incidents	INCIDENTS > List View
Tickets	CASE
IPS Vulnerability Map	*Currently not available*

CMDB

Flash Element	HTML5 Element
Topology	*Currently not available*
Devices	CMDB > Devices
Applications	CMDB > Applications
Users	CMDB > Users
Business Services	CMDB > Business Services

Flash Element	HTML5 Element
Networks	RESOURCES > Networks
Watch Lists	RESOURCES > Watch Lists
Protocols	RESOURCES > Protocols
Event Types	RESOURCES > Event Types
Malware Domains	RESOURCES > Malware Domains
Malware IP	RESOURCES > Malware IPs
Malware URLs	RESOURCES > Malware URLs
Malware Processes	RESOURCES > Malware Processes
CMDB Reports	CMDB > CMDB Reports
Country Groups	RESOURCES > Country Groups
Malware Hash	RESOURCES > Malware Hash
Default Password	RESOURCES > Default Password
Anonymity Networks	RESOURCES > Anonymity Networks
User Agents	RESOURCES > User Agents

Admin

Flash Element	HTML5 Element
Admin > Startup	*Not available*
Admin > Setup Wizard > Organizations	ADMIN > Setup > Organizations
Admin > Setup Wizard > Windows Agents	ADMIN > Setup > Windows Agents
Admin > Setup Wizard > Credentials	ADMIN > Setup > Credentials
Admin > Setup Wizard > Discovery	ADMIN > Setup > Discovery
Admin > Setup Wizard > Pull Events	ADMIN > Setup > Pull Events

Flash Element	HTML5 Element
Admin > Setup Wizard > Monitor Change/Performance	ADMIN > Setup > Monitor Performance
Admin > Setup Wizard > Synthetic Transaction Monitoring	ADMIN > Setup > STM
Admin > Device Support > Device/App Types	ADMIN > Device Support > Device/App
Admin > Device Support > Event Attribute Types	ADMIN > Device Support > Event Attribute
Admin > Device Support > Event Types	ADMIN > Device Support > Event
Admin > Device Support > Parsers	ADMIN > Device Support > Parser
Admin > Device Support > Performance Monitoring	ADMIN > Device Support > Monitoring
Admin > Device Support > Custom Properties	ADMIN > Device Support > Custom Property
Admin > Device Support > Dashboard Columns	*Currently not available*
Admin > Collector Health	ADMIN > Health > Collector Health
Admin > Cloud Health	ADMIN > Health > Cloud Health
Admin > Elasticsearch health	ADMIN > Health > Elasticsearch health
Admin > General Settings > System	ADMIN > Settings > System
Admin > General Settings > Analytics	ADMIN > Settings > Analytics
Admin > General Settings > Discovery	ADMIN > Settings > Discovery
Admin > General Settings > Monitoring	ADMIN > Settings > Monitoring
Admin > General Settings > UI	ADMIN > Settings > System > UI
Admin > General Settings > Email Template	ADMIN > Settings > System > Email
Admin > General Settings > Event Handling	ADMIN > Settings > Event Handling
Admin > General Settings > Kafka Config	ADMIN > Settings >System > Kafka
Admin > General Settings > External Authentication	ADMIN > Settings > General > Authentication
Admin > General Settings > Integration	ADMIN > Settings > General > Integration

Flash Element	HTML5 Element
Admin > General Settings > External Lookup	ADMIN > Settings > System > Lookup
Admin > General Settings > Escalation Policy	ADMIN > Settings > General > Escalation
Admin > Discovery Results	ADMIN > Setup > Discovery > History
Admin > License Management	ADMIN > License > License
Admin > Usage Information	ADMIN > License > Usage
Admin > Role Management	ADMIN > Settings > Role
Admin > Maintenance Calendar	ADMIN > Setup > Maintenance
Admin > Event DB Management	*Currently not available*
Admin > Data Update	ADMIN > Data Update

Flow Support

FortiSIEM supports different formats of flow data. These must be sent to FortiSIEM on the correct port. Refer to the table for more information.

Flow Type	Supported Versions	Protocol/Ports Used
NetFlow	v5, v9	UDP/2055
IPFIX	v10	UDP/2055
sFlow	v5	UDP/6343
JFlow	v5	UDP/6343

FortiSIEM Charts and Views

FortiSIEM provides a variety of charts and maps to better help you understand and analyze your incident data. You can access these charts and views from the widget dashboard settings (see Modifying widget information display) or by clicking the 📈 ▾ drop-down icon in the ANALYTICS page (see Viewing Historical Search Results).

Chart/View	Description	Display Settings	Requirements
Aggregation (Bar) View	Displays data similar to a bar chart.	Select the Aggregate Field (**Column**) to display and their colors. You can also reverse the color map.	At least one numeric column is required.
Aggregations (Donut) View	Displays data similar to a pie chart.	Select the Aggregate Field (**Column**) to display since the report may have multiple Aggregate Fields.	At least one numeric column is required.
Choropleth Map (Region Map)	A thematic map in which areas are shaded or patterned in proportion to the measurement of the statistical variable being displayed on the map.	Select the **Location** and **Value** from the drop-down lists.	At least one location column is required. Configure **Google Maps API Key** in **ADMIN > Settings > System > UI** See UI Settings.
Chord View	A graphical method of displaying the inter-relationships between data in a matrix. The data is arranged radially around a circle with the relationships between the data points typically drawn as arcs connecting the data.	Select the incident **Source**, **Target**, and **Value** from the drop-down lists.	At least two key columns and one numeric column are required.
Clustered Bubble Chart	You can use a bubble chart instead of a scatter chart if your data has three data series that each contain a set of values. The sizes of the bubbles are determined by the values in the third data series.	Select the **Column** from the drop-down list.	At least one numeric column is required.
Column Trend View	Displays positive or negative trends in the data.	None	None
Combo View	Displays an aggregate field and a line chart.	Select the Aggregate Field (**Column**) to display and the colors. You can also reverse the color map and set color thresholds.	One GROUP BY column and one aggregation column is required.
Geo Map (Map View)	Displays the IP addresses in a geographic map.	Public or private IP addresses with location defined in **ADMIN > Settings > Discovery > Location**. See Setting Location.	At least one numeric column is required.

Chart/View	Description	Display Settings	Requirements
Heat Map	Displays two event attributes and a numerical aggregate value.	Select the Heat map coordinates **X** and **Y**, and an associated **Value**.	At least two key columns and one numeric column are required.
Line View	Data displays as a line (Line Chart).	Select the **Column** to display from the drop-down list. You can choose to display the data as a **Stacked Area** or a **Line View** (non-stacked).	One GROUP BY column and one aggregation column is required.
Map View	See Geo Map.		
Pivot Table View	A table of statistics that summarizes the data of a more extensive table.	Select the **Key Column** and **Value Column** from the drop-down lists.	At least two GROUP BY columns and one numeric column are required.
Sankey Diagram	A specific type of flow diagram, in which the width of the arrows is shown proportionally to the flow quantity.	Select the **Source**, **Target**, and **Value** from the drop-down lists.	At least two GROUP BY columns and one numeric column are required.
Scatter Plot	Plots two aggregate fields.	Select two aggregate fields, **X** and **Y**. Select the **Size** of the sample.	At least two numeric columns are required.
Single Line	Displays a single value.	Select the **Text** or **Gauge** view and the **Column** and **Row**. For **Gauge**, you can also select a color-coded **Range**.	At least one numeric column is required.
Sunburst Chart	Visualizes hierarchical data, depicted by concentric circles. The circle in the center represents the root node, with the hierarchy moving outward from the center.	Select the **Rank1**, **Rank2**, and **Count** from the drop-down lists.	Only one column can be used in one rank.
Table View	Displays data in a tabular format.	You can choose to display the bar chart (**Show Bar**), the event type (**Show Event Type**), and the count (**Count**). Set the colors for the bar chart or reverse the color map.	None
Tree Map	Displays columns in a Tree Map.	Select the Tree Map **Ranks**	Only one column can

Chart/View	Description	Display Settings	Requirements
		and the **Count** attributes from the drop-down lists.	be used in one rank.

FortiSIEM Deployment Scenarios

FortiSIEM can be deployed in Enterprise and Service Provider environments in a highly scale-out fashion.

- Enterprise Deployment
- Service Provider Deployment

Enterprise Deployment

Enterprise Deployments with Supervisor and no Collector

Enterprise deployment without Collector (Supervisor only) is the simplest setup where:

- Logs are sent to the Supervisor.
- Test Connectivity, Discovery performance monitoring, and Event pulling, (for example: Cloud Services, WMI based Windows log Collection, etc.) are all done from the Supervisor – Go to **ADMIN** > **Setup** > **Credentials** and **ADMIN** > **Setup** > **Discovery**.

This setup has the following drawbacks:

- Does not scale up when a large number of devices must be monitored or high EPS needs to be handled. This can be solved by deploying Workers – see here.
- Logs cannot be collected efficiently from devices across the Internet. Devices cannot be monitored across the Internet. This is because of latency and security issues over Wide Area Networks. This can be solved by deploying Collectors – see here.
- FortiSIEM Agents cannot be used as they need Collectors – see here.

Enterprise Deployment with Supervisor and Worker but no Collector

The scalability issue above can be resolved by deploying Worker nodes. To add a Worker node:

1. Install a Worker node.
2. Add the Worker to the Supervisor from **ADMIN** > **License** > **Nodes** > **Add**.

In this case:

- Logs can be sent to the Supervisor or Workers. Sending to Workers is recommended since you can load balance across multiple Workers.
- Test Connectivity and Discovery is always done from Super.

- However, Performance monitoring and Event pulling jobs (for example: Cloud Services, WMI based Windows log Collection and so on) are done by the Worker nodes in addition to the Supervisor nodes. After Test connectivity and Discovery, Supervisor node distributes the jobs to the Workers. When a new Worker is added to the FortiSIEM Cluster, jobs are re-distributed to the Workers.

Although it provides scalable event handling, this system has the following shortcomings:

- Logs cannot be collected efficiently from devices across the Internet. Devices cannot be monitored across the Internet. This is because of latency and security issues over Wide Area networks. This can be solved by deploying Collectors – see here.
- FortiSIEM Agents cannot be used, because they need Collectors – see here.

Enterprise Deployments with Supervisor, Worker and Collector

This solution provides the flexibility of log collection and performance across the Internet and behind firewalls. It also provides even more scalability because the Collectors, instead of the Workers, parse events.

To add a Collector node:

1. Go to **ADMIN** > **Setup** > **Collector** and create a Collector in the Supervisor.
2. If you have Workers, define the Workers that the Collectors will upload to (Go to **ADMIN > Settings > System > Worker Upload**).
3. If you are not using Workers you should define the Supervisor IP or DNS name of the Supervisor (Go to **ADMIN > Settings > System > Worker Upload**).
4. Install a Collector.
5. Register the Collector to the Supervisor using any FortiSIEM user credential with Admin privileges (see **CMDB** > **User**). The built-in admin credential will work. During registration, the Collector will get the Workers to upload events to.

In this case:

- Logs can be sent to Collectors (preferred). However, they can be sent to Workers or Super as well. Collectors will upload parsed logs to the Workers in a load-balanced fashion.
- For Test Connectivity and Discovery, choose the Collector for the job. Collectors will collect events and send them to Workers in a load-balanced fashion.

In this configuration, you can add FortiSIEM Windows and Linux Agents:

1. Go to **CMDB** > **User** > **Add** and create an Agent User for Agents to register to the Supervisor node.
2. Install the Agents and register them to the Supervisor using the Agent user credential created in the previous step.
3. Define the Agent Monitoring templates.
4. Assign templates to the Agents and choose Collectors from the set created earlier.

Agents will send logs to the Collectors in a load-balanced manner. Collectors can then send to Workers in a load-balanced manner. This enables log collection in a geographically distributed and scalable manner.

Service Provider Deployment

In a Service Provider deployment, there can be one or more Organizations. Devices and logs are kept logically separated for two Organizations.

Note: **It is very important to assign devices and logs to the correct Organization in FortiSIEM.**

A FortiSIEM Service Provider deployment consists of:

- Supervisor node
- Worker nodes for scalability
- Collector nodes for remote data collection
- Windows/Linux Agents for richer data collection without remote admin credentials

While Supervisor, Workers, and Agents are shared infrastructure across Organizations, Collectors may be present and may be dedicated or shared.

This section provides details on how various infrastructure components are deployed, with an eye towards assigning devices and logs to the right Organization.

- Organizations with Dedicated Collector
- Organizations with Shared Collector

Service Provider Deployment - Organizations with Dedicated Collector

In this case, Organization has one of more Collectors that belong to that Organization only. This is suited for large Organizations.

Setup

1. Create Organizations as follows:
   a. Log in to Super-Global Organization.
   b. Go to **ADMIN** > **Setup** > **Organizations** and create an Organization.
   c. Define Admin credentials (for Collector registration) and Agent credentials (for FortiSIEM Agent registration).
   d. Add Collectors to that Organization.
2. Install the Collectors and register them to Supervisor. Use any Organization Admin credentials defined in **ADMIN** > **Setup** > **Organizations**, to register the Collector.

Operations

Collecting Logs via Agents

1. Install Agents and register them to the Supervisor. Use the Agent credentials for the Organization that the Agents belong to.
2. Define the Agent Monitoring templates. Assign the templates to agents and designate Collectors belonging to the specific Organization.

Agents will send logs to Collectors in a load-balanced fashion. Since Agents are configured with the Organization ID, they include the Organization in every log. This information is used by Collectors to assign devices and logs to the correct Organization.

Collecting Logs without Agents

Configure devices to send logs to the Organization’s Collectors. Since these collectors belong to one organization, it assigns received devices and logs to that Organization.

Discovery and Performance Monitoring by IP Address Range

Log in to the specific Organization and:

1. Define the credential.
2. Do Test Connectivity and Discovery using a specific Collector.

Event Pulling for Cloud Services

Log in to the specific Organization and:

1. Define the credential.
2. Do Test Connectivity and Discovery using a specific Collector.

Service Provider Deployment - Organizations with Shared Multi-tenant Collector

It may not be economically viable for smaller Organizations to deploy their own collectors. But Collectors may be needed to deploy Agents and to scale out data collection across many smaller Organizations managed under the same FortiSIEM.

Setup

In this setup, special multi-tenant Collectors must be defined under the Super/Local Organization as follows:

1. Log in to the Super-Local Organization. This is a built-in organization meant for the Service Provider’s use only .
2. Go to **ADMIN** > **Setup** > **Collector** and add Collectors to that Organization. These are called multi-tenant Collectors as they handle devices and logs from multiple Organizations.
3. Install the Collectors and register them to the Supervisor. Use any Full Admin user in **CMDB** > **User** to register the Collector.

Then create Organizations as follows:

1. Log in to Super-Global Organization.
2. Go to **ADMIN** > **Setup** > **Organizations** and create an Organization.
3. Add Agent credentials for Agent registration.
4. Define the Include/Exclude IP Address ranges if devices belonging to various Organizations are going to send logs to multi-tenant Collectors.

Operations

Collecting Logs via Agents

1. Install Agents and register them to the Supervisor. Use the Agent credentials for the Organization that the Agents belong to.
2. Define Agent Monitoring templates. Assign templates to Agents and designate multi-tenant collectors belonging to the Super-local Organization.

FortiSIEM Agents will send logs to multi-tenant Collectors in a load-balanced fashion. Since Agents are configured with the Organization ID, they include the Organization in every log. This information is used by multi-tenant Collectors to assign devices and logs to the correct Organization.

Collecting Logs without Agents

Configure devices to send logs to the multi-tenant Collectors. Make sure the reporting device IP matches the Include/Exclude IP ranges defined for that Organization in **ADMIN** > **Setup** > **Organization**. A multi-tenant Collector uses the reporting device IP to assign devices and logs to the correct Organization.

Discovery and Performance Monitoring by IP Address Range

This is possible so long as the IP Address range matches the Include/Exclude IP ranges defined for that Organization in **ADMIN** > **Setup** > **Organizations**.

This can be done in two ways:

1. (Recommended) From Super/Global Organization:
   a. Define the credential.
   b. Do Test Connectivity and Discovery. We will automatically choose a multi-tenant collector
2. Alternatively, log in to the Super/Local Organization and:
   a. Define the credential.
   b. Do Test Connectivity and Discovery using a specific multi-tenant Collector.

Approach #1 is recommended because the Collector is automatically chosen.

Event Pulling for Cloud Services

From Super/Global Organization:

1. Define the credential. Specify the Organization in the credential.
2. Perform Test Connectivity and Discovery.
   FortiSIEM will automatically choose a multi-tenant Collector.

Collecting Logs from Multi-tenant Devices

A shared Collector also enables you to collect logs from multi-tenant devices such as FortiGate with Virtual Domains (VDOM). This assumes that the logs contain an attribute (such as FortiGate VDOM) that enables FortiSIEM to classify logs from multi-tenant devices to different Organizations.

From a Super/Global Organization:

1. Go to **ADMIN** > **Settings** > **Event Handling** > **Event Org Mapping**.
2. Click **New** and enter the Organization mappings for the discriminating log attribute (such as VDOM).
3. Click **Save**.

FortiSIEM Event Attribute to CEF Key Mapping

FortiSIEM forwards externally received logs and internally generated events/incidents to an external system via CEF formatted syslog.

FortiSIEM Event Attribute to CEF Key Mappings

FortiSIEM event attributes	CEF key	Notes
appCategory	cat	
appTransportProto	app	
count	cnt	
destAction	act	
destDomain	destinationDnsDomain	
destIntfName	deviceOutboundInterface	
destIpAddr	destinationTranslated Address	
destIpAddr	dst	
destIpPort	destinationTranslatedPort	
destIpPort	dpt	
destMACAddr	dmac	
destName	dhost	
destServiceName	destinationServiceName	
destUser	duser	
destUserId	duid	
destUserPriv	dpriv	
deviceIdentification	deviceExternalId	
deviceTime	rt	
domain	deviceDnsDomain	
endTime	end	
errReason	reason	

FortiSIEM event attributes	CEF key	Notes
extEventId	externalId	
fileAccess	filePermission	
fileId	fileId	
fileModificationTime	fileModificationTime	
fileName	fname	
filePath	filePath	
fileSize	fsize	
fileType	fileType	
hashCode	fileHash	
hostIpAddr	dvc	
hostMACAddr	dvcmac	
hostName	dvchost	
httpCookie	requestCookies	
httpMethod	requestMethod	
httpReferrer	requestContext	
httpUserAgent	requestClientApplication	
infoURL	request	
ipProto	proto	
msg	msg	
postNATHostIpAddr	deviceTranslatedAddress	
postNATSrcIpAddr	sourceTranslatedAddress	

FortiSIEM event attributes	CEF key	Notes
postNATSrcIpPort	sourceTranslatedPort	
procId	dvcpid	
procName	deviceProcessName	
recvBytes	in	
sentBytes	out	
serviceName	sourceServiceName	
srcDomain	sourceDnsDomain	
srcIntfName	deviceInboundInterface	
intfName	deviceInboundInterface	
srcIpAddr	src	
srcIpPort	spt	
srcMACAddr	smac	
srcName	shost	
srcUser	suser	
srcUserPriv	spriv	
startTime	start	
targetProcId	dpid	
targetProcName	dproc	

Mapping to CEF Custom Attributes

FortiSIEM event attributes	CEF key	Notes
supervisorName	cs1Label = Super-	

FortiSIEM event attributes	CEF key	Notes
	visorHostName	
customer	cs2Label = CustomerName	
incidentDetail	cs3Label=IncidentDetail	
ruleName	cs4Label=RuleName	
inIncidentEventIdList	cs5Label=IncidentEventIDList	
phCustId	cn1Label=CustomerID	
incidentId	cn2Label=IncidentID	
	type	0 = base event; 2 = incident

FortiSIEM Event Categories and Handling

This topic provides a brief description of various types of event categories in FortiSIEM.

System Event Category	Description	Counted in EPS License	phstatus -a outout	Stored in DB?
0	External events and not flow events (e.g. syslog, SNMP Trap, Event pulling)	Yes	EPS	Yes
1	Incidents (events that begin with PH_RULE)	No	EPS INTERNAL	Yes
2	FortiSIEM Audit Events (events that begin with PH_AUDIT)	No	EPS INTERNAL	Yes
3	FortiSIEM Internal system logs, free format	No	EPS INTERNAL	Yes
4	External flow events (Netflow, Sflow)	Yes	EPS	Yes
5	FortiSIEM Internal health events for summary	No	EPS INTERNAL	Yes

System Event Category	Description	Counted in EPS License	phstatus -a outout	Stored in DB?
	dashboards			
6	FortiSIEM Performance Monitoring events (events that begin with PH_DEV_MON)	Yes	EPS PERF	Yes
7	AO Beaconing events	No	EPS INTERNAL	Yes
8	FortiSIEM Real Time Performance Probe Events	No	EPS INTERNAL	No
99	FortiSIEM Internal Rule Engine	No	EPS INTERNAL	No

Public Domain Built-in Rules

The following table shows the public domain built-in rules incorporated into FortiSIEM.

Rules that are adopted from the SIGMA rule set are licensed under the Detection Rule License available here.

FortiSIEM Rule	Author	Source Link
AWS CloudTrail Important Changes	vitaliy0x1	https://github.com/SigmaHQ/sigma/blob/master/rules/cloud/aws_cloudtrail_disable_logging.yml
AWS EC2 Userdata Download	faloker	https://github.com/SigmaHQ/sigma/blob/master/rules/cloud/aws_ec2_download_userdata.yml
Linux: Attempt to Disable Crowdstrike Service	Ömer Günal	https://github.com/SigmaHQ/sigma/blob/master/rules/linux/lnx_security_tools_disabling.yml
Linux: Attempt to Disable CarbonBlack Service	Ömer Günal	https://github.com/SigmaHQ/sigma/blob/master/rules/linux/lnx_security_tools_disabling.yml
Windows: Turla Service Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_carbonpaper_turla.yml
Windows: StoneDrill Service Install	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_stonedrill.yml

FortiSIEM Rule	Author	Source Link
Windows: Turla PNG Dropper Service	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_apt_turla_service_png.yml
Windows: smbexec.py Service Installation	Omer Faruk Celik	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_hack_smbexec.yml
Windows: Malicious Service Installations	Florian Roth, Daniil Yugoslavskiy, oscd.community (update)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_service_installs.yml
Windows: Meterpreter or Cobalt Strike Getsystem Service Installation	Teymur Kheirkhabarov, Ecco	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_meterpreter_or_cobaltstrike_getsystem_service_installation.yml
Windows: PsExec Tool Execution	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_tool_psexec.yml
Windows: Local User Creation	Patrick Bareiss	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_creation.yml
Windows: Local User Creation Via Powershell	@ROxPinTeddy	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_create_local_user.yml
Windows: Local User Creation Via Net.exe	Endgame, JHasenbusch (adapted to sigma for oscd.community)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_net_user_add.yml
Windows: Suspicious ANONYMOUS LOGON Local Account Created	James Pemberton / @4A616D6573	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_local_anon_logon_created.yml
Windows: New or Renamed User Account with $ in Attribute SamAccountName	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_new_or_renamed_user_account_with_dollar_sign.yml
Windows: AD Privileged Users or	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_

FortiSIEM Rule	Author	Source Link
Groups Reconnaissance		account_discovery.yml
Windows: Administrator and Domain Admin Reconnaissance	Florian Roth (rule), Jack Croock (method)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_net_recon_activity.yml
Windows: Access to ADMIN$ Share	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_admin_share_access.yml
Windows: Login with WMI	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_wmi_login.yml
Windows: Admin User Remote Logon	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_admin_rdp_login.yml
Windows: RDP Login from Localhost	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_localhost_login.yml
Windows: Interactive Logon to Server Systems	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_interactive_logons.yml
Windows: Pass the Hash Activity	Ilias el Matani (rule), The Information Assurance Directorate at the NSA (method)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_pass_the_hash.yml
Windows: Pass the Hash Activity 2	Dave Kennedy, Jeff Warren (method) / David Vassallo (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_pass_the_hash_2.yml
Windows: Successful Overpass the Hash Attempt	Roberto Rodriguez (source), Dominik Schaudel (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_overpass_the_hash.yml
Windows: RottenPotato Like Attack Pattern	@SBousseaden, Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_rottenpotato.yml
Windows: Hacktool Ruler	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_ruler.yml

FortiSIEM Rule	Author	Source Link
Windows: Metasploit SMB Authentication	Chakib Gzenayi (@Chak092), Hosni Mribah	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_metasploit_authentication.yml
Windows: Kerberos Manipulation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_kerberos_manipulation.yml
Windows: Suspicious Kerberos RC4 Ticket Encryption	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_rc4_kerberos.yml
Windows: Persistence and Execution at Scale via GPO Scheduled Task	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_GPO_scheduledtasks.yml
Windows: Powerview Add-DomainObjectAcl DCSync AD Extend Right	Samir Bousseaden; Roberto Rodriguez @Cyb3rWard0g; oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_account_backdoor_dcsync_rights.yml
Windows: AD Object WriteDAC Access	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_object_writedac_access.yml
Windows: Active Directory Replication from Non Machine Account	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_replication_non_machine_account.yml
Windows: AD User Enumeration	Maxime Thiebaut (@0xThiebaut)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_ad_user_enumeration.yml
Windows: Enabled User Right in AD to Control User Objects	@neu5ron	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_active_directory_user_control.yml
Windows: Eventlog Cleared	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_eventlog_cleared.yml
Windows: MSHTA Suspicious Execution 01	Diego Perez (@darkquassar), Markus Neis, Swisscom (Improve Rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_mshta_execution.yml
Windows: Dumpert Process Dumper	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_hack_dumpert.yml

FortiSIEM Rule	Author	Source Link
Windows: Blue Mockingbird	Trent Liffick (@tliffick)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_blue_mockingbird.yml
Windows: Windows PowerShell Web Request	James Pemberton / @4A616D6573	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/win_powershell_web_request.yml
Windows: DNS Tunnel Technique from MuddyWater	@caliskanfurkan_	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_apt_muddywater_dnstunnel.yml
Windows: Advanced IP Scanner Detected	@ROxPinTeddy	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_advanced_ip_scanner.yml
Windows: APT29 Detected	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_apt29_thinktanks.yml
Windows: Baby Shark Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_babyshark.yml
Windows: Judgement Panda Credential Access Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_bear_activity_gtr19.yml
Windows: Logon Scripts - UserInitMprLogonScript	Tom Ueltschi (@c_APT_ure)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_logon_scripts_userinitmprlogonscript_proc.yml
Windows: BlueMashroom DLL Load	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_bluemashroom.yml
Windows: Password Change on Directory Service Restore Mode DSRM Account	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_dsrm_password_change.yml
Windows: Account Tampering - Suspicious Failed Logon Reasons	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logon_reasons.yml

FortiSIEM Rule	Author	Source Link
Windows: Backup Catalog Deleted	Florian Roth (rule), Tom U. @c_APT_ure (collection)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_backup_delete.yml
Windows: Failed Code Integrity Checks	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_codeintegrity_check_failure.yml
Windows: DHCP Server Loaded the CallOut DLL	Dimitrios Slamaris	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_dhcp_config.yml
Windows: Suspicious LDAP-Attributes Used	xknow @xknow_infosec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_ldap_dataexchange.yml
Windows: Password Dumper Activity on LSASS		https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_lsass_dump.yml
Windows: Generic Password Dumper Activity on LSASS	Roberto Rodriguez, Teymur Kheirkhabarov, Dimitrios Slamaris, Mark Russinovich, Aleksey Potapov, oscd.community (update)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_lsass_dump_generic.yml
Windows: Suspicious PsExec Execution	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_psexec.yml
Windows: Suspicious Access to Sensitive File Extensions	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_raccess_sensitive_fext.yml
Windows: Secure Deletion with SDelete	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_sdelete.yml
Windows: Unauthorized System Time Modification	@neu5ron	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_time_modification.yml
Windows: Windows Defender Exclusion Set	@Barry-Shooshooga	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_defender_bypass.yml
Windows: Windows	Cian Heasley	https://-

FortiSIEM Rule	Author	Source Link
Pcap Driver Installed		github.com/SigmaHQ/sigma/blob/master/rules/windows/other/win_pcap_drivers.yml
Windows: Weak Encryption Enabled and Kerberoast	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_enable_weak_encryption.yml
Windows: Remote Task Creation via ATSVC Named Pipe	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_atsvc_task.yml
Windows: Chafer Activity	Florian Roth, Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_chafer_mar18.yml
Windows: WMIExec VBS Script	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_cloudhopper.yml
Windows: Crack-MapExecWin Activity	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_dragonfly.yml
Windows: Elise Back-door	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_elise.yml
Windows: Emissary Panda Malware SLLauncher Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_emissarypanda_sep19.yml
Windows: Empire Monkey Activity	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_empiremonkey.yml
Windows: Equation Group DLL-U Load	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_equationgroup_dll_u_load.yml
Windows: EvilNum Golden Chickens Deployment via OCX Files	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_evilnum_jul20.yml
Windows: GALLIUM Artefacts Via Hash Match	Tim Burrell	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_gallium.yml
Windows: GALLIUM Artefacts Via Hash and Process Match	Tim Burrell	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_gallium.yml

FortiSIEM Rule	Author	Source Link
Windows: Windows Credential Editor Startup	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/sysmon_hack_wce.yml
Windows: Greenbug Campaign Indicators	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_greenbug_may20.yml
Windows: Hurricane Panda Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_hurricane_panda.yml
Windows: Judgement Panda Exfiltration Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_judgement_panda_gtr19.yml
Windows: Ke3chang Registry Key Modifications	Markus Neis, Swisscom	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_ke3chang_regadd.yml
Windows: Lazarus Session Highjacker	Trent Liffick (@tliffick), Bartlomiej Czyz (@bczyz1)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_lazarus_session_highjack.yml
Windows: Mustang Panda Dropper Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_mustangpanda.yml
Windows: Defrag Deactivation	Florian Roth, Bartlomiej Czyz (@bczyz1)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_slingshot.yml
Windows: Sofacy Trojan Loader Activity	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_sofacy.yml
Windows: Ps.exe Renamed SysInternals Tool	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_ta17_293a_ps.yml
Windows: TAIDOOR RAT DLL Load	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_taidoor.yml
Windows: TropicTrooper Campaign November 2018	@41thexplorer, Microsoft Defender ATP	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_tropictrooper.yml
Windows: Turla Group Commands May 2020	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_turla_comrat_may20.yml

FortiSIEM Rule	Author	Source Link
Windows: Unidentified Attacker November 2018 Activity 1	@41thexplorer, Microsoft Defender ATP	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_unidentified_nov_18.yml
Windows: Unidentified Attacker November 2018 Activity 2	@41thexplorer, Microsoft Defender ATP	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_unidentified_nov_18.yml
Windows: Winnti Malware HK University Campaign	Florian Roth, Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_winnti_mal_hk_jan20.yml
Windows: Winnti Pipemon Characteristics	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_winnti_pipemon.yml
Windows: Operation Wocao Activity	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_wocao.yml
Windows: ZxShell Malware	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_zxshell.yml
Windows: Active Directory User Backdoors	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_alert_ad_user_backdoors.yml
Windows: Mimikatz DC Sync	Benjamin Delpy, Florian Roth, Scott Dermott	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dcsync.yml
Windows: Windows Event Auditing Disabled	@neu5ron	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_disable_event_logging.yml
Windows: DPAPI Domain Backup Key Extraction	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dpapi_domain_backupkey_extraction.yml
Windows: DPAPI Domain Master Key Backup Attempt	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_dpapi_domain_masterkey_backup_attempt.yml
Windows: External Disk Drive or USB Storage Device	Keith Wright	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_external_device.yml
Windows: Possible Impacket SecretDump Remote	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_impacket_secretdump.yml

FortiSIEM Rule	Author	Source Link
Activity		
Windows: Obfuscated Powershell IEX invocation	Daniel Bohannon (@Mandiant/@FireEye), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_invoke_obfuscation_obfuscated_iex_services.yml
Windows: First Time Seen Remote Named Pipe	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_lm_namedpipe.yml
Windows: LSASS Access from Non-System Account	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_lsass_access_non_system_account.yml
Windows: Credential Dumping Tools Service Execution	Florian Roth, Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_creddumper.yml
Windows: WCE wceaux dll Access	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mal_wceaux_dll.yml
Windows: MMC20 Lateral Movement	@2xxeformyshirt (Security Risk Advisors) - rule; Teymur Kheirkhabarov (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_mmc20_lateral_movement.yml
Windows: NetNTLM Downgrade Attack	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_net_ntlm_downgrade.yml
Windows: Denied Access To Remote Desktop	Pushkarev Dmitry	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_not_allowed_rdp_access.yml
Windows: Possible DCShadow	Ilyas Ochkov, oscd.community, Chakib Gzenayi (@Chak092), Hosni Mribah	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_possible_dc_shadow.yml
Windows: Protected Storage Service Access	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_protected_storage_service_access.yml

FortiSIEM Rule	Author	Source Link
Windows: Scanner PoC for CVE-2019-0708 RDP RCE Vuln	Florian Roth (rule), Adam Bradbury (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_bluekeep_poc_scanner.yml
Windows: RDP over Reverse SSH Tunnel	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_rdp_reverse_tunnel.yml
Windows: Register new Logon Process by Rubeus	Roberto Rodriguez (source), Ilyas Ochkov (rule), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_register_new_logon_process_by_rubeus.yml
Windows: Remote PowerShell Sessions	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_remote_powershell_session.yml
Windows: Remote Registry Management Using Reg Utility	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_remote_registry_management_using_reg_utility.yml
Windows: SAM Registry Hive Handle Request	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_sam_registry_hive_handle_request.yml
Windows: SCM Database Handle Failure	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_scm_database_handle_failure.yml
Windows: SCM Database Privileged Operation	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_scm_database_privileged_operation.yml
Windows: Addition of Domain Trusts	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_add_domain_trust.yml
Windows: Addition of SID History to Active Directory Object	Thomas Patzke, @atc_project (improvements)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_add_sid_history.yml
Windows: Failed Logon From Public IP	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logon_source.yml
Windows: Failed Logins with Different Accounts from Single Source System	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_susp_failed_logons_single_source.yml

FortiSIEM Rule	Author	Source Link
Windows: Remote Service Activity via SVCCTL Named Pipe	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_svcctl_remote_service.yml
Windows: SysKey Registry Keys Access	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_syskey_registry_access.yml
Windows: Tap Driver Installation	Daniil Yugoslavskiy, Ian Davis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_tap_driver_installation.yml
Windows: Transferring Files with Credential Data via Network Shares	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_transferring_files_with_credential_data_via_network_shares.yml
Windows: User Added to Local Administrators	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_added_to_local_administrators.yml
Windows: Failed to Call Privileged Service LsaRegisterLogonProcess	Roberto Rodriguez (source), Ilyas Ochkov (rule), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_couldnt_call_privileged_service_lsaregisterlogonprocess.yml
Windows: Suspicious Driver Loaded By User	xknow (@xknow_infosec), xorxes (@xor_xes)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_user_driver_loaded.yml
Windows: Suspicious Driver Load from Temp	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/driver_load/sysmon_susp_driver_load.yml
Windows: File Created with System Process Name	Sander Wiebing	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_creation_system_file.yml
Windows: Credential Dump Tools Dropped Files	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_cred_dump_tools_dropped_files.yml
Windows: Detection of SafetyKatz	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_ghostpack_safetykatz.yml
Windows: LSASS Memory Dump File Creation	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_lsass_memory_dump_file_creation.yml
Windows: Microsoft	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_

FortiSIEM Rule	Author	Source Link
Office Add-In Loading		event/sysmon_office_persistence.yml
Windows: QuarksPwDump Dump File	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_quarkspw_filedump.yml
Windows: RedMimicry Winnti Playbook Dropped File	Alexander Rausch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_redmimicry_winnti_filedrop.yml
Windows: Suspicious ADSI-Cache Usage By Unknown Tool	xknow @xknow_infosec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_adsi_cache_usage.yml
Windows: Suspicious desktop.ini Action	Maxime Thiebaut (@0xThiebaut)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_desktop_ini.yml
Windows: Suspicious PROCEXP152 sys File Created In TMP	xknow (@xknow_infosec), xorxes (@xor_xes)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_susp_procexplorer_driver_created_in_tmp_folder.yml
Windows: Hijack Legit RDP Session to Move Laterally	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_tsclient_filewrite_startup.yml
Windows: Windows Web shell Creation	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_webshell_creation_detect.yml
Windows: WMI Persistence - Script Event Consumer File Write	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/sysmon_wmi_persistence_script_event_consumer_write.yml
Windows: Suspicious Desktopimgdownldr Target File	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/file_event/win_susp_desktopimgdownldr_file.yml
Windows: In-memory PowerShell	Tom Kern, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_in_memory_powershell.yml
Windows: PowerShell load within System Management Automation DLL	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_powershell_execution_moduleload.yml
Windows: Fax Service DLL Search Order Hijack	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_fax_dll.yml
Windows: Possible	Markus Neis	https://-

FortiSIEM Rule	Author	Source Link
Process Hollowing Image Loading		github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_image_load.yml
Windows: .NET DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_assembly_dll_load.yml
Windows: CLR DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_clr_dll_load.yml
Windows: GAC DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dotnet_gac_dll_load.yml
Windows: Active Directory Parsing DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_dsparse_dll_load.yml
Windows: Active Directory Kerberos DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_office_kerberos_dll_load.yml
Windows: VBA DLL Loaded Via Office Applications	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_winword_vbadll_load.yml
Windows: WMI DLL Loaded Via Office Applications	Michael R. (@nahamike01)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_susp_winword_wmidll_load.yml
Windows: Loading dbghelp dbgcore DLL from Suspicious Processes	Perez Diego (@darkquassar), oscd.community, Ecco	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_suspicious_dbghelp_dbgcore_load.yml
Windows: Svchost DLL Search Order Hijack	SBousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_svchost_dll_search_order_hijack.yml
Windows: Unsigned Image Loaded Into LSASS Process	Teymur Kheirkhabarov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_unsigned_image_loaded_into_lsass.yml
Windows: Suspicious WMI Modules Loaded	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_wmi_module_load.yml
Windows: WMI Per-	Thomas Patzke	https://-

FortiSIEM Rule	Author	Source Link
sistence - Command Line Event Consumer		github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_wmi_persistence_commandline_event_consumer.yml
Windows: Registry Entries Found For Azorult Malware	Trent Liffick	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/mal_azorult_reg.yml
Windows: Registry Entries Found For FlowCloud Malware	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_flowcloud.yml
Windows: Octopus Scanner Malware Detected	NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_octopus_scanner.yml
Windows: Registry Entries For Ursnif Malware	megan201296	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_ursnif.yml
Windows: Dllhost.exe Internet Connection	bartblaze	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_dllhost_net_connections.yml
Windows: Suspicious Typical Malware Back Connect Ports	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_malware_backconnect_ports.yml
Windows: Notepad Making Network Connection	EagleEye Team	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_notepad_network_connection.yml
Windows: PowerShell Network Connections	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_powershell_network_connection.yml
Windows: RDP Over Reverse SSH Tunnel	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_rdp_reverse_tunnel.yml
Windows: Regsvr32 Network Activity	Dmitriy Lifanov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_

FortiSIEM Rule	Author	Source Link
		connection/sysmon_regsvr32_network_activity.yml
Windows: Remote PowerShell Session	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_remote_powershell_session_network.yml
Windows: Rundll32 Internet Connection	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_rundll32_net_connections.yml
Windows: Network Connections From Executables in Suspicious Program Locations	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_susp_prog_location_network_connection.yml
Windows: Outbound RDP Connections From Suspicious Executables	Markus Neis - Swisscom	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_susp_rdp.yml
Windows: Outbound Kerberos Connection From Suspicious Executables	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_suspicious_outbound_kerberos_connection.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_suspicious_outbound_kerberos_connection.yml
Windows: Microsoft Binary Github Communication	Michael Haag (idea), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_win_binary_github_com.yml
Windows: Microsoft Binary Suspicious External Communication	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/network_connection/sysmon_win_binary_susp_com.yml
Windows: Data Compressed - Powershell	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_data_compressed.yml
Windows: Dnscat Execution	Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_

FortiSIEM Rule	Author	Source Link
		dnscat_execution.yml
Windows: PowerShell Credential Prompt	John Lambert (idea), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_prompt_credentials.yml
Windows: Powershell Profile ps1 Modification	HieuTT35	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/powershell/powershell_suspicious_profile_create.yml
Windows: Credentials Dumping Tools Accessing LSASS Memory	Florian Roth, Roberto Rodriguez, Dimitrios Slamaris, Mark Russinovich, Thomas Patzke, Teymur Kheirkhabarov, Sherif Eldeeb, James Dickenson, Aleksey Potapov, oscd.community (update)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_cred_dump_lsass_access.yml
Windows: Suspicious In-Memory Module Execution	Perez Diego (@darkquassar), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_in_memory_assembly_execution.yml
Windows: Suspect Svchost Memory Asccess	Tim Burrell	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_invoke_phantom.yml
Windows: Credential Dumping by LaZagne	Bhabesh Raj	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_lazagne_cred_dump_lsass_access.yml
Windows: LSASS Memory Dump	Samir Bousseaden	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_lsass_memdump.yml
Windows: Malware Shellcode in Verclsid Target Process	John Lambert (tech), Florian Roth (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_malware_verclsid_shellcode.yml
Windows: Mimikatz	Patryk Prauze - ING	https://

FortiSIEM Rule	Author	Source Link
through Windows Remote Management	Tech	github.com/SigmaHQ/sigma/blob/master/rules/windows/process_access/sysmon_mimikatz_trough_winrm.yml
Windows: Turla Group Lateral Movement	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_apt_turla_commands.yml
Windows: Hiding Files with Attrib exe	Sami Ruohonen	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_attrib_hiding_files.yml
Windows: Modification of Boot Configuration	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_bootconf_mod.yml
Windows: SquiblyTwo	Markus Neis / Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_bypass_squiblytwo.yml
Windows: Change Default File Association	Timur Zinniatullin, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_change_default_file_association.yml
Windows: Cmdkey Cached Credentials Recon	jmallette	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_cmdkey_recon.yml
Windows: CMSTP UAC Bypass via COM Object Access	Nik Seetharaman	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_cmstp_com_object_access.yml
Windows: Cmd exe CommandLine Path Traversal	xknow @xknow_infosec	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_commandline_path_traversal.yml
Windows: Unusual Control Panel Items	Kyaw Min Thein, Furkan Caliskan (@caliskanfurkan_)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_control_panel_item.yml
Windows: Copying Sensitive Files with Credential Data	Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_copying_sensitive_files_with_credential_data.yml
Windows: Fireball Archer Malware Install	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_fireball.yml
Windows: Maze	Florian Roth	https://-

FortiSIEM Rule	Author	Source Link
Ransomware		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_maze_ransomware.yml
Windows: Snatch Ransomware	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_crime_snatch_ransomware.yml
Windows: Data Compressed - rar.exe	Timur Zinniatullin, E.M. Anhaus, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_data_compressed_with_rar.yml
Windows: DNS Exfiltration and Tunneling Tools Execution	Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dns_exfiltration_tools_execution.yml
Windows: DNSCat2 Powershell Detection Via Process Creation	Cian Heasley	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dnscat2_powershell_implementation.yml
Windows: Encoded FromBase64String	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_encoded_frombase64string.yml
Windows: Encoded IEX	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_encoded_iex.yml
Windows: COMPlus-ETWEnabled Command Line Arguments	Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threat Research)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_etw_modification_cmdline.yml
Windows: Disabling ETW Trace	@neu5ron, Florian Roth, Jonhnathan Ribeiro, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_etw_trace_evasion.yml
Windows: Exfiltration and Tunneling Tools Execution	Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exfiltration_and_tunneling_tools_execution.yml
Windows: Exploit for CVE-2015-1641	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2015_1641.yml
Windows: Exploit for CVE-2017-0261	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_0261.yml
Windows: Droppers	Florian Roth	https://-

FortiSIEM Rule	Author	Source Link
Exploiting CVE-2017-11882		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_11882.yml
Windows: Exploit for CVE-2017-8759	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2017_8759.yml
Windows: Exploiting SetupComplete.cmd CVE-2019-1378	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2019_1378.yml
Windows: Exploiting CVE-2019-1388	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2019_1388.yml
Windows: Exploited CVE-2020-10189 Zoho ManageEngine	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2020_10189.yml
Windows: Suspicious PrinterPorts Creation CVE-2020-1048	EagleEye Team, Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2020_1048.yml
Windows: DNS RCE CVE-2020-1350	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_exploit_cve_2020_1350.yml
Windows: File/Folder Permissions Modifications Via Command line Utilities	Jakob Weinzettl, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_file_permission_modifications.yml
Windows: Grabbing Sensitive Hives via Reg Utility	Teymur Kheirkhabarov, Endgame, JHasenbusch, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_grabbing_sensitive_hives_via_reg.yml
Windows: Bloodhound and Sharphound Hack Tool	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_bloodhound.yml
Windows: Koadic Execution	wagga	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_koadic.yml
Windows: Rubeus Hack Tool	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_rubeus.yml

FortiSIEM Rule	Author	Source Link
Windows: SecurityXploded Tool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hack_secutyxploded.yml
Windows: HH exe Execution	E.M. Anhaus (originally from Atomic Blue Detections, Dan Beavin), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hh_chm.yml
Windows: CreateMiniDump Hacktool	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hktl_createminidump.yml
Windows: HTML Help Shell Spawn	Maxim Pavlunin	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_html_help_spawn.yml
Windows: Suspicious HWP Sub Processes	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_hwp_exploits.yml
Windows: Impacket Lateralization Detection	Ecco	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_impacket_lateralization.yml
Windows: Indirect Command Execution	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_indirect_cmd.yml
Windows: Suspicious Debugger Registration Cmdline	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_install_reg_debugger_backdoor.yml
Windows: Interactive AT Job	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_interactive_at.yml
Windows: Invoke-Obfuscation Obfuscated IEX Invocation when to create process	Daniel Bohannon (@Mandiant/@FireEye), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_invoke_obfuscation_obfuscated_iex_commandline.yml
Windows: Windows Kernel and 3rd-Party	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
Drivers Exploits Token Stealing	(source), Daniil Yugoslavskiy (rule)	creation/win_kernel_and_3rd_party_drivers_exploits_token_stealing.yml
Windows: MSHTA Spawned by SVCHOST	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_lethalhta.yml
Windows: Local Accounts Discovery	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_local_system_owner_account_discovery.yml
Windows: LSASS Memory Dumping Using procdump	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_lsass_dump.yml
Windows: Adwind Remote Access Tool JRAT	Florian Roth, Tom Ueltschi	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mal_adwind.yml
Windows: Dridex Process Pattern	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_dridex.yml
Windows: DTRACK Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_dtrack.yml
Windows: Emotet Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_emotet.yml
Windows: Formbook Malware Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_formbook.yml
Windows: QBot Process Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_qbot.yml
Windows: Ryuk Ransomware	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/malware/win_mal_ryuk.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_ryuk.yml

FortiSIEM Rule	Author	Source Link
Windows: WScript or CScript Dropper	Margaritis Dimitrios (idea), Florian Roth (rule)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_script_dropper.yml
Windows: Trickbot Malware Recon Activity	David Burkett, Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_trickbot_recon_activity.yml
Windows: WannaCry Ransomware	Florian Roth (rule), Tom U. @c_APT_ure (collection)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_malware_wannacry.yml
Windows: MavInject Process Injection	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mavinject_proc_inj.yml
Windows: Meterpreter or Cobalt Strike Getsystem Service Start	Teymur Kheirkhabarov, Ecco	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_meterpreter_or_cobaltstrike_getsystem_service_start.yml
Windows: Mimikatz Command Line	Teymur Kheirkhabarov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mimikatz_command_line.yml
Windows: MMC Spawning Windows Shell	Karneades, Swisscom CSIRT	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mmc_spawn_shell.yml
Windows: Mouse Lock Credential Gathering	Cian Heasley	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mouse_lock.yml
Windows: Mshta JavaScript Execution	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mshta_javascript.yml
Windows: MSHTA Spawning Windows Shell	Michael Haag	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_mshta_spawn_shell.yml
Windows: Quick Execution of a Series of Suspicious Commands	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_multiple_suspicious_cli.yml
Windows: Windows Network Enumeration	Endgame, JHasenbusch (ported for oscd.community)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_net_enum.yml

FortiSIEM Rule	Author	Source Link
Windows: Netsh RDP Port Opening	Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_allow_port_rdp.yml
Windows: Netsh Port or Application Allowed	Markus Neis, Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_fw_add.yml
Windows: Netsh Program Allowed with Suspcious Location	Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_fw_add_susp_image.yml
Windows: Network Trace with netsh exe	Kutepov Anton, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_packet_capture.yml
Windows: Netsh Port Forwarding	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_port_fwd.yml
Windows: Netsh RDP Port Forwarding	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_port_fwd_3389.yml
Windows: Harvesting of Wifi Credentials Using netsh exe	Andreas Hunkeler (@Karneades)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_netsh_wifi_credential_harvesting.yml
Windows: Network Sniffing	Timur Zinniatullin, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_network_sniffing.yml
Windows: New Service Creation via sc.exe	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_new_service_creation.yml
Windows: Non Interactive PowerShell	Roberto Rodriguez @Cyb3rWard0g (rule), oscd.-community (improvements)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_non_interactive_powershell.yml
Windows: Microsoft Office Product Spawning Windows Shell	Michael Haag, Florian Roth, Markus Neis, Elastic, FPT.EagleEye Team	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_office_shell.yml
Windows: MS Office	Jason Lynch	https://-

FortiSIEM Rule	Author	Source Link
Product Spawning Exe in User Directory		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_office_spawn_exe_from_users_directory.yml
Windows: Executable Used by PlugX in Uncommon Location	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_plugx_susp_exe_locations.yml
Windows: Possible Applocker Bypass	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_possible_applocker_bypass.yml
Windows: Detection of Possible Rotten Potato	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_possible_privilege_escalation_using_rotten_potato.yml
Windows: Powershell AMSI Bypass via NET Reflection	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_amsi_bypass.yml
Windows: Audio Capture via PowerShell	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_audio_capture.yml
Windows: PowerShell Base64 Encoded Shellcode	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_b64_shellcode.yml
Windows: Suspicious Bitsadmin Job via PowerShell	Endgame, JHasenbusch (ported to sigma for oscd.-community)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_bitsjob.yml
Windows: Suspicious PowerShell Execution via DLL	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_dll_execution.yml
Windows: PowerShell Downgrade Attack	Harish Segar (rule)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_downgrade_attack.yml
Windows: Download via PowerShell URL	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_download.yml
Windows: FromBase64String Command Line	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_frombase64string.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious PowerShell Parameter Substring	Florian Roth (rule), Daniel Bohannon (idea), Roberto Rodriguez (Fix)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_suspicious_parameter_variation.yml
Windows: Suspicious XOR Encoded PowerShell Command Line	Sami Ruohonen, Harish Segar (improvement)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powershell_xor_commandline.yml
Windows: Default PowerSploit and Empire Schtasks Persistence	Markus Neis, @Karneades	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_powersploit_empire_schtasks.yml
Windows: Windows Important Process Started From Suspicious Parent Directories	vburov	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_proc_wrong_parent.yml
Windows: Bitsadmin Download	Michael Haag	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_process_creation_bitsadmin_download.yml
Windows: Process Dump via Rundll32 and Comsvcs dll	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_process_dump_rundll32_comsvcs.yml
Windows: PsExec Service Start	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_psexesvc_start.yml
Windows: Query Registry	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_query_registry.yml
Windows: MSTSC Shadowing	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_rdp_hijack_shadowing.yml
Windows: RedMimicry Winnti Playbook Execute	Alexander Rausch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_redmimicry_winnti_proc.yml
Windows: Remote PowerShell Session for creating process	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_remote_powershell_session_process.yml
Windows: System Time Discovery	E.M. Anhaus (originally from Atomic	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
	Blue Detections, Endgame), oscd.-community	creation/win_remote_time_discovery.yml
Windows: Renamed Binary	Matthew Green - @mgreen27, Ecco, James Pemberton / @4A616D6573, oscd.community (improvements), Andreas Hunkeler (@Karneades)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_binary.yml
Windows: Highly Relevant Renamed Binary	Matthew Green - @mgreen27, Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_binary_highly_relevant.yml
Windows: Renamed jusched exe	Markus Neis, Swisscom	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_jusched.yml
Windows: Execution of Renamed PaExec	Jason Lynch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_paexec.yml
Windows: Renamed PowerShell	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_powershell.yml
Windows: Renamed ProcDump	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_procdump.yml
Windows: Renamed PsExec	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_renamed_psexec.yml
Windows: Run PowerShell Script from ADS	Sergey Soldatov, Kaspersky Lab, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_run_powershell_script_from_ads.yml
Windows: Possible Shim Database Persistence via sdbinst exe	Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_sdbinst_shim_persistence.yml
Windows: Manual Service Execution	Timur Zinniatullin, Daniil Yugoslavskiy, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_service_execution.yml

FortiSIEM Rule	Author	Source Link
Windows: Stop Windows Service	Jakob Weinzettl, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_service_stop.yml
Windows: Shadow Copies Access via Symlink	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_access_symlink.yml
Windows: Shadow Copies Creation Using Operating Systems Utilities	Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_creation.yml
Windows: Shadow Copies Deletion Using Operating Systems Utilities	Florian Roth, Michael Haag, Teymur Kheirkhabarov, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shadow_copies_deletion.yml
Windows: Windows Shell Spawning Suspicious Program	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_shell_spawn_susp_program.yml
Windows: SILENTTRINITY Stager Execution	Aleksey Potapov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_silenttrinity_stage_use.yml
Windows: Audio Capture via SoundRecorder	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_soundrec_audio_capture.yml
Windows: Possible SPN Enumeration	Markus Neis, keepwatch	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_spn_enum.yml
Windows: Possible Ransomware or Unauthorized MBR Modifications	@neu5ron	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_bcdedit.yml
Windows: Application Allowlisting Bypass via Bginfo	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_bginfo.yml
Windows: Suspicious Calculator Usage	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_calc.yml

FortiSIEM Rule	Author	Source Link
Windows: Possible App Allowlisting Bypass via WinDbg CDB as a Shell code Runner	Beyu Denis, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cdb.yml
Windows: Suspicious Certutil Command	Florian Roth, juju4, keepwatch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_certutil_command.yml
Windows: Certutil Encode	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_certutil_encode.yml
Windows: Suspicious Commandline Escape	juju4	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cli_escape.yml
Windows: Command Line Execution with Suspicious URL and AppData Strings	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_cmd_http_appdata.yml
Windows: Suspicious Code Page Switch	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_codepage_switch.yml
Windows: Reconnaissance Activity with Net Command	Florian Roth, Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_commands_recon_activity.yml
Windows: Suspicious Compression Tool Parameters	Florian Roth, Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_compression_params.yml
Windows: Process Dump via Comsvcs DLL	Modexp (idea)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_comsvcs_procdump.yml
Windows: Copy from Admin Share	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_copy_lateral_movement.yml
Windows: Suspicious Copy From or To System32	Florian Roth, Markus Neis	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_copy_system32.yml
Windows: Covenant Launcher Indicators	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_covenant.yml

FortiSIEM Rule	Author	Source Link
Windows: CrackMapExec Command Execution	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_crackmapexec_execution.yml
Windows: CrackMapExec PowerShell Obfuscation	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_crackmapexec_powershell_obfuscation.yml
Windows: Suspicious Parent of Csc.exe	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_csc.yml
Windows: Suspicious Csc.exe Source File Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_csc_folder.yml
Windows: Suspicious Curl Usage on Windows	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_curl_download.yml
Windows: Suspicious Curl File Upload	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_curl_fileupload.yml
Windows: Curl Start Combination	Sreeman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_curl_start_combo.yml
Windows: ZOHO Dctask64 Process Injection	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dctask64_proc_inject.yml
Windows: Suspicious Desktopimgdownldr Command	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_desktopimgdownldr.yml
Windows: Devtoolslauncher.exe Executing Specified Binary	Beyu Denis, oscd.community (rule), @_felamos (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_devtoolslauncher.yml
Windows: Direct Autorun Keys Modification	Victor Sergeev, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_direct_asep_reg_keys_modification.yml
Windows: Disabled IE Security Features	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_disable_ie_features.yml
Windows: DIT Snapshot Viewer Use	Furkan Caliskan (@caliskanfurkan_)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ditsnap.yml

FortiSIEM Rule	Author	Source Link
Windows: Application Allowlisting Bypass via Dnx.exe	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dnx.yml
Windows: Suspicious Double File Extension	Florian Roth (rule), @blu3_team (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_double_extension.yml
Windows: Application Allowlisting Bypass via Dxcap.exe	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_dxcap.yml
Windows: Suspicious Eventlog Clear or Configuration Using Wevtutil or Powershell or Wmic	Ecco, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_eventlog_clear.yml
Windows: Executables Started in Suspicious Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_exec_folder.yml
Windows: Execution in Non-Executable Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_execution_path.yml
Windows: Execution in Webserver Root Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_execution_path_webserver.yml
Windows: Explorer Root Flag Process Tree Break	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_explorer_break_proctree.yml
Windows: Suspicious File Characteristics Due to Missing Fields	Markus Neis, Sander Wiebing	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_file_characteristics.yml
Windows: Findstr Launching lnk File	Trent Liffick	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_findstr_lnk.yml
Windows: Firewall Disabled via Netsh	Fatih Sirin	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_firewall_disable.yml
Windows: Fsutil Suspicious Invocation	Ecco, E.M. Anhaus, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_fsutil_usage.yml
Windows: Suspicious	Florian Roth	https://

FortiSIEM Rule	Author	Source Link
GUP.exe Usage		github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_gup.yml
Windows: IIS Native-Code Module Command Line Installation	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_iss_module_install.yml
Windows: Windows Defender Download Activity	Matthew Matchen	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_mpcmdrun_download.yml
Windows: Suspicious MsiExec Directory	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_msiexec_cwd.yml
Windows: MsiExec Web Install	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_msiexec_web_install.yml
Windows: Malicious Payload Download via Office Binaries	Beyu Denis, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_msoffice.yml
Windows: Net.exe Execution For Discovery	Michael Haag, Mark Woan (improvements), James Pemberton / @4A616D6573 / oscd.community (improvements)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_net_execution.yml
Windows: Suspicious Netsh.DLL Persistence	Victor Sergeev, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_netsh_dll_persistence.yml
Windows: Invocation of Active Directory Diagnostic Tool ntdsutil exe	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ntdsutil.yml
Windows: Application Allowlisting Bypass via DLL Loaded by odbcconf exe	Kirill Kiryanov, Beyu Denis, Daniil Yugoslavskiy, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_odbcconf.yml
Windows: OpenWith.exe Executing Specified Binary	Beyu Denis, oscd.-community (rule), @harr0ey (idea)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_openwith.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious Execution from Outlook	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_outlook.yml
Windows: Execution in Outlook Temp Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_outlook_temp.yml
Windows: Ping Hex IP	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ping_hex_ip.yml
Windows: Empire PowerShell Launch Parameters	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_empire_launch.yml
Windows: Empire PowerShell UAC Bypass	Ecco	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_empire_uac_bypass.yml
Windows: Suspicious Encoded PowerShell Command Line	Florian Roth, Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_enc_cmd.yml
Windows: PowerShell Encoded Character Syntax	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_encoded_param.yml
Windows: Malicious Base64 Encoded PowerShell Keywords in Command Lines	John Lambert (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_hidden_b64_cmd.yml
Windows: Suspicious PowerShell Invocation Based on Parent Process	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_parent_combo.yml
Windows: Suspicious PowerShell Parent Process	Teymur Kheirkhabarov, Harish Segar (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_powershell_parent_process.yml
Windows: Suspicious Use of Procdump	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_procdump.yml
Windows: Programs starting from Suspicious Location	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_prog_location_process_starts.yml

FortiSIEM Rule	Author	Source Link
Windows: PowerShell Script Run in AppData	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ps_appdata.yml
Windows: PowerShell DownloadFile	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_ps_downloadfile.yml
Windows: Psr.exe Capture Screenshots	Beyu Denis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_psr_capture_screenshots.yml
Windows: Rar with Password or Compression Level	@ROxPinTeddy	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rar_flags.yml
Windows: Suspicious RASdial Activity	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rasdial_activity.yml
Windows: Suspicious Reconnaissance Activity via net group or localgroup	Florian Roth, omkar72	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_recon_activity.yml
Windows: Suspicious Regsvr32 Usage	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_regsvr32_anomalies.yml
Windows: Regsvr32 Flags Anomaly	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_regsvr32_flags_anomaly.yml
Windows: Renamed ZOHO Dctask64	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_renamed_dctask64.yml
Windows: Renamed SysInternals Debug View	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_renamed_debugview.yml
Windows: Suspicious Process Start Locations	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_run_locations.yml
Windows: Suspicious Arguments in Rundll32 Usage	juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_rundll32_activity.yml
Windows: Suspicious DLL Call by Ordinal	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_

FortiSIEM Rule	Author	Source Link
		creation/win_susp_rundll32_by_ordinal.yml
Windows: Scheduled Task Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_schtask_creation.yml
Windows: WSF JSE JS VBA VBE File Execution	Michael Haag	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_script_execution.yml
Windows: Suspicious Service Path Modification	Victor Sergeev, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_service_path_modification.yml
Windows: Squirrel Lolbin	Karneades / Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_squirrel_lolbin.yml
Windows: Suspicious Svchost Process	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_svchost.yml
Windows: Suspect Svchost Activity	David Burkett	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_svchost_no_cli.yml
Windows: Sysprep on AppData Folder	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_sysprep_appdata.yml
Windows: Suspicious SYSVOL Domain Group Policy Access	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_sysvol_access.yml
Windows: Taskmgr Created By Local SYSTEM Account	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_taskmgr_localsystem.yml
Windows: Process Launch from Taskmgr	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_taskmgr_parent.yml
Windows: Suspicious tscon.exe Created By Local SYSTEM Account	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_tscon_localsystem.yml
Windows: Suspicious RDP Redirect Using tscon.exe	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_tscon_rdp_redirect.yml

FortiSIEM Rule	Author	Source Link
Windows: Suspicious Use of CSharp Interactive Console	Michael R. (@nahamike01)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_use_of_csharp_console.yml
Windows: Suspicious Userinit Child Process	Florian Roth (rule), Samir Bousseaden (idea)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_userinit_child.yml
Windows: Whoami Execution	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_whoami.yml
Windows: Suspicious WMI Execution	Michael Haag, Florian Roth, juju4	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_susp_wmi_execution.yml
Windows: Sysmon Driver Unload	Kirill Kiryanov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_sysmon_driver_unload.yml
Windows: System File Execution Location Anomaly	Florian Roth, Patrick Bareiss	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_system_exe_anomaly.yml
Windows: Tap Installer Execution	Daniil Yugoslavskiy, Ian Davis, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_tap_installer_execution.yml
Windows: Tasks Folder Evasion	Sreeman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_task_folder_evasion.yml
Windows: Terminal Service Process Spawn	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_termserv_proc_spawn.yml
Windows: Domain Trust Discovery	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community, omkar72	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_dsquery_domain_trust_discovery.yml ; https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_trust_discovery.yml
Windows: Bypass UAC via CMSTP	E.M. Anhaus (originally from Atomic Blue Detections, Endgame), oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_cmstp.yml
Windows: Bypass	E.M. Anhaus (ori-	https://

FortiSIEM Rule	Author	Source Link
UAC via Fodhelper.exe	ginally from Atomic Blue Detections, Tony Lambert), oscd.community	github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_fodhelper.yml
Windows: Bypass UAC via WSReset exe	E.M. Anhaus (originally from Atomic Blue Detections, Tony Lambert), oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_uac_wsreset.yml
Windows: Possible Privilege Escalation via Weak Service Permissions	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_using_sc_to_change_sevice_image_path_by_non_admin.yml
Windows: Java Running with Remote Debugging	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_vul_java_remote_debugging.yml
Windows: Webshell Detection With Command Line Keywords	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_detection.yml
Windows: Webshell Recon Detection Via CommandLine Processes	Cian Heasley	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_recon_detection.yml
Windows: Shells Spawned by Web Servers	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_webshell_spawn.yml
Windows: Run Whoami as SYSTEM	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_whoami_as_system.yml
Windows: Windows 10 Scheduled Task SandboxEscaper 0-day	Olaf Hartong	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_win10_sched_task_0day.yml
Windows: WMI Backdoor Exchange Transport Agent	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_backdoor_exchange_transport_agent.yml
Windows: WMI Persistence - Script Event Consumer	Thomas Patzke	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_persistence_script_event_consumer.yml

FortiSIEM Rule	Author	Source Link
Windows: WMI Spawning Windows PowerShell	Markus Neis / @Karneades	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmi_spwns_powershell.yml
Windows: Wmiprvse Spawning Process	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wmiprvse_spawning_process.yml
Windows: Microsoft Workflow Compiler	Nik Seetharaman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_workflow_compiler.yml
Windows: Wsreset UAC Bypass	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_wsreset_uac_bypass.yml
Windows: XSL Script Processing	Timur Zinniatullin, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/process_creation/win_xsl_script_processing.yml
Windows: Leviathan Registry Key Activity	Aidan Bracher	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_leviathan.yml
Windows: OceanLotus Registry Activity	megan201296	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_oceanlotus_registry.yml
Windows: Pandemic Registry Key	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_apt_pandemic.yml
Windows: Autorun Keys Modification	Victor Sergeev, Daniil Yugoslavskiy, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_asep_reg_keys_modification.yml
Windows: Suspicious New Printer Ports in Registry CVE-2020-1048	EagleEye Team, Florian Roth, NVISO	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_cve-2020-1048.yml
Windows: DHCP Callout DLL Installation	Dimitrios Slamaris	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_dhcp_calloutdll.yml
Windows: Disable Security Events Logging Adding Reg Key MiniNt	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_disable_security_events_logging_adding_reg_key_minint.yml
Windows: DNS	Florian Roth	https://

FortiSIEM Rule	Author	Source Link
ServerLevelPluginDll Install		github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_dns_serverlevelplugindll.yml
Windows: COMPlus-ETWEnabled Registry Modification	Roberto Rodriguez (Cyb3rWard0g), OTR (Open Threat Research)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/builtin/win_etw_modification.yml ; https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_etw_disabled.yml
Windows: Windows Credential Editor Install Via Registry	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_hack_wce_reg.yml
Windows: Logon Scripts User-InitMprLogonScript Registry	Tom Ueltschi (@c_APT_ure)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_logon_scripts_userinitmprlogonscript_reg.yml
Windows: Narrator s Feedback-Hub Persistence	Dmitriy Lifanov, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_narrator_feedback_persistance.yml
Windows: New DLL Added to AppCertDlls Registry Key	Ilyas Ochkov, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_new_dll_added_to_appcertdlls_registry_key.yml
Windows: New DLL Added to AppInit-DLLs Registry Key	Ilyas Ochkov, oscd.-community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_new_dll_added_to_appinit_dlls_registry_key.yml
Windows: Possible Privilege Escalation via Service Permissions Weakness	Teymur Kheirkhabarov	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_possible_privilege_escalation_via_service_registry_permissions_weakness.yml
Windows: RDP Registry Modification	Roberto Rodriguez @Cyb3rWard0g	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_rdp_registry_modification.yml
Windows: RDP Sensitive Settings Changed	Samir Bousseaden	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_rdp_settings_hijack.yml
Windows: RedMimicry Winnti Playbook Registry Manipulation	Alexander Rausch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_redmimicry_winnti_reg.yml
Windows: Office	Trent Liffick (@tlif-	https://-

FortiSIEM Rule	Author	Source Link
Security Settings Changed	fick)	github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_reg_office_security.yml
Windows: Windows Registry Persistence COM Key Linking	Kutepov Anton, oscd.community	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_persistence_key_linking.yml
Windows: Windows Registry Persistence COM Search Order Hijacking	Maxime Thiebaut (@0xThiebaut)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_persistence_search_order.yml
Windows: Windows Registry Trust Record Modification	Antonlovesdnb	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_registry_trust_record_modification.yml
Windows: Security Support Provider SSP Added to LSA Configuration	iwillkeepwatch	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_ssp_added_lsa_config.yml
Windows: Sticky Key Like Backdoor Usage	Florian Roth, @twjackomo	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_stickykey_like_backdoor.yml
Windows: Suspicious RUN Key from Download	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_download_run_key.yml
Windows: DLL Load via LSASS	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_lsass_dll_load.yml
Windows: Suspicious Camera and Microphone Access	Den Iuzvyk	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_mic_cam_access.yml
Windows: Registry Persistence via Explorer Run Key	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_reg_persist_explorer_run.yml
Windows: New RUN Key Pointing to Suspicious Folder	Florian Roth, Markus Neis, Sander Wiebing	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_run_key_img_folder.yml
Windows: Suspicious Service Installed	xknow (@xknow_infosec), xorxes (@xor_xes)	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_susp_service_installed.yml
Windows: Suspicious Keyboard Layout	Florian Roth	https://-github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_

FortiSIEM Rule	Author	Source Link
Load		event/sysmon_suspicious_keyboard_layout_load.yml
Windows: Usage of Sysinternals Tools	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_sysinternals_eula_accepted.yml
Windows: UAC Bypass via Event Viewer	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_uac_bypass_eventvwr.yml
Windows: UAC Bypass via Sdclt	Omer Yampel	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_uac_bypass_sdclt.yml
Windows: Registry Persistence Mechanisms	Karneades	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_win_reg_persistence.yml
Windows: Azure Browser SSO Abuse	Den Iuzvyk	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/image_load/sysmon_abusing_azure_browser_sso.yml
Windows: Executable in ADS	Florian Roth, @0xrawsec	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_ads_executable.yml
Windows: Alternate PowerShell Hosts Pipe	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_alternate_powershell_hosts_pipe.yml
Windows: Turla Group Named Pipes	Markus Neis	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_apt_turla_namedpipes.yml
Windows: CactusTorch Remote Thread Creation	@SBousseaden (detection), Thomas Patzke (rule)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cactustorch.yml
Windows: CMSTP Execution	Nik Seetharaman	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/registry_event/sysmon_cmstp_execution.yml

FortiSIEM Rule	Author	Source Link
Windows: CobaltStrike Process Injection	Olaf Hartong, Florian Roth, Aleksey Potapov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cobaltstrike_process_injection.yml
Windows: CreateRemoteThread API and LoadLibrary	Roberto Rodriguez @Cyb3rWard0g	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_createremotethread_loadlibrary.yml
Windows: Cred Dump Tools Via Named Pipes	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_cred_dump_tools_named_pipes.yml
Windows: Malicious Named Pipe	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_mal_namedpipes.yml
Windows: Password Dumper Remote Thread in LSASS	Thomas Patzke	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_password_dumper_lsass.yml
Windows: Possible DNS Rebinding	Ilyas Ochkov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_possible_dns_rebinding.yml
Windows: Raw Disk Access Using Illegitimate Tools	Teymur Kheirkhabarov, oscd.community	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_raw_disk_access_using_illegitimate_tools.yml
Windows: PowerShell Rundll32 Remote Thread Creation	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_susp_powershell_rundll32.yml
Windows: Suspicious	Perez Diego	https://

FortiSIEM Rule	Author	Source Link
Remote Thread Created	(@darkquassar), oscd.community	github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_suspicious_remote_thread.yml
Windows: WMI Event Subscription	Tom Ueltschi (@c_APT_ure)	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_wmi_event_subscription.yml
Windows: Suspicious Scripting in a WMI Consumer	Florian Roth	https://github.com/SigmaHQ/sigma/blob/master/rules/windows/sysmon/sysmon_wmi_susp_scripting.yml

REST API to Return Worker Queue State

The following public REST API can be used to query Worker Event Upload Queue state. An upstream load balancer can use the information to route events from Collectors to the least loaded Worker.

API: `GET https://<WorkerIP>/workerUploadHealth/response.json`

Response: `{ allowUpload: true, fileQueueSizeMB: 500, fileQueueCount: 300 }`

Response Parameter	Description
allowUpload	True means Worker upload queue is less than 100MB and Worker will accept events. False means Worker upload queue is more than 100MB and Worker will reject events. This is likely because inserts to event database is slow.
fileQueueSizeMB	Current file queue size in MB.
fileQueueCount	Current file queue count.

FORTINET®

www.fortinet.com