Manufacturer's Authorization

To: Secretariatul Parlamentului Republicii Moldova
Partner: "BTS PRO" SRL
Tender ID - ocds-b3wdp1-MD-1720783098208

WHEREAS

Dell Ukraine LLC is an entity within the Dell Technologies, who are established and reputable producer of computers, monitors, projectors, printers, servers, storages, and other electronic devices, having factories at USA (One Dell Way, Round Rock, TX 78682), Poland (Lodz, ul. lnformatyczna 1, 92-410), China (2366 Jinshang Road, Xiamen, 361011), India (Sirumangadu Hi-Tech SEZ SIPCOT Industrial Park, Tamil, Nadu 602106), Malaysia (Plot 76, Mukim 11, Bukit Tengah Industrial Park, 14000 Bukit Merta jam, Penang), and other locations informs that **"BTS PRO" SRL**, MD2069, Republic Moldova is authorized to submit a bid of the above mentioned tender, and subsequently negotiate and sign the contract.

Iryna Volk
General Director
Dell Ukraine LLC

м. Київ * Україна * Товариство з обмеженою відповідальністю
«ДЕЛЛ УКРАЇНА»
Ідентифікаційний код 35077983

23 of August 2024

Dell history starts form 1984, Server manufacturing Dell started from 1990. For more information that is detailed please visit our web site: www.dell.com

Digitally signed by Canţer Aurelia
Date: 2024.08.26 14:49:46 EEST
Reason: MoldSign Signature
Location: Moldova
MOLDOVA EUROPEANĂ

Dell Ukraine LLC • **www.Dell.ua**
04070, Kyiv, Ukraine, Spaska Str. 30 A, BC Podil Plaza, 7th floor
Tel.: +38 044-390-7877

ISO 9001:2015

The NetApp Quality Management System is certified to ISO 9001:2015. The scope of the NetApp certification is the Design and Manufacture of High Performance Network Data Storage Devices.

NetApp Management Systems have been registered to ISO 9001 certification since May 1997. Most recently, NetApp received a certificate for registration to ISO 9001:2015 in Nov 20, 2017.

- ISO 9001 Quality Policy Statement
- ISO 9001 Certificate

ISO 14001:2015

The NetApp Environmental Management System (EMS) is a continual cycle of planning, implementing, reviewing, and improving NetApp processes and actions to meet environmental obligations and objectives. NetApp conforms to the Environmental Management System Standard ISO 14001:2015.

- ISO 14001 Environmental Policy Statement
- ISO 14001 Certificate

Request additional information about NetApp’s environmental certifications.

LENOVO GLOBAL TECHNOLOGY HK LIMITED

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Manufacturer's Authorization Form

Secretariatul Parlamentului Republicii Moldova

MD-2073, MOLDOVA, mun.Chişinău, mun.Chişinău, bd. Ştefan cel Mare si Sfint nr.105

Tender ID - ocds-b3wdp1-MD-1720783098208a

Whereas, LENOVO GLOBAL TECHNOLOGY HK LIMITED, acting on behalf of Lenovo PC HK Limited as reputable Manufacturer of Hardware, Software and Services (hereinafter "the Producer"), hereby confirms that BTS PRO, Moldova is an authorized Lenovo Business Partner and is further authorized to resell in Moldova to Secretariatul Parlamentului Republicii Moldova any products produced by the Manufacturer, which include the following:

Lenovo ThinkSystems and Storage

Should the bidding result in a contract between BTS PRO and Secretariatul Parlamentului Republicii Moldova, the above-listed products will come with the Manufacturer's full standard warranty.

This confirmation does not constitute any representation by the Manufacturer of the status or qualifications of BTS PRO.

_____

Olga Gubina

Sr. Solution Sales Rep

Infrastructure Solutions Group

Lenovo AM, GE, MD, UZ

Date: 23.08.2024.

www.netapp.com

NetApp Ireland Limited
NSQ2, Navigation Square,
Albert Quay, Cork,
Ireland, T12 W351

August 23, 2024
Ref. AC-2452

To: **Secretariatul Parlamentului Republicii Moldova**

Regarding: Sistem de stocare Tender ID - ocds-b3wdp1-MD-1720783098208

NetApp Partner Status Confirmation Letter (Authorization Form)

We hereby confirm that as of today the company

BTS PRO located at str. Tighina 23/3, Chisinau, Republic of Moldova

is authorized by

NetApp Ireland Limited (NetApp), located at: NSQ2, Navigation Square, Albert Quay, Cork, Ireland, T12 W351,

to resell NetApp products on the territory of Republic of Moldova and is an authorized NetApp partner with the following partner status(-es):

NetApp Preferred Partner
NetApp Lifecycle Services Certified Partner

Sincerely yours,
Anton Sinsky
Regional Partner Manager
sinsky@netapp.com

DATASHEET

NETAPP ASA

SAN-optimized storage for critical enterprise applications

The challenge
Enterprise customers typically have both SAN-based workloads (ERP, databases, VDI) and unstructured data NAS workloads in their environment. Some customers separate these workloads based on internal policies that require dedicated storage to isolate some or all of the SAN workloads. Those SAN workloads need high performance, continuous availability, and operational efficiency to address constrained budgets.

The solution
NetApp® ASA systems have you covered. These all-flash arrays deliver a simplified and consistent SAN experience for mission-critical databases and other SAN workloads. Built on an end-to-end NVMe architecture, the NetApp ASA systems deliver industry-leading availability, superior performance, and simplified data management across your hybrid cloud.

All-flash block storage powered by ONTAP

NetApp ASA systems deliver modern solutions to your SAN infrastructure. They enable you to accelerate your business-critical applications, make sure that your data is always available, and simplify your operations. The ASA systems include A-Series models designed for the most performance-demanding and mission-critical applications, and C-Series models optimized for cost-effective deployment of business-critical applications. Together, the ASA A-Series and C-Series systems:

- Deliver exceptional performance to improve customer experience and reduce time to results.
- Keep business-critical data available, protected, and secure.
- Provide more effective capacity for any workload, backed by the industry's most effective guarantee.

Fuel your applications with the right performance

NetApp ASA arrays are primed to take on any SAN workloads. Multitasking is not a problem. These systems stay sharp even while encrypting, compressing, deduplicating, and protecting your data.

Build a trusted SAN environment with the powerful ASA systems that:

- Support both NVMe/FC and NVMe/TCP, providing latency as low as 100 microseconds with ASA A-Series systems and millions of IOPS in a cluster.
- Accelerate your VMware infrastructure, Oracle, SAP, and Microsoft SQL Server applications to improve customer experience and reduce time to results.
- Meet the performance objectives for all your applications even while encrypting, replicating, and storing the data efficiently.

Keep important data available, protected, and secure

As organizations become more data driven, the business impact of data loss can be increasingly dramatic—and costly. IT must protect data from both internal and external threats, ensure data availability, eliminate maintenance disruptions, and quickly recover from failures.

Access your data with continuous availability
ASA systems provide continuous access to your data during unplanned outages with symmetric, active-active multipathing. With both active controllers capable of communicating to a LUN, the multipathing gives you uninterrupted access to your data, with rapid failover recovery.

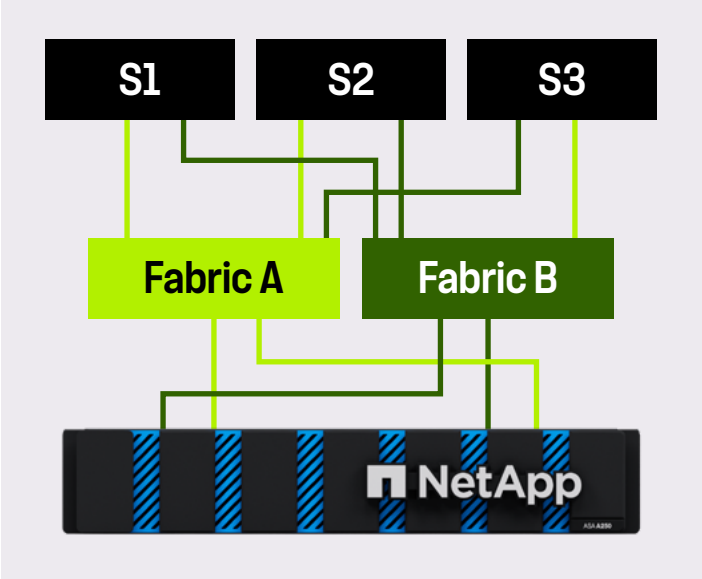


Figure 1) Symmetric active-active topology.

KEY BENEFITS

Worry-free customer experience:

- Superior performance for your VMware workloads and database applications in the dedicated SAN environment.
- Continuous data access to support your mission-critical and business-critical workloads.
- Lower TCO and improved sustainability with significant savings on storage footprint, energy consumption, and carbon footprint.
- Effortless cloud connectivity with leading integration to Amazon Web Services, Microsoft Azure, Google Cloud, and others.
- Ability to scale performance and capacity in a cluster nondisruptively as your data grows.

NetApp business continuity solutions help you maintain constant data availability with zero data loss and zero downtime if a man-made or natural disaster occurs. NetApp MetroCluster™ software replicates your data synchronously to a separate location to protect your entire system. If something goes wrong at one site, your applications automatically switch over to the other site instantaneously. For a more tailored approach, choose NetApp SnapMirror® active sync to replicate the most critical data in a more cost-efficient way while taking advantage of the increased performance, greater flexibility, and enhanced load-balancing capability that come with the symmetric active-active architecture.

Integrated data protection
ASA systems come with a full suite of acclaimed NetApp integrated and application-consistent data protection software. Key capabilities include:

- Native space efficiency with cloning and NetApp Snapshot™ copies that reduce storage costs and minimize performance impact. Up to 1,023 copies are supported.
- NetApp SnapCenter® software provides application-consistent data protection and clone management to simplify application management.
- NetApp SnapMirror technology replicates to any NetApp FAS or AFF system, both on premises and in the cloud, reducing overall system costs.

Security everywhere
Encryption and key management help guard your sensitive data on premises, in the cloud, and in transit. The market-leading anti-ransomware protection for post-attack recovery safeguards your critical data from ransomware attacks and can prevent catastrophic financial consequences. With NetApp's proven and efficient security solutions, you can:

- Protect against threats with multifactor authentication, role-based access control, and multi-admin verification.
- Achieve FIPS 140-2 compliance (Level 1 and Level 2) with self-encrypting drives and use any type of drives with software-based encryption.
- Meet governance, risk, and compliance requirements with security features such as disk sanitization, logging and auditing monitors, and secure multitenancy.

Simplify operations and reduce TCO

Managing your infrastructure shouldn't be complex. As seasoned veterans in this industry, we know a thing or two about what works and what doesn't. NetApp ASA block storage provides a simple SAN experience for your IT staff. The new System Manager interface creates an intuitive user experience, and the feature-rich, SAN-specific NetApp ONTAP® data management capabilities are built in, enabling your IT staff to:

- Quickly provision storage and simplify ongoing management of dedicated SAN workloads—VMware, Oracle, SAP, Microsoft SQL Server.
- Streamline data management with System Manager, which is optimized for SAN-only configurations.
- Automatically tier data across your hybrid cloud with leading cloud connectivity.
- Reduce storage footprint, power consumption, and carbon footprint significantly with high-density, highly efficient all-flash storage.

Future-proof your infrastructure

When you purchase NetApp ASA storage, you can future-proof your investment with NetApp Advance, our best-in-class storage ownership program. Make the smart choice today and stay current with technological innovations:

- Eliminate the headache of tech refreshes with the Storage Lifecycle Program: Get a new controller every 3 years with support-managed updates included, or move to the cloud, whichever best meets your needs.
- Achieve high performance while minimizing storage cost with the Storage Efficiency Guarantee: If we don't meet your workload goals, we'll make it right at no cost to you (4:1 for SAN workloads1).
- Enjoy a Six Nines (99.9999%) Data Availability Guarantee: If you have unplanned downtime in excess of 31.56 seconds per year, we provide remediation.
- Recover data with the Ransomware Recovery Guarantee if a ransomware attack occurs. If we can't help you restore your Snapshot data, we will compensate you.

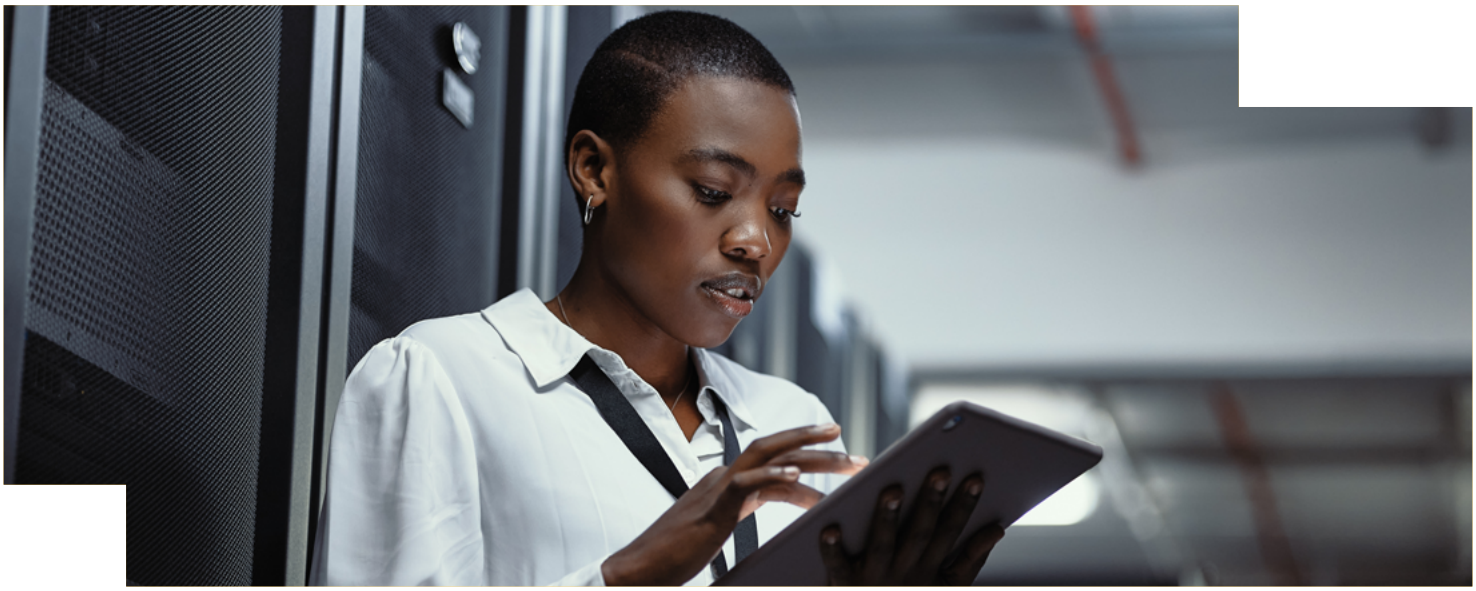


Table 1) ASA A-Series technical specifications.

	ASA A900	ASA A800	ASA A400	ASA A250	ASA A150
Maximum scale-out	12 nodes	12 nodes	12 nodes	12 nodes	12 nodes
Maximum SSDs	2,880	1,440	2,880	288	432
Maximum effective capacity[1]	351PB	158PB	351PB	26PB	13PB
Per-system specifications (active-active) dual controller					
Controller chassis form factor	8U	4U; 48 internal SSD slots	4U	2U; 24 internal SSD slots	2U; 24 internal SSD slots
PCIe expansion slots	20	8	10	4	n/a
FC target ports (32Gb autoranging)	64	32	24	Up to 16	n/a
FC target ports (16Gb autoranging)	64	32	32 (with FC mezzanine card)	n/a	n/a
UTA2 (16Gb FC/10GbE)	64	n/a	n/a	n/a	8 (UTA2 models only)
100GbE ports (40GbE autoranging)	32	20	16	8[2]	n/a
40GbE ports (can be 4× 10GbE)	n/a	n/a	n/a	n/a	n/a
25GbE ports (10GbE autoranging)	64	16	16	Up to 16	n/a
10GbE ports	64	32	32	n/a	4
10GBASE-T (1GbE autoranging)	64	n/a	16	4	8 (10GBASE-T models only)
12Gb/6Gb SAS ports	64	n/a	32	4	4
Storage networking supported	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, NVMe/FC, FC, iSCSI	NVMe/TCP, FC, iSCSI
Software version	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later	ONTAP 9.13.1 GA or later
Shelves and media	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF); DS2246 (2U, 24 drives, 2.5", SFF)	NS224 (2U, 24 drives, SFF NVMe); DS224C (2U, 24 drives, 2.5" SFF)	DS224C (2U, 24 drives, 2.5" SFF), DS2246 (2U, 24 drives, 2.5", SFF)
Power consumption (median)	2450W (with NS224)	1463W	890W (with DS224C), 1240W (with NS224)	491W	300W[3]
Host/client OS supported	Windows Server, Linux, Oracle Solaris, AIX, HP-UX, VMware				

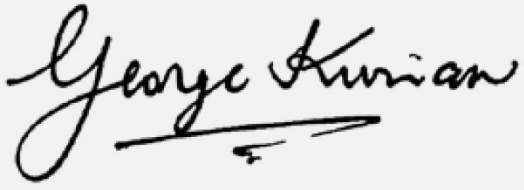
[1]Effective capacity based on 5:1 storage efficiency ratios with the maximum number of SSDs installed; space savings vary depending on workload and use cases.
[2]The ASA A250 supports 8 100GbE ports for ONTAP 9.13.1 or later, and 4 ports for earlier ONTAP releases.
[3]Estimate under typical conditions.

Certificate of achievement

Anatolie Colta

has successfully completed the requirement to be recognized as a

NetApp Certified Support Engineer



George Kurian, CEO

Certified Date: 4/22/2024
Expiration Date: 7/22/2026
Candidate ID: NETAPP00082140
Validation Number: ce3f97fca9a34475a328d436d9856b72
Validate at https://cp.certmetrics.com/netapp/en/public/verify/credential

NetApp

DATASHEET

ONTAP UNIFIED DATA STORAGE MANAGEMENT

Powering the data that drives your business.

The challenge

Data-driven businesses outperform their competitors by 20% (McKinsey, "The Data Dividend: Fueling Generative AI" (2023)). To achieve the data-driven ideal, data needs to be easily accessible by users and applications, achieve a balance of performance and efficiency, and be protected from both natural and human-made disasters. And businesses typically must do all of this while fitting into constrained IT budgets.

Many businesses struggle to achieve all three of these goals. Data spread across disconnected infrastructure or clouds creates silos and complexity. Mismatch of performance and application needs creates inefficiencies. And the layer of complexity to secure data creates barriers to use.

The solution

To address these challenges, you need a storage infrastructure that unifies data and eliminates silos; supports any data, anywhere, at the right price for performance; and eliminates the risk of data loss, destruction, or theft with integrated and intelligent AI-based protection.

NetApp ONTAP®, the industry's leading storage management software, breaks down silos and unifies storage and data, providing a single platform for all of your data across all your locations throughout the lifecycle of the data.

ONTAP makes storage simple

Eliminate the complexity of silos to reduce administration costs.
ONTAP gives you a common set of features across your on-premises and cloud storage, which simplifies operations so that your IT team can focus on strategic business priorities. Unify storage management across a hybrid multicloud that can span flash, disk, and cloud running SAN, NAS, and object workloads. Easily move your data within or between storage clusters, or to the cloud—wherever it's most useful. ONTAP is the foundation for the intelligent data infrastructure that will power your data to drive your innovation.

Get proven storage efficiency
With ONTAP, you get a comprehensive portfolio of storage efficiency capabilities. Inline data compression, deduplication, and compaction work together to reduce your storage costs and maximize the data you can store. Plus, you can multiply your savings with space-efficient NetApp Snapshot copies, thin provisioning, replication, and cloning technologies.

Tier automatically to cloud
ONTAP lets you deliver high performance to your applications and reduce storage costs by automatically tiering cold data from the performance tier to NetApp StorageGRID® object storage or a public cloud. Free up space on your performance tier, such as NetApp All SAN Array (ASA), AFF and FAS systems, or Cloud Volumes ONTAP instances in a public cloud so you can consolidate more workloads. For new all-flash system purchases, data tiering means that you can buy a smaller initial AFF or ASA configuration.

Maximize investment protection
ONTAP gives you the flexibility to create an integrated, scalable storage environment by clustering your on-premises storage controllers from different families—AFF all-flash and FAS hybrid-flash systems—and from different generations. You can grow your system with the latest hardware, continue to use your older hardware, and connect all of it to an ONTAP environment in the cloud. When it's time to retire a storage system, you can simply upgrade the controllers and keep your data in place on the existing disk shelves.

Get simple, powerful management capabilities
NetApp ONTAP integrates with BlueXP™ to provide unified control of your storage and data services to support an intelligent data infrastructure, across your hybrid multicloud. It enables you to discover, deploy, optimize, and manage your infrastructure and data, anytime, anywhere, across your on-premises and hybrid multicloud environments. Powerful AIOps drive operational simplicity with automated workflows, predictive analytics, and intelligent, actionable insights that improve system health, performance, and security. Its integrated services maximize data protection and cyber resilience, while minimizing costs. It includes flexible consumption investment management that unlocks control, protects investments, and delivers real-time return on investment (ROI) details, centrally.

KEY BENEFITS

Simple. Eliminate complex silos for greater data access and reduced costs

- Provide a common set of industry leading data services
- Support any data; block, file, and object from one platform
- Manage everything from a single user-friendly GUI or automate with CLI and APIs

Powerful. Serve any data, anywhere, with the right performance and price

- Support for a wide range of platforms, including all-flash and hybrid
- Integrated into all major clouds as a first-party service
- The best of software-defined and appliance storage to support core, cloud, and edge workloads

Protected. Mitigate risk with secure and available storage

- Replication, NetApp® Snapshot™ technology, and multisite high availability
- Integrated AI to automatically detect anomalies and threats to your data
- Zero Trust architecture with complete access control and fully integrated at-rest and in-flight data encryption technology

ONTAP is powerful

Serve any data, anywhere, with the right performance at the right price.
To support your critical applications, you need a storage environment that delivers high performance and availability across your hybrid multicloud. But you also need the versatility to scale and adapt as your business changes. ONTAP delivers on all these requirements with performance at scale, and non-disruptive operations.

Get flash optimization
ONTAP delivers the high throughput and consistent, sub-millisecond low latency that enterprise applications require, while providing comprehensive data services. ONTAP is optimized for flash, including ASA and AFF systems with NVMe solid-state drives (SSDs), NVMe over TCP and NVMe over Fabrics.

Deliver consistent performance
To maintain high customer satisfaction, adaptive quality of service (AQoS) helps you deliver consistent performance by automatically adjusting storage resource levels to respond to changes in workloads (number of terabytes of data, priority of the workload, and so on). AQoS simplifies the implementation of policies to keep your workloads within prescribed minimum and maximum throughput targets.

Stay ahead of business changes with seamless scalability
You can start small and grow with your business by using high-capacity SSDs or HDDs or public cloud to scale your ONTAP storage environment. On-premises systems that run ONTAP can handle SAN, NAS, and object workloads that range from a few terabytes up to 176PB. You can scale up by adding capacity to existing storage controllers or scale out by adding controllers to seamlessly expand your cluster up to 24 nodes. Or quickly deploy an ONTAP environment in public clouds using Cloud Volumes ONTAP. ONTAP also supports massive NAS data containers that are easy to manage. With NetApp ONTAP FlexGroup volumes, a single namespace can grow to 20PB or 400 billion files while delivering consistent high performance and resilience.

ONTAP protects your data

Reduce risk with the most secure and available storage.
In a world full of threats, whether human-made such as ransomware or natural disaster, ONTAP provides the security and availability you need to eliminate risk from operations and enhance business continuity.

Integrated data protection and nondisruptive operations
With ONTAP, you can meet your requirements for local backup with nearly instantaneous recovery by using space-efficient Snapshot copies. Achieve remote backup/recovery and disaster recovery with NetApp SnapMirror® asynchronous replication or with SnapMirror Cloud when replicating data to a cloud object store in a public or private cloud. Or, to step up to zero data loss protection (RPO=0), use SnapMirror synchronous replication.
Protect business operations from regional outages
For your critical applications that require continuous data availability, NetApp MetroCluster and SnapMirror active sync technologies synchronously mirror between locations to provide business continuity against human-made or natural disasters. The storage arrays can be deployed at a single site, across a metropolitan area, or in different cities. MetroCluster is a robust, full-system infrastructure for your SAN and NAS workloads. SnapMirror active sync enables the flexibility to granularly protect the most critical SAN applications with continuous availability if a data center disaster occurs.

Scale and maintain nondisruptively
With ONTAP, you can service and update your infrastructure during regular working hours without disrupting your business. Dynamically assign, promote, and retire storage resources without downtime over the lifecycle of an application. Data can be moved without application interruption, so you can get the data on the node that delivers the optimal combination of speed, latency, capacity, and cost.

Support your workloads efficiently wherever they run

With ONTAP, you can design and deploy your storage environment across the widest range of architectures, so you can match the approach that's right for your evolving business needs.

- **On NetApp hardware systems.** Employ AFF all-flash systems, for the best latency for demanding performance, ASA all-flash systems for block optimized workloads, and FAS systems, for a balance of performance and capacity.
- **Within a converged infrastructure (CI).** FlexPod® from NetApp and Cisco is a secure, smart, sustainable, hybrid-ready CI platform that helps customers accelerate a large and growing portfolio of modern and enterprise reference architectures.
- **As software-defined storage on commodity servers.** ONTAP Select.
- **In the cloud.** Cloud Volumes ONTAP. Amazon FSx for NetApp ONTAP, Azure NetApp Files, Google Cloud NetApp Volumes.

You can move your data seamlessly between architectures to place it in the optimal environment for performance, capacity, and cost efficiency.

Secure consolidation
You can save time and money by sharing the same consolidated infrastructure for workloads or tenants that have different performance, capacity, and security requirements. And with ONTAP, you don't have to worry that the activity in one tenant partition will affect another. With multitenancy, a storage cluster can be subdivided into secure partitions that are governed by rights and permissions.

Robust security and ransomware protection
The industry-leading portfolio of security capabilities in ONTAP helps you integrate data security and ransomware protection across your hybrid multicloud. Autonomous Ransomware Protection, based on machine learning, quickly identifies malware threats. And multi-admin verification, an industry-first native approach, prevents malicious and accidental changes to your data by requiring multiple approvals for critical admin tasks. With the NetApp Volume Encryption feature that is built in to ONTAP, you can easily and efficiently protect your at-rest data by encrypting any volume. In-flight encryption for backup and replication protects your data in transit. And other features such as multifactor authentication, role-based access control (RBAC), and onboard and external key management increase the security of your data.

Rigorous compliance

To meet your stringent compliance and data retention policies, NetApp SnapLock® software enables write once, read many (WORM) protected data for your ONTAP environment. NetApp also provides superior integration with enterprise backup vendors and leading applications. In addition, cryptographic shredding by the NetApp secure purge technology enables you to remediate data spillage online while the system is still in use. It also provides state-of-the-art "right-to-erasure" capability for General Data Protection Regulation (GDPR).

Industry-leading support at every stage of your journey

Make a simple, straightforward transition to ONTAP. No matter what your starting point is, NetApp streamlines your move to ONTAP. Consult our experts to plan and implement your transition and gain the latest ONTAP advantages from day one. You can use NetApp Professional Services or NetApp Services Certified Partners, you can do it yourself by using our proven tools and processes, or you can combine these approaches. Plus, when you're running ONTAP, you can use the Managed Upgrade Service to get the most from your investment by keeping your ONTAP software always up to date.

	Function	Benefit
Data compaction	Packs more data into each storage block for greater data reduction	Works with compression to reduce the amount of storage that you need to purchase and operate
Data compression	Provides transparent inline and postprocess data compression for data reduction	Reduces the amount of storage that you need to purchase and maintain
Deduplication	Performs general-purpose deduplication for removal of redundant data	Reduces the amount of storage that you need to purchase and maintain
FabricPool	Automates data tiering to a NetApp StorageGRID object storage solution or a public cloud	Decreases storage costs for cold data and frees up space on your high-performance tier
FlexCache®	Caches actively read datasets within a cluster and at remote sites	Accelerates read performance for hot datasets by increasing data throughput within a cluster, and improves the speed and productivity of collaboration across multiple locations
FlexClone®	Instantaneously creates file, LUN, and volume clones without requiring additional storage	Saves you time in testing and development and increases your storage capacity
FlexGroup	Enables a single namespace to scale up to 20PB and 400 billion files	Supports compute-intensive workloads and data repositories that require a massive NAS container while maintaining consistent high performance and resiliency
FlexVol®	Creates flexibly sized volumes across a large pool of disks and one or more RAID groups	Enables storage systems to be used at maximum efficiency and reduces hardware investment
MetroCluster	Robust infrastructure that combines array-based clustering with synchronous mirroring to deliver continuous availability and zero data loss for SAN and NAS workloads; up to 700km distance between nodes	Maintains business continuity for critical enterprise applications and workloads if a data center disaster occur
Multi-Admin Verification	Require multiple approvals for critical admin tasks, such as "volume snapshot delete" or "volume delete".	Prevent malicious and accidental changes to your data. A single cluster administrator, or a ransomware attacker with a compromised administrator account, cannot execute critical commands without approvals from one or more additional administrators.
Dynamic authorization framework	Uses additional environmental factors such as IP address, location, or time to authorize actions of highly sensitive or powerful accounts such as administrator	Creates an additional layer of protection to prevent malicious actors using compromised credentials from performing highly controlled or destructive actions
Performance capacity	Provides visibility of performance capacity that is available for deploying new workloads on storage nodes	Simplifies management and enables more effective provisioning of new workloads to the optimal node
QoS (adaptive)	Simplifies setup of QoS policies and automatically allocates storage resources to respond to workload changes (number of terabytes of data, priority of the workload, and so on)	Simplifies operations and maintains consistent workload performance within your prescribed minimum and maximum IOPS boundaries
Ransomware Protection	Provides built-in, robust features that detect ransomware activity, prevent its spread, and enable quick recovery—including automatically taking snapshots and alerting administrators when ONTAP detects abnormal file activity	Protects automatically against ransomware attacks and enables quick recovery, to avoid paying the ransom
SnapCenter®	Provides host-based data management of NetApp storage for databases and business applications	Offers application-aware backup and clone management; automates error-free data restores

	Function	Benefit
SnapLock	Provides WORM file-level locking, preventing changes and deletion of the file	Supports regulatory compliance and organizational data retention requirements. Plus, enables air-gap separation of Snapshot copies for enhanced ransomware protection and quick recovery from an attack
SnapMirror	Provides integrated remote backup/recovery and disaster recovery with incremental asynchronous data replication; preserves storage efficiency savings during and after data transfer	Provides flexibility and efficiency when replicating data to support remote backup/recovery, disaster recovery, and data distribution
SnapMirror active sync	Combines flexible array-based clustering with application granularity for synchronous mirroring to deliver symmetric active-active multisite replication for business continuity of mission-critical SAN workloads	Cost effectively protects the most critical SAN applications with continuous availability to maintain business continuity if a data center disaster occurs
SnapMirror Cloud	Provides integrated remote backup/recovery and disaster recovery with incremental asynchronous data replication leveraging S3 cloud resources	Provides flexibility and efficiency when replicating data to a cloud object store in a public or private cloud, to support remote backup/recovery, disaster recovery, and data distribution
SnapMirror Synchronous	Delivers incremental, volume-granular, synchronous data replication; preserves storage efficiency savings during and after data transfer	Achieve zero data loss protection (RPO=0)
SnapRestore®	Rapidly restores single files, directories, or entire LUNs and volumes from any Snapshot copy	Instantaneously recovers files, databases, and complete volumes from your point-in-time Snapshot copy
Snapshot	Makes incremental data-in-place, point-in-time copies of a LUN or a volume with minimal performance impact	Enables you to create frequent space-efficient backups with no disruption to data traffic
NetApp Volume Encryption	Provides data-at-rest encryption that is built into ONTAP	Lets you easily and efficiently protect your at-rest data by encrypting any volume on an AFF or FAS system; no special encrypting disks are required

Table 1) ONTAP offers a robust set of standard and optional features.

ONTAP software licensing	Features
Required software:	
ONTAP One (only for NetApp AFF A-Series, AFF C-Series, and FAS systems)	Comprehensive, unified software suite that includes all protocols (SAN/NAS/Object) as well as ONTAP technologies such as SnapRestore, SnapMirror, SnapCenter, FabricPool (to ONTAP-S3 and StorageGRID), FlexClone, FlexCache, FPolicy, Encryption[1], autonomous ransomware protection, SnapLock, and multi-tenant key management
ONTAP One for SAN (only for NetApp ASA systems)	Comprehensive software suite that includes SAN protocols as well as ONTAP technologies applicable for SAN workloads such as SnapRestore, SnapMirror, SnapCenter, FabricPool (to ONTAP-S3 and StorageGRID), FlexClone, FlexCache, FPolicy, Encryption1, SnapLock, and multi-tenant key management

[1] Encryption availability subject to Global Trade Compliance

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About NetApp

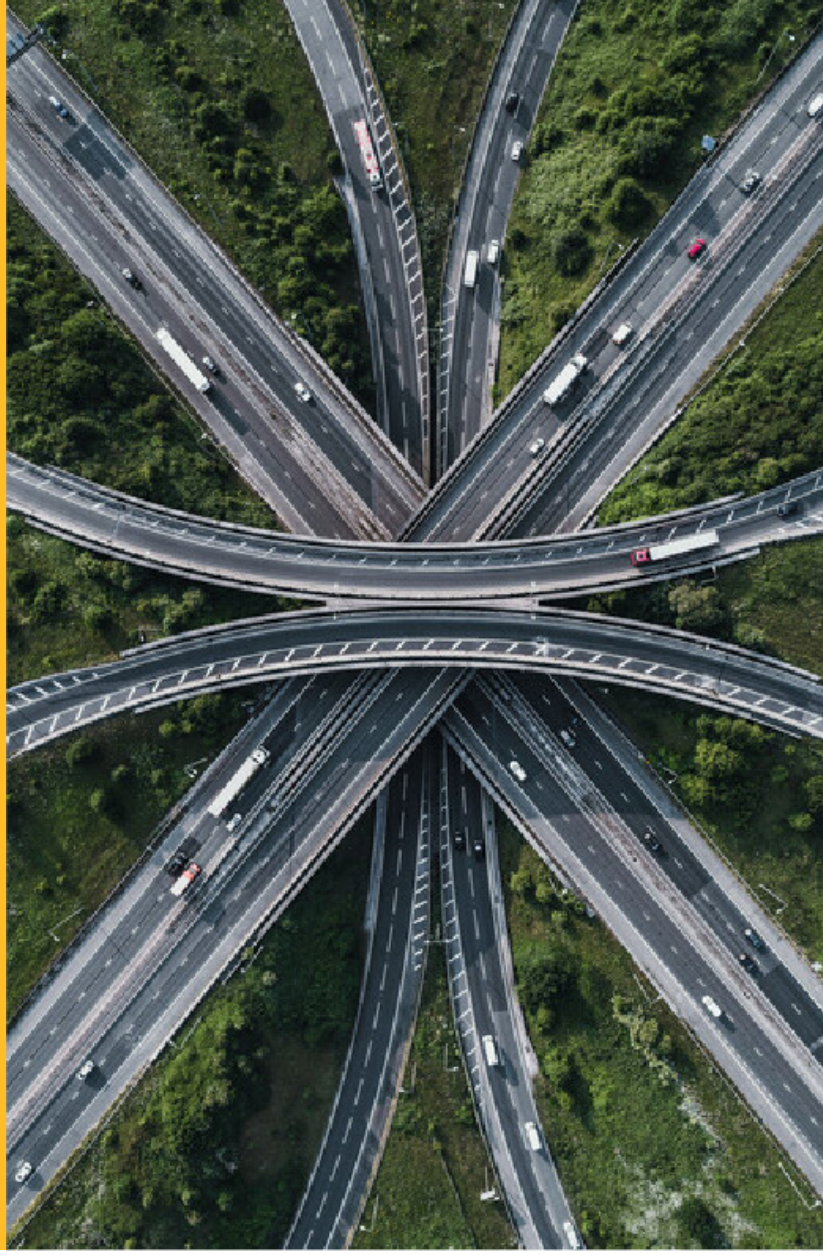
NetApp is the intelligent data infrastructure company combining unified data storage, integrated data services, and CloudOps solutions to turn a world of disruption into opportunity for every customer. NetApp creates silo-free infrastructure, then harnesses observability and AI, to enable the best data management. As the only enterprise-grade storage service natively embedded in the world's biggest clouds, our data storage delivers seamless flexibility and our data services create a data advantage through superior cyber-resilience, governance, and applications agility. Our CloudOps solutions provide continuous optimization of performance and efficiency through observability and AI. No matter the data type, workload or environment, transform your data infrastructure to realize your business possibilities with NetApp. www.netapp.com

NetApp

DATASHEET

NetApp SnapCenter

Simple, performant, empowering: enterprise data protection and clone management for ONTAP



NetApp

The Challenge

Data protection at scale

Protecting data is one of the top concerns of any IT manager. As applications proliferate and the organization grows, managing a diverse IT environment can be a real challenge. This challenge is especially evident for organizations that have application, database, and backup specialists who are required to back up their data but might not be responsible for the storage infrastructure.

For organizations with IT specialists, it is critical to create an environment that allows each function to operate independently and according to its own application workflow. At the same time, these specialists must retain some level of infrastructure control and integrity. It is not easy to achieve this balance with traditional tools and technologies. IT specialists want to have "self-service" autonomy, but they might not have in-depth knowledge of storage systems and backup software. And storage infrastructure admin- istrators want to offload typical data protection tasks to application owners without sacrificing the ability to oversee and regulate activity on the storage systems.

Traditional backup and restore technologies based on streaming data protection devices, such as tape or streaming disk devices that emulate tape, don't use storage-based snapshot technology. As a result, these technologies can be very slow in responding and are resource-intensive. Ingesting large amounts of data is one strength of these devices, but trying to restore or retrieve data is complicated and can take a significant amount of time. As the size of applications and the number of applications increase, complexity goes up significantly because each application can have a different administrator with different needs requiring different schedules and policies. How do you easily manage backups across disparate applications and infrastructures, with delegated management to application or database owners, without sacrificing control or oversight and do it at scale?

Key benefits

- Simplifies backup, restore, and clone management with application- integrated workflows and predefined policies.
- Simplifies VMware backup and recovery with new Linux-based SnapCenter Plug-in for VMWare vSphere
- Increases performance and availability and reduces testing and development time with storage-based data management.
- Offers role-based access control (RBAC) to give application administrators self- service capability While providing centralized oversight.
- Provides intuitive GUI with centralized management to simplify the user experience across all supported application environments.
- Added and enhanced plug-ins offer richer functionality across a broad set of applications.

The Solution Enterprise-ready, easy-to-use data protection

NetApp® SnapCenter® software is simple, unified platform for application-consistent data protection and clone management. This software simplifies backup, restore, and clone lifecycle management with application-integrated workflows. Leveraging storage-based data management, SnapCenter enables increased performance and availability and reduced testing and develop- ment times.

Simple

NetApp SnapCenter includes both the SnapCenter Server and individual lightweight application, database, and operating system plug-ins that are all controlled from a central management console. The management console delivers a consistent user experience across all applications or databases. It incorporates an intuitive GUI with visual representations of data copies across the Data Fabric to support critical functions. These functions include job monitoring, event notification, logging, dashboard, reporting, scheduling, and policy management for all application or database plug-ins.

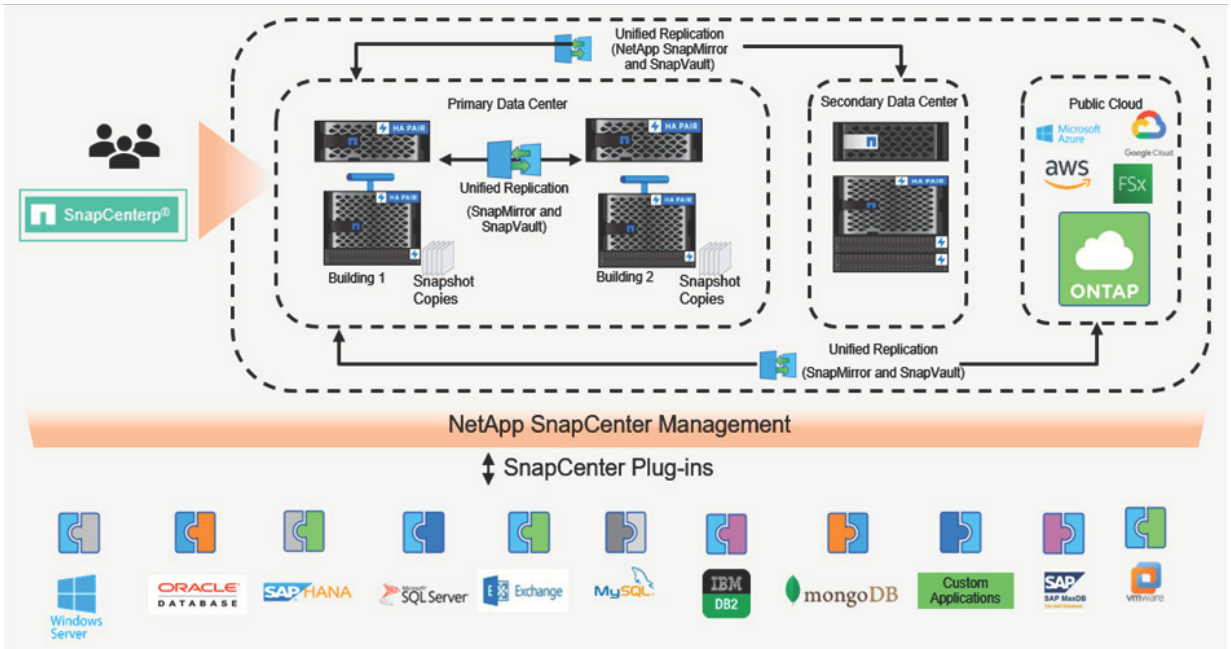


Figure 1) SnapCenter supports a variety of applications and protocols. Consult the NetApp Interoperability Matrix Tool (IMT) for details.

SnapCenter Server also includes Snapshot™ catalog management to facilitate easy rollback to point-in-time copies. SnapCenter Server checks application, database, and OS interoperability and then nondis-ruptively installs and upgrades software plug-ins on application and database hosts. Those plug-ins can then be managed from the central management console.

In addition, SnapCenter Server enables custom scripts to be executed either before or after common operations such as backup, cloning, and restore by using Perl, Python, PowerShell and REST APIs Customers who use NetApp SnapManager® products have an intuitive migration mechanism to move to NetApp SnapCenter.

High Performance

SnapCenter is designed to deliver high performance backup and recovery for database and application workloads hosted on ONTAP storage. Backup and restore performance is largely due to onboard capabilities of NetApp ONTAP storage-based Snapshot technology. Offloading this functionality not only simplifies operation, but also offloads Snapshot functions from the host.

By leveraging the embedded functionality of NetApp ONTAP® storage software to perform space-efficient NetApp FlexClone® management, NetApp SnapCenter also enables greater agility by increasing the performance of testing and development. Application and database administrators can initiate FlexClone volumes independent of storage administrators through the same GUI console to support highly iterative test and development workflows. The self-service feature of space-efficient cloning reduces testing and development time and puts more capability into the hands of application owners.

Empowering

IT organizations face the challenge of providing self-service capabilities for individual administrators while also retaining oversight and control of the storage infrastructure by the storage administrator. SnapCenter uses RBAC to delegate functionality to application and database owners while retaining oversight and control by a central storage infrastructure administrator. This level of control and security frees storage administrators from tedious tasks that application and database owners can do for themselves. At the same time, such control protects the overall infrastructure from abuse from even colleagues with the best intentions.

Supported platforms	
Application/database support**	Microsoft Exchange Server; Microsoft SQL Server (physical/virtual) Microsoft Windows host file system (physical/virtual) SAP HANA (physical/virtual) Oracle Database on Linux/AIX (physical/virtual); Linux file system VMware virtual machines and datastores User-defined custom plug-ins
NetApp storage*	NetApp AFF, FAS, ONTAP® Select, Cloud Volume ONTAP, AWS FSx for NetApp ONTAP, Azure NetApp Files
NetApp SnapCenter Server OS support*	Microsoft Windows Server 2012, 2012 R2, 2016 and 2019 (physical/virtual)
Protocols	FC, FCoE, iSCSI, NFS, dNFS

* Consult Interoperability Matrix Tool (IMT) for supported software versions.

**Additional application and database plug-ins are available on the NetApp Automation Store.

Administrators can use SnapCenter plug-ins for applications such as SAP HANA and for databases so that the application or database is consistent at all levels, which promotes maximum recoverability. Plug-ins for SnapCenter enable a variety of restore capabilities. Plug-ins can roll forward logs and enable application or database administrators to clone or recover to the latest information available or to a specific point in time. Available plug-in enhancements include simplified data protection for virtualized databases; support for Microsoft SQL Server Stretch Database; Oracle RMAN cataloging; and Microsoft Windows host file systems backup, restore, and cloning. SnapCenter also enables end users to create plug-ins for custom applications. SnapCenter leverages NetApp storage-based backup and replication functions, such as with NetApp SnapVault® and SnapMirror® technology. All SnapCenter plug-ins can perform cloning and restore operations from both primary and secondary locations.

providing application- and database-specific workflows. SnapCenter delivers the control and choice needed to enable application and database owners to manage their own environment through RBAC while preserving the integrity of the storage environment. Designed with simplicity in mind for both enterprise and midsize businesses, SnapCenter can accelerate application and database development, preserve data integrity, and simplify management of traditional complex backup and restore processes.

About NetApp

NetApp is the intelligent data infrastructure company. We create silo free infrastructure, then harness observability and AI to enable best data management actions everywhere—so customers can achieve their dynamic business priorities.

As the only enterprise-grade storage service natively embedded in the world's largest clouds, our data storage powers any data across the biggest hyperscalers. Our data services ensure active data management through superior data security, protection, governance, and sustainability. And our CloudOps solutions enable adaptive operations across infrastructure, applications, and teams.

NetApp makes data infrastructure intelligent by combining unified data storage, integrated data services, and CloudOps solutions—to turn a world of disruption into opportunities for every customer."

NetApp

NetApp®

GOLD PARTNER

Authorized Partner

June 1, 2017

To Whom It May Concern:

NetApp has a comprehensive management program in place to ensure our products conform to applicable RoHS (European Union's Restriction of Hazardous Substances) directives. NetApp manufactures a wide range of products; a large number of subassemblies and components are purchased from other manufacturers. NetApp strives to make sure all our products meet applicable marking requirements when a product is shipped to the customer. NetApp continually monitors for changes in applicable requirements, however, NetApp assumes no liability for changing regulatory requirements after a product has been supplied to the customer.

NetApp's RoHS compliance approach includes the following elements and requirements:

1. For products designated by NetApp to be RoHS compliant, NetApp specifies and designs the product to use materials and parts that conform to the RoHS directive.

2. All NetApp suppliers of RoHS compliant products must provide NetApp a declaration that the particular products supplied meet the RoHS directive.

3. NetApp follows a detailed product qualification process for all products, which includes materials and specification reviews and audits of manufacturing lines.

Directive 2011/65/EU [DIRECTIVE 2011/65/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 8 June 2011 (aka RoHS 2)] states that the procedures for assessing conformity of EEE subject to the Directive will fall under the common framework of the EU and will become a CE marking requirement. As such, the NetApp CE Declaration of Conformity for each product shipped after January 1, 2013 includes certification of conformity to Directive 2011/65/EU.

Directive 2015/863/EU amended Annex II of Directive 2011/65/EU by adding four new substances to the list of restricted substances. The four substances are the phthalates DEHP, BBP, DBP, and DIBP. The restriction goes into effect 22 July 2019 for NetApp products. NetApp products shipped after 21 July 2019 will be in compliance with this amendment.

ROHS Certification

For customers who need to file a copy of EU RoHS certification for auditing purposes, we offer the service (after purchase) to print a certificate for their purchased systems which specifically details the hardware parts in their system. This includes a formal statement stating that the parts meet the EU RoHS directive.

If you have any questions concerning this letter, please contact your NetApp Sales Representative.

Sincerely,

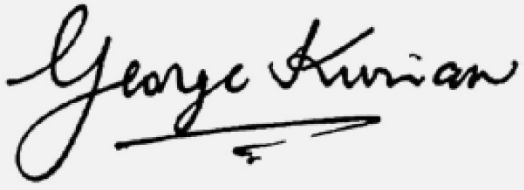
Donald Goddard
Environmental Compliance Manager

Certificate of achievement

Constantin Sirbu

has successfully completed the requirement to be recognized as a

NetApp Certified Storage Installation Engineer, ONTAP



George Kurian, CEO

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Expiration Date: 7/27/2025
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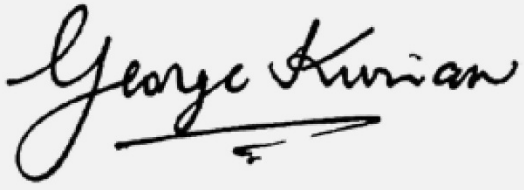

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NetApp

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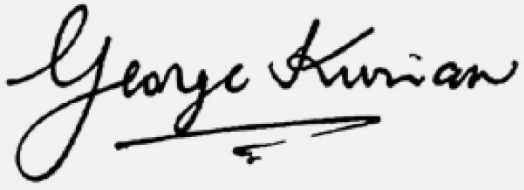
NetApp Certified Implementation Engineer - SAN Specialist, Data ONTAP 7-Mode



George Kurian, CEO

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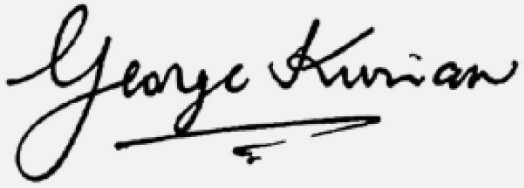
Certificate of achievement

Anatolie Colta

has successfully completed the requirement to be recognized as a

NetApp Certified Data Administrator, ONTAP



George Kurian, CEO

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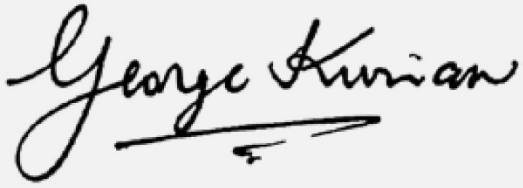
Certificate of achievement

Constantin Sirbu

has successfully completed the requirement to be recognized as a

NetApp Certified Data Administrator, ONTAP



George Kurian, CEO

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Table 3) ASA software.

Data access protocols	• FC, iSCSI, NVMe/FC, NVMe/TCP
High availability	• Active-active controller architecture • Symmetric active-active FCP and iSCSI multipathing • Nondisruptive maintenance, upgrade, and scale-out clustering • Multisite resilience for continuous data access
Storage efficiency	• Inline data compression, deduplication, and compaction • Space-efficient LUN and volume cloning • Automatic data tiering
Data management	• Intuitive on-board GUI, REST APIs, and automation integration • AI-informed predictive analytics and corrective action • Quality of service (QoS) workload control • Easy provisioning and data management from market-leading host operating systems, hypervisors, and application software
Data protection	• Application-consistent NetApp Snapshot copies for backup and restore • Integrated remote backup and disaster recovery • Synchronous zero-data-loss replication • Tamperproof Snapshot copies • Symmetric active-active multisite replication for business continuity
Security and compliance	• Multifactor admin access • In-flight and data-at-rest encryption • Regulatory-compliant data retention • Multi-admin verification before executing sensitive commands
Cloud integration	• Seamlessly tier, back up, and replicate data to private and public clouds

Get more business value with services
Whether you're planning your next-generation data center, need specialized know-how for a major storage deployment, or want to optimize the operational efficiency of your existing infrastructure, NetApp Professional Services and NetApp certified partners can help.

Contact Us

About NetApp
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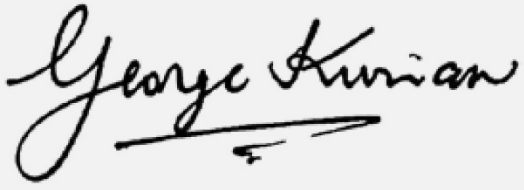
Certificate of achievement

Anatolie Colta

has successfully completed the requirement to be recognized as a

NetApp Accredited Hardware Support Engineer



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