

Anexa 1 la formularul 4.1
Complianța Tehnica si componentele detaliate ale bunurilor Ofertate

Nr. d/o	Funcționalități	Descrierea specificației solicitate de Cumpărător	Raspuns Ofertant
I.	Cerințe generale	Echipamentul oferit în cadrul achiziției trebuie să fie nou, calitativ, produs de serie, brand (BRAND NAME), cu proveniență de la producători renumiți, bine cunoscuți internațional în domeniul TI. Configurația echipamentului trebuie să fie compusă din componente reciproc compatibile, de la același producător, și să asigure funcționarea optimă a sistemului în ansamblu. În cazul existenței certificatelor de compatibilitate și atestare a calității, o copie sau referința Internet trebuie să fie inclusă în ofertă. Toate lucrările de instalare, configurare si migrare vor fi executate doar de specialiști certificați de producătorii soluțiilor ofertate, inclusiv pentru sisteme de operare (RedHat Linux), SGBD Oracle, servere de aplicații SOClass 2.2 si medii aplicative AsycudaWORLD 4.2 etc. Lista specialiștilor certificați cu rolurile si responsabilitățile in proiect se va include in oferta.	Corespunde Va fi respectat. Toate lucrările de instalare, configurare si migrare vor fi executate doar de specialiști certificați de producătorii soluțiilor ofertate, inclusiv pentru sisteme de operare (RedHat Linux), SGBD Oracle, servere de aplicații SOClass 2.2 si medii aplicative AsycudaWORLD 4.2 etc. Lista specialiștilor certificați cu rolurile si responsabilitățile in proiect este inclusa in oferta
II.	Cerințe față de cabinete, PDU și elemente aferente	Cablarea între cabinete trebuie să fie pe partea de sus a rack-ului. Accesorii de cablare de pe partea de sus a rack-ului trebuie să fie compatibile cu soluția existentă APC Symmetra PX Infrastruxure.	Corespunde Va fi respectat.

		Toate echipamente trebuie sa fie instalate in dulapuri de comunicații. Ofertantul este responsabil pentru instalarea echipamentelor și conectarea acestora la soluția existentă APC Symmetra PX acoperit de contract de garanție continue, în cazul în care pe parcursul lucrărilor de instalare se constată lipsa unor componente necesare, fără de care conectarea la soluția existentă APC Symmetra PX nu poate fi posibilă, Ofertantul se obligă să completeze componentele respective din cont propriu.	
III.	Cerințe față de implementare	Ofertantul trebuie să-și asume deplina responsabilitate pentru instalarea și configurarea infrastructurii propuse la sediul Cumpărătorului (in ambele Data Centre). În cazul în care pe parcursul lucrărilor de instalare și configurare a infrastructurii se constată lipsa unor componente, fără care soluția nu poate funcționa în modul stabilit în documentele de licitație și contractul semnat între părți, Ofertantul se obligă să completeze componentele respective din cont propriu. Ofertantul va instala si configura soluția propusa intr-un mod redundant, cu demonstrația si testarea capabilităților de disponibilitate înalta conform caietului de sarcini. Lucrările de integrare vor conține, dar nu sunt limitate la: • Instalarea fizică a componentelor în dulapuri de comunicații în ambele data centre. • Start-Up și teste de baza • Conectarea la infrastructura SAN existenta	Corespunde Va fi respectat.

		• Instalarea Sistemelor de Operare pe serverele de baze de date (RedHat Linux) • Instalarea si configurarea SGBD (Oracle) • Instalarea Sistemelor de Operare pe serverele de aplicații (RedHat) • Instalarea aplicației SOClass 2.2 si AsycudaWORLD 4.2 • Configurarea înaltei disponibilități a sistemului informațional.	
IV.	Cerințe față de implementare/migrare	Ofertantul trebuie să-și asume deplina responsabilitate pentru instalarea, configurarea și migrarea soluției AsycudaWORLD pe infrastructura noua propusa, inclusiv configurarea copiilor de rezervă. • Copierea “de test” a datelor pentru verificarea corectitudinii funcționării serverilor noi de aplicații si DB • Eliminarea defectelor depistate in procesul de testare • Migrarea finala a datelor si configurarea mecanismelor de redundanta si disponibilitate înalta • Reconfigurarea soluției de creare a copiilor de rezervă cu testarea scenariilor de restabilire	Corespunde Va fi respectat.
V.	Condiții de garanție	Perioada de garanție pentru tot echipamentul propus trebuie să fie de minimum 3 ani (în lipsa altor indicații în descrierea pozițiilor) și începe din momentul livrării a bunurilor.	Corespunde Va fi respectat.

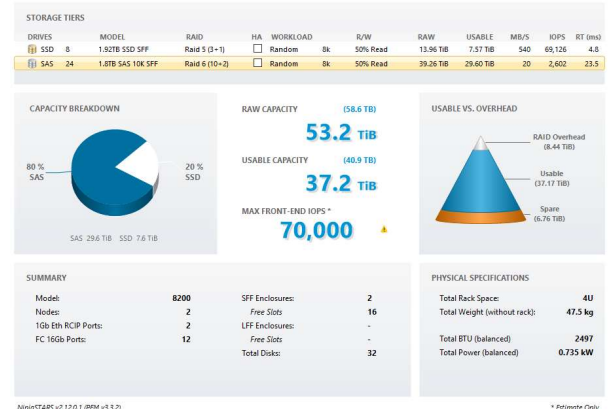
		În perioada de garanție, Vânzătorul se obligă să asigure constatarea (diagnosticarea) unei defecțiuni în maxim 4 ore lucrătoare și remedierea defecțiunii în maxim 5 zile lucrătoare de la data reclamării acesteia de către Cumpărător (în perioada 08:00 – 17:00, zile lucrătoare). Constatarea și remedierea defecțiunii se va face la sediul Cumpărătorului, iar în cazul unor defecțiuni mai grave, echipamentele se vor transporta la sediul Vânzătorului de către acesta. La solicitarea Cumpărătorului și acordul Vânzătorului, lucrările de remediere a defecțiunilor pot fi executate și în afara orelor de lucru, sau în zilele nelucrătoare.	
VI.	Licențe	Toate licențele livrate trebuie să fie de tip „perpetua” (fără limitarea în timp)	Corespunde

I. Echipamente solicitate

Storage Cluster

General description	High Available Enterprise Tier 1 storage system, in Cluster/Metro Cluster active-active configuration. Disaster Resilient data cluster with 2 cluster nodes distributed between 2 sites (distance between sites up to 10km, connection FC 16Gb/s and Ethernet with connection speed 1/10Gb/s), with: • The storage system must be located on two sites; • Both nodes on sites function as a single system providing business continuity in case of failure; • Seamless functioning in case of destruction of any components of 1 site; • No single point of failure on system for each cluster node (important components of 1 site need to be redundant);	Toate cerințe generale sunt respectate.
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	• The simple and cost effective data protection for efficient multi-tenant disaster recovery • The failover/failback between two sites/data centers to be transparent to hosts and without any disruption to applications running on them. For example, systems located at metropolitan distances to act as peers to each other, presenting a nearly continuous storage system to hosts connected to them. • The rapid automated protection against application downtime from fault, failure, or site disaster. Solution must provide complete Disaster Resiliency in case of the following scenarios: ✓ Complete fail of 1 site; ✓ Partial or complete loss of connection between sites; ✓ Automated recovery in case of 1 controller failure; ✓ Automated recovery in case of 1 disc shelf failure; • Storage Firmware upgrade without server downtime (online upgrade). • Each cluster node should be capable to operate independent without limits	
Quantity	1 solution / cluster from 2 cluster nodes distributed between 2 sites	Este propusă soluția de tip Metro Cluster compusă din 2 dispozitive HPE 3PAR 8200 2N+SW Storage Field Base (K2Q36B)
Below are requirements for one cluster node from solution (storage installed in one of the site):		
Additional confirmation documents	HDDs quantity calculation for each disks types (Performance and Capacity), including data protection level (RAID proposed, spare space / spare disk). This annexed information need to be confirmed by manufacture or presented reference to official manufacture tool	Calcularea spațiului și performanței este prezentată mai jos.

		 The screenshot displays the HPE NimbleSTARs v2 configuration interface. It shows a RAID 6 configuration with 24 SAS drives (1.8TB each) in a 10K SFF format. The capacity breakdown indicates a raw capacity of 58.6 TB, usable capacity of 37.2 TB, and a maximum front-end IOPS of 70,000. Physical specifications include 2 nodes, 16 free slots, and a total weight of 47.5 kg.
Availability	High availability 99.99%	Enterprise-class 99.9999% availability https://h20195.www2.hpe.com/v2/getpdf.aspx/4AA5-9493ENW.pdf
Redundancy	The storage architecture need to be designed to eliminate any single point of failure (hardware or software) in the system. Redundant power supplies, batteries and fans.	Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/4AA5-9493ENW.pdf https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Type of controllers	- Real Active-Active Symmetric redundant controllers, automatically rebalance workload independent of the LUN or RAID Group ownership. - At least 64GB Cache per controller node - Battery-backed cache de-staged to flash upon power loss.	Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
CPU (per node)	Min 4 x CPUs (ASIC and/or x86) per system	2x HPE 3PAR Gen5 ASICs 2x 6-core 2.2 GHz Processors Corespunde

		https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Flash Cache included	Included "Flash Cache" capabilities, can be configured up to 750Gb	Flash Cache (optional) up to 768 GiB Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
RAID supported	0, 1, 10, 5, 6 Possibility to have multiple RAID levels on single HDD for better capacity utilization. If offered storage system do not support it, than additional 25% capacity per each disk type must be included	RAID Levels RAID 0, 1, 5, 6 RAID 5 Data to Parity Ratios 2:1 - 8:1 RAID 6 Data to Parity Ratios 4:2, 6:2, 8:2, 10:2, 14:2 Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
Host Ports upgrade possibility (min / max possible)	• 16Gb/s Fibre Channel Host Ports: 4 / 12 ports • 10Gb/s iSCSI Host Ports: 0 / 4 ports • 10Gb/s FCoE Host Ports: 0 / 4 ports • 10Gb/s Ethernet Adapter: 0 / 4 ports Storage Protocols Supported: FC, FCoE, iSCSI, NFSv4, SMB 3.0	Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Storage Fibre Channel Host Ports included (per node)	Cluster node need to be include Min 12 x 16Gb/s Fibre Channel Host Ports with SFP installed (min 6 per controller from cluster node)	12x 16Gb/s Fibre Channel Host Ports (4 port default plus 2x HPE 3PAR StoreServ 8000 4-port 16Gb Fibre Channel Adapter)

		Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Other controller ports	• 1 x Ethernet Port per controller for Management • 1 x Ethernet Port per controller for Replication over IP	Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Replication	Replication supported (ready to use) through both: • FC ports on the controllers, 8-16Gb/s • IP Ethernet based replication, min 1Gb/s Ethernet port per controller	Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
Capacity supported	• Maximum host ports: 12, no convertors or switch accepted • Initiators Supported: 2048 • Maximum LUNs per System: 32000 • Number of Disk Drives: max. 240 • Disks intermix (per drive enclosure) • Raw Capacity supported: 1000Tb	Corespunde https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf
SSD support	Support SSD in mixed configuration	Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
Features included	• Online RAID group expansion/migration; Distributed sparing • LUN Snapshots, Snapshot Restore (Local instant copy), Create snapshot of snapshot, Promote snapshot without deleting subsequent snapshots;	Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture:

	• Non-Disruptive Capacity Expansion (capacity can be expanded by adding new disks or another storage shelf to an existing array) and rebalancing disks occupancy • Automated, non-disruptive capacity rebalancing when adding capacity to avoid hot spots and maintain consistent performance • Thin Provisioning, Thin Persistence, Thin Conversion, • Thin Deduplication, Inline Compression or/and Deduplication technologies that does not affect storage performance must be included in order to ensure effective use of disc space • Zero Reclaiming capabilities included (No impact performance during reclaiming zero pages) • Dynamic Tiering • Storage virtualization • Data Priority Optimization capabilities for service-level optimization (QoS) • In-System replication - Volume Clone, Volume replication • Remote Synchronous/Asynchronous and Periodic Asynchronous mode replication. Remote Synchronization via IP and FC is obligatory and dedicated port is preferred. Storages will be distributed in long distance locations up to 10km, and will be created Metro cluster • Capability to act as peers to each other for delivering a high-availability, transparent failover solution for the connected VMware vSphere, Microsoft Hyper-V in a metropolitan distance locations • Cluster Software for rapid automated protection against application downtime from fault, failure, or site disaster. • The failover/failback between two sites/data centers to be transparent to hosts and without any disruption to applications running on them.	https://h20195.www2.hp.com/v2/getpdf.aspx/4aa3-3516enw.pdf
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	• Features supported (but not included): Data Encryption • The hardware and software offered as part of the cluster solution must be from single vendor and tested for compatibility and performance. • No dedicated physical connections between cluster nodes	
Delivered RAW space (per cluster node)	• Min 13,9TiB - High Performance drives / SSD (min 8 x 1.92TB cMLC SSD or equivalent) • Min 39,2TiB - Performance drives (min 24 x 1.8TB 12G SAS 10K HDD or equivalent) RAW space calculated without spare requirements.	Sunt include: 8x K2P89B - HPE 3PAR 8000 1.92TB+SW SFF SSD 24x K2P94B - HPE 3PAR 8000 1.8TB+SW 10K SFF HDD Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
Spare drive mechanism	Distributed sparing, no dedicated spare drive. If storage requires spare drives, than min 2 x additional drives per each disk type should be offered, and is depending of quantity of disk enclosures.	Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf HPE 3PAR StoreServ Architecture: https://h20195.www2.hpe.com/v2/getpdf.aspx/4aa3-3516enw.pdf
Host OS Support	• Oracle Linux (UEK and RHEL compatible kernels), Oracle RAC • Microsoft Windows Server, including Microsoft Hyper-V • Red Hat Enterprise Linux • SUSE Linux Enterprise • VMware vSphere	Corespunde QuickSpecs: https://h20195.www2.hpe.com/v2/getpdf.aspx/c04607918.pdf

	CentOS	
Rack mounting	Rack mounting accessories included	Inclus
Warranty	- Minimum 3 years, 24 hours per day, 7 days per week including holidays support (Manufacturer remote monitoring, problem diagnosis and Support, Replacement parts and materials, Onsite hardware support, Firmware updates, Software support) 5 years warranty for SSD disks	Inclus Pentru SSD disks – 5 ani
Cables	Power cords included, All necessary data cables for startup and running	Inclus
Certificates	Manufacturer Declaration of Conformity	Inclus
Power	Adaptive cooling, power monitoring	Corespunde
Installation	Installation need to be performed by manufacture certified engineer	Inclus

Application Servers

Chassis	Rack mount, 1U, up to 29 inches (73.6 cm) deep	Este propus model: 867959-B21 - HPE ProLiant DL360 Gen10 8SFF Server
Quantity	2 units	Corespunde
Processor	Min Two (2x) Intel Xeon-Gold 6126 (2.6GHz/12-core/125W) or equivalent (server with maximum capacity of 2 processor sockets)	2x HPE DL360 Gen10 Intel Xeon-Gold 6126 (2.6GHz_12-core_125W) Processor
Memory	Total 128GB. 8 x 16GB Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory	8x 815098-B21 - HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered
RAID controller	Hardware 12G SAS Modular Controller (RAID 0/1, 8 Internal Lanes with 2GB Cache battery protected)	804331-B21 - HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G
Hard drives	Two (2x) min 400GB SAS 12G SFF (2.5in) Mixed Use SSD	2x 872374-B21 - HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed
Cooling system	Full Redundant hot plug fans	Inclus

Power supply	Full Redundant hot plug power supplies (min 2 power supplies)	2x 865408-B21 - HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit
Network interfaces	Four ports (4x) – 1 Gbit Ethernet NIC ports (RJ45 ports) Two ports (2x) – 10 Gbit Ethernet NIC ports (SFP+ ports) with Direct Attached Cables 7m for connection with HP Procurve 5406 zl switch	4x 1 Gbit Ethernet NIC ports 1x 700751-B21 - HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter 2x HP X242 10G SFP+ SFP+ 7m DAC Cable
Diagnostic LEDs	System diagnostic on front panel, diagnostic for each HDD/SSD	Corespunde
Server management (SM)	1 Gb Dedicated Ethernet NIC for management with full software features license. Local and remote control of system resources (manage, diagnose and monitor). Remote power control, remote firmware updating, remote presence, capture of OS failure screen (BSOD) via web interface, virtual media attachment to a server of USB drive, CD/DVD drive Serial over LAN, DHCP, IPMI V2.0, CIM, SNMP, email alerts LDAP user authentication Browser based administration with full control over the remote host server's display, keyboard, and mouse, including host OS graphical interface. Virtual media option that provides virtual CD drive and remote image mounting. SM & server diagnostics logging. SSL or SSH encryption.	Corespunde BD505A - HPE iLO Advanced 1-server License with 3yr Support on iLO License
Rack mounting rails	Rails with full extraction	Inclus
Cables	Two (2x) Power cables, PDU connection All necessary data cables for startup and running	Inclus
Software Supported	Windows Server 2012 R2 (Most Recent Version) Windows Server 2016 (Most Recent Version) VMware ESXi (Most Recent Version) Red Hat Enterprise Linux (RHEL) 6.9 and 7.3	Corespunde

	SUSE Linux Enterprise Server (SLES) 11 SP4 and 12 SP2 ClearOS CentOS	
Warranty, service, support and upgrades	3-Year Next Business Day (Manufacturer remote problem diagnosis and Support, Replacement parts and materials, Onsite hardware support, Firmware updates, Software support)	Inclus
Certificates	Manufacturer Declaration of Conformity	Corespunde
Power Efficiency compliance	Energy Star certified	Corespunde
OS included	Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subscription, 9x5 support	G3J31AAE - Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subs

DB Servers

Chassis	Rack mount, 1U, up to 29 inches (73.6 cm) deep	Este propus model: 867959-B21 - HPE ProLiant DL360 Gen10 8SFF Server
Quantity	2 units	Corespunde
Processor	Min Two (2x) Intel Xeon-Gold 6134 (3.2GHz/8-core/130W) or equivalent (server with maximum capacity of 2 processor sockets)	2x HPE DL360 Gen10 Intel Xeon-Gold 6134 (3.2GHz_8-core_130W) Processor
Memory	Total 128GB. 8 x 16GB Single Rank x4 DDR4-2666 CAS-19-19-19 Registered Smart Memory	8x 815098-B21 - HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registered
RAID controller	Hardware 12G SAS Modular Controller (RAID 0/1, 8 Internal Lanes with 2GB Cache battery protected)	804331-B21 - HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G
Hard drives	Two (2x) min 400GB SAS 12G SFF (2.5in) Mixed Use SSD	2x 872374-B21 - HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Signed
Cooling system	Full Redundant hot plug fans	Inclus
Power supply	Full Redundant hot plug power supplies (min 2 power supplies)	2x 865408-B21 - HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit

Network interfaces	Four ports (4x) – 1 Gbit Ethernet NIC ports (RJ45 ports) Two ports (2x) – 10 Gbit Ethernet NIC ports (SFP+ ports) with Direct Attached Cables 7m for connection with HP Procurve 5406 zl switch	4x 1 Gbit Ethernet NIC ports 1x 700751-B21 - HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter 2x HP X242 10G SFP+ SFP+ 7m DAC Cable
Additional cards	Two ports (2x) - 16Gbit FC ports HBA (autosense 4/8/16Gbit), including SFP transceivers for multimode cable	P9D94A - HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Adapter
Diagnostic LEDs	System diagnostic on front panel, diagnostic for each HDD/SSD	Corespunde
Server management (SM)	1 Gb Dedicated Ethernet NIC for management with full software features license. Local and remote control of system resources (manage, diagnose and monitor). Remote power control, remote firmware updating, remote presence, capture of OS failure screen (BSOD) via web interface, virtual media attachment to a server of USB drive, CD/DVD drive Serial over LAN, DHCP, IPMI V2.0, CIM, SNMP, email alerts LDAP user authentication Browser based administration with full control over the remote host server's display, keyboard, and mouse, including host OS graphical interface. Virtual media option that provides virtual CD drive and remote image mounting. SM & server diagnostics logging. SSL or SSH encryption.	Corespunde BD505A - HPE iLO Advanced 1-server License with 3yr Support on iLO License
Rack mounting rails	Rails with full extraction	Inclus
Cables	Two (2x) Power cables, PDU connection All necessary data cables for startup and running.	Inclus
Software Supported	Windows Server 2012 R2 (Most Recent Version) Windows Server 2016 (Most Recent Version) VMware ESXi (Most Recent Version) Red Hat Enterprise Linux (RHEL) 6.9 and 7.3	Corespunde

	SUSE Linux Enterprise Server (SLES) 11 SP4 and 12 SP2 ClearOS CentOS	
Warranty, service, support and upgrades	3-Year Next Business Day (Manufacturer remote problem diagnosis and Support, Replacement parts and materials, Onsite hardware support, Firmware updates, Software support)	Inclus
Certificates	Manufacturer Declaration of Conformity	Corespunde
Power Efficiency compliance	Energy Star certified	Corespunde
OS included	Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subscription, 9x5 support	G3J31AAE - Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subs

FC switch

Name	Fibre Channel Switch for Storage Area Network (SAN)	Este propus model: QW938A - HPE SN3000B 16Gb 24-port_24-port Active Fibre Channel Switch
Tip	16Gb 24-port/24-port Active Fibre Channel Switch, non-blocking architecture	Corespunde https://h20195.www2.hpe.com/v2/getdocument.aspx?docname=c04111465
Quantity	4 units	Inclus
Main description	16 Gb SAN Switch with 24 ports, Full Fabric	Corespunde https://h20195.www2.hpe.com/v2/getdocument.aspx?docname=c04111465
Ports enabled	24 ports enabled	Corespunde
Transceivers (per unit)	23 x 16Gb SFP+ Short Wave Transceiver 1 x 16Gb SFP+ Long Wave 10km Transceiver	23x QK724A - HPE B-series 16Gb SFP+ Short Wave Transceiver 1x QK725A - HPE B-series 16Gb SFP+ Long Wave 10km Transceiver
Power Efficiency	Operating Power Max 60W	Corespunde
Power Supply	Second, hot-swappable power supply included	QW939A - HPE SN3000B Optional Power Supply

Certificates	Manufacturer Declaration of Conformity	Corespunde
Warranty	3-Year Next Business Day (Manufacturer remote problem diagnosis and Support, Replacement parts and materials, Onsite hardware support, Firmware updates)	Inclus
Cables (per unit)	23 x LC/LC Multi-mode OM4 2 fiber 5m Cable	23x QK734A - HPE Premier Flex LC_LC Multi-mode OM4 2 fiber 5m Cable

D2D Backup

Name	Data protection solution: disk-based, deduplication, cloud integrated, backup systems providing automated backup, data recovery and data retention	Este propus dispozitiv BB955A - HPE StoreOnce 3640 48TB System
Type	2U Disk backup appliance, with data deduplication	Corespunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Quantity	1 unit, rack mounted equipment	Corespunde
Main description	Total capacity (raw) - 48 TB, local usable capacity - 36 TB. Backup write performance up to 18 TB/hr	Corespunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Maximum capacity	Total raw capacity up to 144 TB / local usable capacity up to 108 TB The Cloud Bank Storage supported, not included	Corespunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Connectivity	1 GbE and 10 / 25 GbE, 16 and 32 Gb Fibre Channel	Corespunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Ports enabled, connection to the servers	16Gb 2-ports Fibre Channel Card with SFP 1 GbE 2-ports BASE-T Network Card 10GbE 2-ports Network Card with SFP+ to SFP+ 7m Direct Attach Copper Cable	BB986A - HPE StoreOnce Gen4 16Gb Fibre Channel Network Card BB982A - HPE StoreOnce Gen4 10_25Gb SFP Network Card
Power Efficiency	Redundant power suppliers	Corespunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf

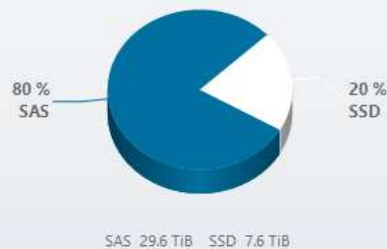
Features	• Deduplication, reduces the disk space required to store backup data sets by typically 20x without impacting backup performance • Consolidate multiple parallel backup streams via standard Ethernet or Fibre Channel network to a single disk-based system • Flexible backup with NAS, (NFS, CIFS (SMB), iSCSI and FC virtual tape libraries (VTL) and StoreOnce Catalyst backup targets. • Flexible connectivity enables fast, easy integration into Fibre Channel (4 Gb, 8 Gb, 16 Gb) and Ethernet (1 Gb, 10 GbE, iSCSI) networks.	Correspunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Licenses	All possible licenses need to be included (excluding additional capacity and encryption)	Correspunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Integration	• Fully integration with HP DataProtector 8.1 software, used at the moment for backup solution. • Integration with Storage Cluster/Metro Cluster solution with possibility to backup direct from storage	Correspunde https://h20195.www2.hpe.com/v2/GetPDF.aspx/c04328820.pdf
Certificates	Manufacturer Declaration of Conformity	Correspunde
Warranty	3-Year Next Business Day (Manufacturer remote problem diagnosis and Support, Replacement parts and materials, Onsite hardware support, Firmware updates)	Inclus
Cables	Two (2x) Power cables, PDU connection, All necessary data cables for startup and running.	Inclus

Space calculation:

STORAGE TIERS

DRIVES		MODEL	RAID	HA	WORKLOAD	R/W	RAW	USABLE	MB/S	IOPS	RT (ms)	
	SSD 8	1.92TB SSD SFF	Raid 5 (3+1)	☐	Random	8k	50% Read	13.96 TiB	7.57 TiB	540	69,126	4.8
	SAS 24	1.8TB SAS 10K SFF	Raid 6 (10+2)	☐	Random	8k	50% Read	39.26 TiB	29.60 TiB	20	2,602	23.5

CAPACITY BREAKDOWN



RAW CAPACITY (58.6 TB)

53.2 TiB

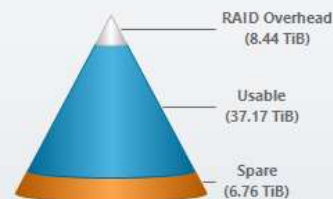
USABLE CAPACITY (40.9 TB)

37.2 TiB

MAX FRONT-END IOPS *

70,000

USABLE VS. OVERHEAD



CONFIGURATION LAYOUT



SUMMARY

Model:	8200	SFF Enclosures:	2
Nodes:	2	Free Slots	16
1Gb Eth RCIP Ports:	2	LFF Enclosures:	-
FC 16Gb Ports:	12	Free Slots	-
		Total Disks:	32

PHYSICAL SPECIFICATIONS

Total Rack Space:	4U
Total Weight (without rack):	47.5 kg
Total BTU (balanced)	2497
Total Power (balanced)	0.735 kW

NinjaSTARS v2.12.0.1 (PEM v3.3.2)

* Estimate Only

Componentele detaliate ale solutiei

Product N	OptionCode	Product Description	Qty
Storage			
K2Q36B		HPE 3PAR 8200 2N+SW Storage Field Base	2
K2P89B		HPE 3PAR 8000 1.92TB+SW SFF SSD	8
K2P89B	OD1	Factory Integrated	8
K2P94B		HPE 3PAR 8000 1.8TB+SW 10K SFF HDD	24
K2P94B	OD1	Factory Integrated	24
H6Z00A		HPE 3PAR StoreServ 8000 4-port 16Gb Fibre Channel Adapter	4
H6Z00A	OD1	HP 3PAR StoreServ 8000 4-port 16Gb Fibre Channel Adapter FIO	4
E7Y71A		HPE 3PAR StoreServ 8000 SFF(2.5in) Field Integrated SAS Drive Enc	2
K2P89B		HPE 3PAR 8000 1.92TB+SW SFF SSD	8
K2P89B	OD1	Factory Integrated	8
K2P94B		HPE 3PAR 8000 1.8TB+SW 10K SFF HDD	24
K2P94B	OD1	Factory Integrated	24
L7E69AAE		HPE 3PAR 8200 All-inc Multi-sys SW E-LTU	2
L7F20AAE		HPE 3PAR All-in S-sys SW Current E-Media	2
L7F22AAE		HPE 3PAR All-in M-sys SW Current E-Media	2
H1K92A3	W3G	HPE 3PAR 8200 2N+SW Storage Base Support	2
H1K92A3	WSF	HPE 3PAR Internal Entitlement Supp	4
H1K92A3	X84	HPE 3PAR 8000 1.8TB+SW 10K SFF HDD Supp	48
H1K92A3	X8J	HPE 3PAR 8000 1.92TB+SW SFF SSD Supp	16
H1K92A3	X8S	HPE 3PAR 8200 Multi-system SW Supp	2
H1K92A3	YTJ	HPE 3PAR 8000 Drive Encl Support	2
H1K92A3	YTL	HPE 3PAR 8000 4-pt 16Gb FC Adapter Supp	4
Server DB			
867959-B21		HPE ProLiant DL360 Gen10 8SFF Configure-to-order Server	2
867959-B21	B19	HPE DL360 Gen10 8SFF CTO Server	2
860689-L21		HPE DL360 Gen10 Intel Xeon-Gold 6134 (3.2GHz_8-core_130W) FIO Pro	2

860689-B21		HPE DL360 Gen10 Intel Xeon-Gold 6134 (3.2GHz_8-core_130W) Process	2
860689-B21	OD1	HPE DL360 Gen10 Intel Xeon-Gold 6134 (3.2GHz_8-core_130W) FIO Pro	2
815098-B21		HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registere	16
815098-B21	OD1	HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registere	16
872374-B21		HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Sign	4
872374-B21	OD1	HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Sign	4
P9D94A		HPE StoreFabric SN1100Q 16Gb Dual Port Fibre Channel Host Bus Ada	2
P9D94A	OD1	HPE StoreFabric SN1100Q 16Gb FIO Dual Port Fibre Channel Host Bus	2
P01366-B21		HPE 96W Smart Storage Battery (up to 20 Devices) with 145mm Cable	2
P01366-B21	OD1	Factory Integrated	2
804331-B21		HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G	2
804331-B21	OD1	HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G	2
700751-B21		HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	2
700751-B21	OD1	HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	2
339778-B21		HP RAID 1 Drive 1 FIO Setting	2
865408-B21		HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	4
865408-B21	OD1	HPE 500W Flex Slot Platinum Hot Plug Low Halogen FIO Power Supply	4
BD505A		HPE iLO Advanced 1-server License with 3yr Support on iLO License	2
BD505A	OD1	HPE iLO Adv 1-svr Lic 3yr Support	2
874543-B21		HPE 1U Gen10 SFF Easy Install Rail Kit	2
874543-B21	OD1	HPE 1U Gen10 SFF Easy Install FIO Rail Kit	2
G3J31AAE		Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subs	2
H7J32A3		HPE 3Y Foundation Care NBD SVC	1
H7J32A3	WAG	HPE DL360 Gen10 Support	2
J9285D		Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	4

Server APP

867959-B21		HPE ProLiant DL360 Gen10 8SFF Configure-to-order Server	2
867959-B21	B19	HPE DL360 Gen10 8SFF CTO Server	2
860683-L21		HPE DL360 Gen10 Intel Xeon-Gold 6126 (2.6GHz_12-core_125W) FIO Pr	2

860683-B21		HPE DL360 Gen10 Intel Xeon-Gold 6126 (2.6GHz_12-core_125W) Proces	2
860683-B21	OD1	HPE DL360 Gen10 Intel Xeon-Gold 6126 (2.6GHz_12-core_125W) FIO Pr	2
815098-B21		HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registere	16
815098-B21	OD1	HPE 16GB (1x16GB) Single Rank x4 DDR4-2666 CAS-19-19-19 Registere	16
872374-B21		HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Sign	4
872374-B21	OD1	HPE 400GB SAS 12G Mixed Use SFF (2.5in) SC 3yr Wty Digitally Sign	4
P01366-B21		HPE 96W Smart Storage Battery (up to 20 Devices) with 145mm Cable	2
P01366-B21	OD1	Factory Integrated	2
804331-B21		HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G	2
804331-B21	OD1	HPE Smart Array P408i-a SR Gen10 (8 Internal Lanes_2GB Cache) 12G	2
700751-B21		HPE FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	2
700751-B21	OD1	HP FlexFabric 10Gb 2-port 534FLR-SFP+ Adapter	2
865408-B21		HPE 500W Flex Slot Platinum Hot Plug Low Halogen Power Supply Kit	4
865408-B21	OD1	HPE 500W Flex Slot Platinum Hot Plug Low Halogen FIO Power Supply	4
BD505A		HPE iLO Advanced 1-server License with 3yr Support on iLO License	2
BD505A	OD1	HPE iLO Adv 1-svr Lic 3yr Support	2
874543-B21		HPE 1U Gen10 SFF Easy Install Rail Kit	2
874543-B21	OD1	HPE 1U Gen10 SFF Easy Install FIO Rail Kit	2
G3J31AAE		Red Hat Enterprise Linux Server 2 Sockets or 2 Guests 3 Year Subs	2
H7J32A3		HPE 3Y Foundation Care NBD SVC	1
H7J32A3	WAG	HPE DL360 Gen10 Support	2
J9285D		Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	4
FC switches			
QW938A		HPE SN3000B 16Gb 24-port_24-port Active Fibre Channel Switch	4
QW938A	05Y	2.4m Jumper (IEC320 C13_C14, M_F CEE 22)	4
QK724A		HPE B-series 16Gb SFP+ Short Wave Transceiver	92
QK724A	OD1	Factory Integrated	92
QK725A		HPE B-series 16Gb SFP+ Long Wave 10km Transceiver	4
QK725A	OD1	Factory Integrated	4
QW939A		HPE SN3000B Optional Power Supply	4
QW939A	05Y	2.4m Jumper (IEC320 C13_C14, M_F CEE 22)	4

QK734A		HPE Premier Flex LC_LC Multi-mode OM4 2 fiber 5m Cable	92
H7J32A3	9LJ	HPE B-Series 8_8 and 8_24 Switch Support	4

Backup to Disk device

BB955A		HPE StoreOnce 3640 48TB System	1
BB982A		HPE StoreOnce Gen4 10_25Gb SFP Network Card	1
BB982A	0D1	Factory Integrated	1
BB986A		HPE StoreOnce Gen4 16Gb Fibre Channel Network Card	1
BB986A	0D1	Factory Integrated	1
BB983A		HPE StoreOnce Gen4 10_25Gb SFP Network Card LTU	1
BB983A	0D1	FACTORY INTEGRATED	1
BB987A		HPE StoreOnce Gen4 16Gb Fibre Channel Network Card LTU	1
BB987A	0D1	FACTORY INTEGRATED	1
H7J32A3	ZGZ	HPE StoreOnce 3640 48TB System Support	1
J9285BR		HP X242 10G SFP+ SFP+ 7m DAC Refurbished Cable	2