

SPECIFICAȚII TEHNICE

Anexa nr. 22

la Documentația standard nr. 115 din 15.09.2021

Numărul procedurii de achiziție: **Licitație deschisă 21153454 / ocde-b3wdp1-MD-1705401141024**Denumirea licitației: **Echipament de stocare a datelor informatice (storage)**

Cod CPV	Denumirea bunurilor/sau a serviciilor	Modelul articolului	Țara de origine	Producătorul	Specificarea tehnică deplină solicitată de către autoritatea contractantă	Specificarea tehnică deplină propusă de către ofertant	Standarde de referință
1	2	3	4	5	6	7	8
48800000-6	Bunuri/Servicii: Echipament de stocare a datelor informatice (storage)	VSP-E-SOLUTION.S	Netherlands	Hitachi Vantara Nederland BV	Conform Caietului de sarcini (anexa 21 Documentația Standard).	Virtual Storage Platform E- 1 VSP E590 Appliance Product- 1 POWER CORD IEC C14 TO IEC C13 250VAC 10A WORLDWIDE APPROVALS 0.7M- 2 VSP EXX0 Host I/O Module FC 16/32G 4port- 2 VSP EXX0 SFP for 16Gbps Shortwave- 4 VSP E590 Base Package- 1 VSP E590 3.8TB NVMe spare- 1 VSP E590 Base Kit- 1 VSP E590 Base 4 x 3.8TB NVMe SSD Package- 2 VSP E590 Appliance Support- 1 SVC VSP E590 - BLF 1 Mo - Incl spares-36 VSP E590 Incentive- 1 VSP E590 New Account Incentive- 1 VSP E590 Capacity Incentive (Small)- 1 VSP E590 Software Sales- 1 VSP E590 Adaptive Data Reduction Activation- 1	ISO

Numele, Prenumele: Ghincu Sergiu

În calitate de: Director General

Ofertantul: DAAC System Integrator S.R.L.

Adresa: mun.Chisinau str.Calea Iesilor 10

		Response	Justification/links
Mid-Range Enterprise Block Storage (SAN).		Hitachi VSP E590 Block storage	https://www.hitachivantara.com/en-us/pdf/datasheet/virtual-storage-platform-e-series-datasheet.pdf https://www.hitachivantara.com/content/dam/public/en-us/pdfs/specifications/virtual-storage-platform-e-series-family-matrix.pdf?resource=/en-us/products/data-storage/primary-block-storage/vsp-e-series/_jcr_content/root/responsivegrid/specificationcontain
Modular	Min 20Tb of usable capacity after RAID6 + Spare (NVMe flash), for starting purchase.		
Max Number of Enclosures	>= 8	Supported	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Drive types	support SAS 10K/ SATA SAS 7,2/ Flash and NVMe (2.5, 3.5 inch FF)	Supported	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Controllers	Min 2 Active-Active controllers, Min 128 Gb Cache per Controller	Supported. Minimum cache 348GB, 2 controller symmetrical active active architecture	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
	Possibility of mixing SAS Flash NVME on the same controller without virtualization	Supported with NVMe drives in controller chassis with additional SAS enclosures	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction

Interface	Min 2*16Gbps FC connectivity per controller (upgrade possibility to 32 Gbps)	Supported, Configuration comes with 8 ports and 4x 16Gbps SFP	
RAID level	0/1/5/6/10 (5/6/10 – must)	Supported. Hitachi naming convention marks RAID 10 as Raid one in mirror + stripe groups of 2+2 and 4+4	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Min Data Transfer speed	400 Mbps (FC), Compression support.	Supported	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction https://knowledge.hitachivantara.com/Documents/Management_Software/SVOS/9.8.7/Volume_Management_-_VSP_E_Series/Data_Reduction/02_About_capacity_saving
Licenses that must be included	Snapshot, Clone, Tiering (3 Tiers)	Supported, Feature is called snapshot cascade	https://knowledge.hitachivantara.com/Documents/Management_Software/SVOS/9.8.7/Local_Replication/Thin_Image/01_Overview_of_Thin_Image
Software	Management software as HTML5 GUI and command line	Supported. Hitachi OpsCenter supports HTML 5 GUI, API and Command line interface (CLI/CCI)	https://docs.hitachivantara.com/r/en-us/ops-center-administrator/11.0.x/mk-99adm001/getting-started/overview-of-ops-center-administrator/unified-management-of-block-storage-and-file-storage https://docs.hitachivantara.com/v/u/en-us/command-control-interface/01-71-03/mk-90rd7010 https://docs.hitachivantara.com/r/en-us/virtual-storage-platform-5100/93-07-2x/mk-98rd9014

Optional/Additional features	Must be included or price have to be indicated in case of additional licensing of the feature		
Storage	Replication Synchronous, asynchronous or/and active-active	Supported, Advanced license pack require. Truecopy – Sync, HUR – Async and GAD – Active-active	https://www.hitachivantara.com/en-us/pdf/datasheet/virtual-storage-platform-e-series-datasheet.pdf https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9022 https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9023 https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9024
	Deduplication	Supported (ADR – Adaptive Data Reduction and is included with all VSP E storages	https://knowledge.hitachivantara.com/Documents/Management_Software/SVOS/9.8.7/Volume_Management_-_VSP_E_Series/Data_Reduction/02_About_capacity_saving
	3-rd party storage virtualization	Supported, licenses required for each TiB of virtualized storage. Hitachi storage can be virtualized free of charge. Feature is called Universal Volume manager	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9016
QoS	Throughput and bandwidth based on LUN, WWN or port	Supported – Feature is Called Server Priority Manager	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9019/server-priority-manager-operations
	Controller cache partitioning	Supported as cache logical partitioning	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9019/hitachi-virtual-partition-manager-operations/use-case-for-cache-logical-partitioning
To be described in detail	Power consumption, Heat Output, Air Flow - Power consumption, Heat Output, Air Flow	Calculation for offered configuration available at provided link	https://hccpanywhere.hitachivantara.com/u/xYx6ZM8MfybXjHpk/1b52155c-952c-4a08-bc32-4a270fcefec6?l

Warranty	3 year warranty with the option to extend warranty for 1 year and to extend the warranty at guaranteed prices.	Offered storage is with 36 months of support with possibility to extend for 1+ years	https://knowledge.hitachivantara.com/Support Information/More Info/Product Life-Cycle Matrix
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Requirements

Requirement	Response	Justification / links
Echipamentul de stocare trebuie sa fie nou din fabrica (nu se accepta echipamente refolosite sau reconditionate) si achizitionat printr-un canal oficial (declaratie de la producator)	Equipment is new and unused. Vendor's certificates included in the offer	
Producatorul echipamentului de stocare trebuie sa fie inclus in lista furnizorilor conform Gartner Magic Quadrant for 2023	Hitachi Vantara is amongs leaders in latest Gartner Magic Quadrant for primary storage	https://www.hitachivantara.com/ext/2023-gartner-magic-quadrant-for-primary-storage.html
Functionarea echipamentului de stocare trebuie sa se bazeze pe principiul "no single point of failure" furnizand inalta disponibilitate prin redundanta subansamblelor (ventilatoare, surse de alimentare, unitati controloare, etc)	Hitachi storage systems are engineered to have no single points of failure and multiple levels of redundancy	https://community.hitachivantara.com/blogs/hubert-yoshida/2020/12/18/unique-vsp-capabilities-which-were-not-noted-in-the-gartner-reports
Subansamblele trebuie sa fie inlocuibile online (de tip hot-swap)	Components are replaceable online	https://hccpanywhere.hitachivantara.com/u/w-3hcclt5DTR7eFx/bdd4e893-e792-4a78-94f0-8270cefd0070?l
Unitatile controller trebuie sa functioneze in mod simetric active/active cu distribuirea incarcarii intre cele doua controllere. Echipamentul de stocare trebuie sa suporte clusterizare a pana la 65 de echipamente de stocare pentru distribuirea incarcarii si migrarea datelor	Storage Architecture is symmetrical active-active that supports up to 65 controller nodes per cluster	https://www.hitachivantara.com/en-us/pdf/datasheet/virtual-storage-platform-e-series-datasheet.pdf https://www.hitachivantara.com/en-us/products/storage-platforms/primary-block-storage/vsp-e-series.html

Spatiul util de stocare trebuie configurat utilizand nivelul RAID-6 si trebuie sa includa numarul recomandat de unitati de rezerva (spare). Configuratia trebuie sa aiba cel putin 20TiB spatiu util folosind unitati de stocare NVMe de minim 3.8TB	The configuration is made with Raid6(6+2) and 3,8 TB NVMe drives and one spare drive. Usable capacity is 20.633TiB	In attached offer (Bill of Materials)
Echipamentul de stocare trebuie sa suporte unitati de stocare de tip NVMe, SAS SSD, SAS 10k HDD si NL-SAS 7.2k HDD in configuratie dual-controller. Echipamentul de stocare trebuie sa suporte cel putin 24 de unitati de stocare NVMe si sa suporte upgrade cu cel putin 240 unitati de stocare SAS SSD sau cu cel putin 480 unitati de stocare SAS HDD	VSP E 590 is hybrid storage that support mixing NVMe, SAS and NL_SAS drives	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Echipamentul de stocare trebuie sa suporte cel putin urmatoarele niveluri RAID: RAID-1, RAID-5 si RAID-6	Storage supports RAID 1 (10), RAID 5 and RAID 6 configurations	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Echipamentul de stocare trebuie sa suporte instalarea a pana la minim 16 porturi Fiber Channel (32Gbps pe fiecare port) sau pana la minim 8 porturi iSCSI (10Gbps pe fiecare port). Configuratia ofertata trebuie sa aiba minim 4 porturi FC 16Gbps active si populate cu transceivere de tip shortwave	Storage supports mixing required number of FC and iSCSI ports	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Echipamentul de stocare trebuie sa aiba o arhitectura cu doua unitati controller cu cel putin 384GB memorie cache fara a utiliza unitati flash suplimentare. Modelul echipamentului de stocare trebuie sa suporte maximum 768GB cache	Storage VSP E590 can come with 384 or 768Gb of total cache capacity balanced across both controllers	https://knowledge.hitachivantara.com/Documents/Storage/VSP_E_Series/93-04-0x/VSP_E590_VSP_E790_Hardware_Reference/01_Introduction
Echipamentul de stocare trebuie sa aiba suport pentru upgrade viitor la replicare cu access continuu (active-active) intre echipamente	Storage supports upgrade to advanced license pack with feature Global active	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9024

separate geographic, fara a fi necesara interventia utilizatorului si pentru a atinge zero RPO/RTO. Solutia trebuie sa poata scrie/citi pe acelasi LUN in acelasi timp am abele locatii	device that enables active-active replication with RPO/RTO=0	
Echipamentul de stocare trebuie sa aiba capacitatea de a proteja datele din memoria cache de scriere in cazul unei caderi de curent	The battery for the data saving is installed on each Controller Board • When the power failure continues for more than 20 milliseconds, the Storage System uses power from the batteries to back up the Cache Memory data and the Storage System configuration data onto the Cache Flash Memory. • Environmentally friendly nickel hydride battery is used for the Storage System.	https://hccpanywhere.hitachivantara.com/u/8TfVpvu30OXjN9Wm/a6984368-54a6-40e5-9644-57e1a8555415?l
Echipamentul de stocare trebuie sa aiba licenta pentru automatic tiering intre diferite unitati de stocare. In cazul unei cereri bruste de IO pentru datele stocate pe cel mai lent nivel de stocare ar trebui sa poata utiliza nivelul flash pentru a minimiza impactul cerintelor de performanta neasteptate	Feature is called Dynamic tiering and Active Flash which enables real time tiering.	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-97hm85026/dynamic-provisioning-dynamic-tiering-and-active-flash-gui-reference
Monitorizarea la distanta a starii, controlul, administrarea si configurarea tuturor functionalitatilor necesare sunt activate prin interfata grafica, interfata linie de comanda si API	Supported. Hitachi OpsCenter supports HTML 5 GUI, API and Command line interface (CLI/CCI)	https://docs.hitachivantara.com/r/en-us/ops-center-administrator/11.0.x/mk-99adm001/getting-started/overview-of-ops-center-administrator/unified-management-of-block-storage-and-file-storage https://docs.hitachivantara.com/v/u/en-us/command-control-interface/01-71-03/mk-90rd7010 https://docs.hitachivantara.com/r/en-us/virtual-storage-platform-5100/93-07-2x/mk-98rd9014

Echipamentul de stocare oferat trebuie sa suporte posibilitatea migrarii datelor intre storage pools / unitati de stocare / echipamente de stocare externe in timp ce aplicatiile sunt functionale (migrare LUN online)	Ops Center Administrator gives you an end-to-end workflow for migrating volumes from one pool to a different pool within one storage system (internal migration) and an end-to-end workflow for migrating volumes from one storage system to another (external migration).	https://docs.hitachivantara.com/r/en-us/ops-center-administrator/11.0.x/mk-99adm001/migrate-volumes
Echipamentul de stocare trebuie sa suporte prin upgrade de licenta ulterior virtualizarea externa a echipamentelor de stocare third-party fara adaugarea de componente externe. Echipamentul de stocare trebuie sa accepte virtualizarea prin porturile FC si iSCSI. Echipamentul de stocare trebuie sa suporte aceleasi caracteristici pentru volumele virtualizate ca si pentru capacitatea interna	Supported, licenses required for each TiB of virtualized storage. Hitachi storage can be virtualized free of charge. Feature is called Universal Volume manager	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9016
Echipamentul de stocare trebuie sa aiba capacitatea de monitorizare prin protocolul SNMP si de alertare prin e-mail si functia “call-home”	Storage supports SNMP traps and call home feature with Remote Ops software.	https://docs.hitachivantara.com/r/en-us/virtual-storage-platform-e1090/93-06-8x/mk-97hm85027/introduction/snmp-agent-overview https://www.hitachivantara.com/en-us/pdf/datasheet/remote-ops-monitoring-system-datasheet.pdf
Echipamentul de stocare trebuie sa aiba capacitatea de a extinde pool-urile de discuri si discurile logice fara a intrerupe functionarea	Storage can expand Pools and Volumes online	https://docs.hitachivantara.com/r/en-us/ops-center-administrator/11.0.x/mk-99adm001/configure-block-storage/managing-volumes/updating-volumes
Echipamentul de stocare trebuie sa aiba licenta inclusa pentru deduplicare si compresi per LUN	Every storage comes with included deduplication and compression license (base package)	

Echipamentul de stocare trebuie sa foloseasca snapshoturi si clone a datelor cu optiune de retentie si protectie impotriva oricaror modificari (modificare, stergere, suprascrisere, reconfigurare, etc) incluzand protectie ransomware aditionala. Snapshoturile trebuie sa suporte Redirecton-write si posibilitatea de a utiliza reducerea datelor pe volumele Snapshot	Storage supports various features for local replication (ThinImage – snapshots, Shadowimage – Clones). Retention utility enables storage to protect copies of data against ransomware attacks and malicious admin users to change configuration of protected users. Redirect on write is supported with ThinImage Advanced	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9033 https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9020 https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9021 https://docs.hitachivantara.com/r/en-us/ops-center-administrator/11.0.x/mk-99adm003/system-requirements/interoperability-requirements/data-retention-utility
Echipamentul de stocare trebuie sa includa licenta pentru snapshot-uri de tip application-consistent (Oracle)	License is included with every Hitachi storage and is part of OpsCenter Protector	https://docs.hitachivantara.com/r/en-us/ops-center-protector/7.7.x/mk-99prt003
Echipamentul de stocare trebuie sa include licenta pentru Quality of Service. Caracteristica QoS trebuie sa poata limita debitul/latimea de banda per LUN, WWN, server sau port de stocare	Supported – Feature is Called Server Priority Manager	https://docs.hitachivantara.com/r/en-us/svos/9.8.7/mk-98rd9019/server-priority-manager-operations
Echipamentul de stocare trebuie sa aiba capacitatea de actualiza firmware-ul fara nici un timp de nefunctionare in timpul orelor de lucru fara a pierde intregul controller la momentul respective	Storage supports micro-program Exchange Procedure (On-line)	https://hccpanywhere.hitachivantara.com/u/2n4xcdD-NDXIfjFx/cd6da98c-492e-4a22-ad28-d5ced8a94fc5?l
Echipamentul de stocare trebuie sa includa tot ce este necesar pentru instalarea intr-un rack standard de 19-inch	Every storage controller tray and and disk chassis comes with required parts for Rack Installation	
Echipamentul de stocare trebuie sa ofere integrare cu Openstack, Containers, VMware (vRealize, SRM, VAAI, VASA, vCenter integration), Microsoft SCOM, Oracle si altele.	Every storage comes included with all required integrations and are available on Hitachi documentation page	https://knowledge.hitachivantara.com/Documents/Adapters_and_Drivers/Storage_Adapters_and_Drivers

Echipamentul de stocare trebuie sa ofere posibilitatea de monitorizare a performantei istorice, analiza, detectarea si rezolvarea automata a problemelor de performanta. Instrumentul trebuie sa poata monitoriza echipamentul de stocare, echipamentele virtualizate de stocare, mediul SAN (atat Brocade cat si CISCO) si serverele host la nivel de OS sau hypervisor.	Every storage comes with included OpsCenter Analyzer licenses which supports all required features	https://docs.hitachivantara.com/r/en-us/ops-center-analyzer/10.9.x/mk-99ana002 https://docs.hitachivantara.com/r/en-us/ops-center/11.0.x/mk-99ops001
Atat solutia de automatizare cat si solutia de monitorizare a performantei trebuie sa fie instalate la nivel local (on premise)	All included software comes with permanent license and can be installed on prem.	https://docs.hitachivantara.com/r/en-us/ops-center/11.0.x/mk-99ops001 https://docs.hitachivantara.com/r/en-us/ops-center/11.0.x/mk-99ops001
Echipamentul de stocare trebuie sa suporte cel putin urmatoarele sisteme de operare: Microsoft Windows Server, Microsoft Hyper-V, VMware vSphere, RedHat Enterprise Linux si altele.	Storage supports all required Operating systems and more. Entire compatibility matrix is available at compatibility.hitachivantara.com	Required OS: https://compatibility.hitachivantara.com/products/interop-matrix?os=377,393,368,386,402,230,304,362&array=301&server=61&array_if=2
Echipamentul de stocare ar trebui sa aiba garantie cu penalitati oferite de producator in cazul pierderii datelor din cauza nefunctionarii corecte a echipamentului.	For every storage Hitachi can sign 100% data availability guarantee	https://www.hitachivantara.com/en-us/pdf/datasheet/ensure-data-availability-for-vsp-datasheet.pdf
Echipamentul de stocare trebuie sa aiba o garantie de minim 36 de luni.	Included. Please check the offer and Bill Of Materials	