Anexa nr. 22
la Documentația standard
aprobată prin Ordinul Ministrului Finanţelor
nr. 115 din 15.09.2021

Specificaţii tehnice

[Acest tabel va fi completat de către ofertant în coloanele 2, 3, 4, 6, 7, iar de către autoritatea contractantă – încoloanele 1, 5,]

Numărul procedurii de achiziție: *ocds-b3wdp1-MD-1721217778613 din data de 17 iulie 2024*
Obiectul achiziției: *Servere și sisteme de stocare (perioada 2024-2025)*

Denumirea bunurilor/ serviciilor	**Denumirea modelului bunului/ serviciului**	**Țara de origine**	**Produ-cătorul**	**Specificarea tehnică deplină solicitată de către autoritatea contractantă**	**Specificarea tehnică deplină propusă de către ofertant**	**Standarde de referinţă**
1	2	3	4	5	6	7
Bunuri/servicii						
Lotul nr. 1 Enterprise Servere tip 1	PowerEdge R660	SUA	Dell	Echipament nou și nerecondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server **Form Factor:** max. 2U, Rack mounting: rails with full extraction included; **CPU:** min. 2 x CPU; min. 24 core per CPU with hyper-threading;	Echipament nou și nerecondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server, PowerEdge R660 Server **Form Factor: 1**U, Rack mounting: rails with full extraction included; **CPU:** 2 x CPU, Intel Xeon Gold 6542Y; 24 core per CPU with hyper-threading; CPU launch date starting with Q4’23;	

				CPU launch date starting with Q3'23; Cache: min. 40MB; Base Frequency: min. 2.4 Ghz; **Total Memory(RAM):** min. 24 DDR5 slots; **Memory(RAM) pre-installed:** min. 12 x 64GB DDR5; **Min drive bays pre-installed:** min. 8 bays 2.5 for data Support Hot-Swappable; **Storage pre-installed:** min. 2 x min. 240 Gb SSD SAS; **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache min. 4GB; **NICs included:** min. 1 x 1GE management; min. 2 x 1GE; min. 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments:** 1. Microsoft Windows Server; 2. Red Hat Enterprise Linux; 3. VMware (VMware ESXi); 4. Microsoft Hyper-V; **Interfaces:** min. 2 port USB; **Power supplies included**: min. 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Front Indicator Status:** 1. Power Status 2. Health System Status 3. Drive Status 4. NIC Status	Cache: 60MB; Base Frequency: 2.9 Ghz; **Total Memory(RAM): 3**2 DDR5 slots; **Memory(RAM) pre-installed:** 12 x 64GB DDR5; **Min drive bays pre-installed: 10** bays 2.5 for data Support Hot-Swappable; **Storage pre-installed:** 2 x 960Gb SSD SAS; **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache 8GB; **NICs included:** 1 x 1GE management; 2 x 1GE; 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments:** 6. Microsoft Windows Server; 7. Red Hat Enterprise Linux; 8. VMware (VMware ESXi); 9. Microsoft Hyper-V; **Interfaces:** 4 port USB; **Power supplies included**: 2 hot-plug PSU 1400W with support for 1+1 redundancy with power cables c13-c14(2 m); **Front Indicator Status:** 10.Power Status 11.Health System Status 12.Drive Status 13.NIC Status 14.UID Status	

				5. UID Status **Fan Modules:** hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors; - Monitoring and control of electricity consumption; - Turn On/Off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders. - Support SNMP min.v2c. **Operating system:** no OS pre-installed. **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul	**Fan Modules:** hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors; - Monitoring and control of electricity consumption; - Turn On/Off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders. - Support SNMP min.v2c. **Operating system:** no OS pre-installed. **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință;	

				vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	Toate componentele sunt actuale și să nu sunt promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu includ limitări hardware sau software.	
Lotul nr. 2 Enterprise Server tip 2	PowerEdge R760	SUA	Dell	Echipament nou și nerecondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type**: Enterprise Server; **Form Factor:** max. 2U, Rack mounting: rails with full extraction included; **CPU:** min. 2 x CPU; min. 24 core per CPU with hyper-threading; CPU launch date starting with Q3'23; Cache: min. 40MB; Base Frequency: min. 2.4 Ghz; **Total Memory(RAM):** min. 24 DDR5 slots; **Memory(RAM) pre-installed:** min. 8 x 64 GB DDR5; **Min. drive bays pre-installed:** min. 24 bays 2.5 for data Support Hot-Swappable **Storage pre-installed**: min. 16 x min. 1,9 Tb SSD, SAS 12Gb/s min. 2 x min. 240 Gb SSD SAS; **RAID Controller**: Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache min. 4GB; **NICs included:**min. 1 x 1GE management; min. 2 x 1GE;	Echipament nou și nerecondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024,, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type**: Enterprise Server, PowerEdge R760 Server **Form Factor:** 2U, Rack mounting: rails with full extraction included; **CPU:** 2 x CPU, Intel Xeon Gold 6542Y; 24 core per CPU with hyper-threading; CPU launch date starting with Q4'23; Cache: 60MB; Base Frequency: 2.9 Ghz; **Total Memory(RAM):** 32 DDR5 slots; **Memory(RAM) pre-installed:** 8 x 64 GB DDR5; **Min. drive bays pre-installed:** 24 bays 2.5 for data Support Hot-Swappable **Storage pre-installed**: 16 x 1,9 Tb SSD, SAS 12Gb/s 2 x 960 Gb SSD SAS; **RAID Controller**: Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache 8GB; **NICs included:** 1 x 1GE management;	

				min. 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; min. 2 x SFP+ SR MM modules (Cisco Compatible). **Supported operating environments**: 1. Microsoft Windows Server; 2. Red Hat Enterprise Linux; 3. VMware (VMware ESXi); 4. Microsoft Hyper-V; **Interfaces**: min. 2 port USB; **Power supplies included**: 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Front Indicator Status:** 1. Power Status 2. Health System Status 3. Drive Status 4. NIC Status 5. UID Status **Fan Modules**: hot-swappable with N+1 redundancy; **Management**: A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors;	2 x 1GE; 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; 2 x SFP+ SR MM modules (Cisco Compatible). **Supported operating environments**: 5. Microsoft Windows Server; 6. Red Hat Enterprise Linux; 7. VMware (VMware ESXi); 8. Microsoft Hyper-V; **Interfaces**: 4 port USB; **Power supplies included**: 2 hot-plug PSU 1400W with support for 1+1 redundancy with power cables c13-c14(2 m); **Front Indicator Status:** 6. Power Status 7. Health System Status 8. Drive Status 9. NIC Status 10. UID Status **Fan Modules**: hot-swappable with N+1 redundancy; **Management**: A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors;	

				- Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating system:** no OS pre-installed; **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	- Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating system:** no OS pre-installed; **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele sunt actuale și nu sunt promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu include limitări hardware sau software.	
Lotul nr. 3 Enterprise Servere tip 3	PowerEdge R660	SUA	Dell	Echipament nou și ne recondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server	Echipament nou și ne recondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server, PowerEdge R660 Server	

				Form Factor: max. 2U, Rack mounting: rails with full extraction included; **CPU:** min. 2 x CPU; min. 24 core per CPU with hyper-threading; CPU launch date starting with Q3'23 Cache: min. 40MB; Base Frequency: min. 2.4 Ghz; **Total Memory(RAM):** min. 24 DDR5 slots; **Memory(RAM) pre-installed:** min. 4 x 64GB DDR5; **Min. drive bays pre-installed:** min. 8 bays 2.5 for data Support Hot-Swappable; **Storage pre-installed:** min. 2 x min. 240 Gb SSD SAS; **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache min. 4GB; **NICs included:** min. 1 x 1GE management; min. 2 x 1GE; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments:** 1. Microsoft Windows Server; 2. Red Hat Enterprise Linux; 3. VMware (VMware ESXi); 4. Microsoft Hyper-V; **Interfaces:** min. 2 port USB; **Power supplies included:** 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Front Indicator Status:** 1. Power Status 2. Health System Status 3. Drive Status 4. NIC Status 5. UID Status	**Form Factor: 1**U, Rack mounting: rails with full extraction included; **CPU:** 2 x CPU, Intel Xeon Gold 6542Y ; 24 core per CPU with hyper-threading; CPU launch date starting with Q4'23 Cache: 60MB; Base Frequency: 2.9 Ghz; **Total Memory(RAM):** 32 DDR5 slots; **Memory(RAM) pre-installed:** 4 x 64GB DDR5; **Min. drive bays pre-installed:** 10 bays 2.5 for data Support Hot-Swappable; **Storage pre-installed:** 2 x 960 Gb SSD SAS; **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache 8GB; **NICs included:** 1 x 1GE management; 2 x 1GE; 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments:** 5. Microsoft Windows Server; 6. Red Hat Enterprise Linux; 7. VMware (VMware ESXi); 8. Microsoft Hyper-V; **Interfaces:** min. 2 port USB; **Power supplies included:** 2 hot-plug PSU 1400W with support for 1+1 redundancy with power cables c13-c14(2 m); **Front Indicator Status:** 6. Power Status 7. Health System Status 8. Drive Status 9. NIC Status 10. UID Status	

				Fan Modules: hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM(Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors; - Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating System:** MS Windows Server 2022 Datacenter OEM preinstalled for each server, covering all Cores in accordance with offered model. **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare. **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință;	**Fan Modules:** hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM(Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information; - View information from sensors; - Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating System:** MS Windows Server 2022 Datacenter OEM preinstalled for each server, covering all Cores in accordance with offered model. **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii;	

				Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	O cerință nu trebuie să limiteze o altă cerință; Toate componentele sunt actuale și nu sunt promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu includ limitări hardware sau software.	
Lotul nr. 4 Enterprise Servere tip 4	PowerEdge R660	SUA	Dell	Echipament nou și ne recondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server **Form Factor:** max. 2U, Rack mounting: rails with full extraction included; **CPU:** min. 2 x CPU; min. 24 core per CPU with hyper-threading; CPU launch date starting with Q3'23; Cache: min. 40MB; Base Frequency: min. 2.4 Ghz; **Total Memory(RAM):** min. 24 DDR5 slots; **Memory(RAM) pre-installed:** min. 4 x 64GB DDR5; **Min. drive bays pre-installed:** min. 8 bays 2.5 for data Support Hot-Swappable, **Storage pre-installed:** min. 2 x min. 240 Gb SSD SAS **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache min. 4GB; **NICs included:**	Echipament nou și ne recondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Server, PowerEdge R660 Server **Form Factor: 1**U, Rack mounting: rails with full extraction included; **CPU:** 2 x CPU, Intel Xeon Gold 6542Y; 24 core per CPU with hyper-threading; CPU launch date starting with Q4'23; Cache: 60MB; Base Frequency: 2.9 Ghz; **Total Memory(RAM):** 32 DDR5 slots; **Memory(RAM) pre-installed:** 4 x 64GB DDR5; **Min. drive bays pre-installed:** 10 bays 2.5 for data Support Hot-Swappable, **Storage pre-installed:** 2 x 960 Gb SSD SAS **RAID Controller:** Support Pass-through mode; RAID 1, 5, 6, 10, 50, 60; Cache 8GB; **NICs included:**	

				min. 1 x 1GE management; min. 2 x 1GE; min. 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments**: 1. Microsoft Windows Server; 2. Red Hat Enterprise Linux; 3. VMware (VMware ESXi); 4. Microsoft Hyper-V; **Interfaces:** min. 2 port USB **Power supplies included:** 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Front Indicator Status:** 1. Power Status 2. Health System Status 3. Drive Status 4. NIC Status 5. UID Status **Fan Modules:** hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS;	1 x 1GE management; 2 x 1GE; 2 x 10GE SFP+, identical, network virtualization offload, with SFP+ SR MM module included; 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments**: 5. Microsoft Windows Server; 6. Red Hat Enterprise Linux; 7. VMware (VMware ESXi); 8. Microsoft Hyper-V; **Interfaces:** min. 2 port USB **Power supplies included:** 2 hot-plug PSU 1400W with support for 1+1 redundancy with power cables c13-c14(2 m); **Front Indicator Status:** 6. Power Status 7. Health System Status 8. Drive Status 9. NIC Status 10. UID Status **Fan Modules:** hot-swappable with N+1 redundancy; **Management:** A web-based solution for KVM (Kernel-based Virtual Machine) must be included with full functionality for manage and monitoring, including at least: - View information about the state of the managed server; - Inventory and monitoring of network adapters and data storage subsystems without software agents in the OS; - View inventory information;	

				- View inventory information; - View information from sensors; - Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating system: n**o OS pre-installed. **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	- View information from sensors; - Monitoring and control of electricity consumption; - Turn on/off the server; - Remote update of BIOS, firmware of network and RAID controllers; - Virtual console, virtual media devices; - OS installation from virtual media devices and through network shared folders; - Support SNMP min. v2c. **Operating system: n**o OS pre-installed. **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele sunt actuale și nu sunt promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu includ limitări hardware sau software.	
Lotul nr. 5 Sisteme de stocare Full flash tip 1	PowerStore 5200T	SUA	Dell	Echipament nou și nerecondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu.	Echipament nou și nerecondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu.	

				Type: Enterprise Storage Full Flash **Form Factor:** min. 2U Rack mounting included; **Availability:** The equipment must be working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%; - lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers; - lack of decrease in the required performance in the event of a failure of half of the controllers; - 100% full capacity reading; - The system must have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data must be available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. The equipment must allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. The equipment must have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a	**Type:** Enterprise Storage Full Flash, 2x PowerStore 5200T **Form Factor:** 2U Rack mounting included; **Availability:** The equipment working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%; - lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers; - lack of decrease in the required performance in the event of a failure of half of the controllers; - 100% full capacity reading; - The system have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. The equipment allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. The equipment have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a breakdown of two carriers, the device must	

				breakdown of two carriers, the device must provide uninterrupted access to all data on the device. The equipment must allow to safely disable the device that does not cause user **<u>data</u>** loss. **Type Drives**: NVMe/Flash; **Capacity:** Min. usable space 600 TB (considering min. RAID 6) Hot Spare optional (If the equipment may not contain spare components that are not used during the operation of the device (e.g. spare controller, Hot Spare disk)). **RAID(if the equipment involves the use of RAID):** -Support Pass-through mode; -RAID 6, 10. **Cache requirement:** - If the technology/equipment vendor provides for the presence of a cache in the operation of the storage system, then minimum requirements are the following min. 128GB per node. **Controllers:** - The system must include at least 1 node consisting of 2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - The equipment must have the functionality of synchronous replication enabling the creation of the Active-Active cluster from both equipments (between two server rooms located in separate buildings) and provide all hardware components necessary to implement the	provide uninterrupted access to all data on the device. The equipment allow to safely disable the device that does not cause user **<u>data</u>** loss. **Type Drives**: NVMe/Flash; **Capacity:** Min. usable space 696 TB (considering min. RAID 6) effective capacity. Hot Spare optional (If the equipment may not contain spare components that are not used during the operation of the device (e.g. spare controller, Hot Spare disk)). **RAID(if the equipment involves the use of RAID):** -RAID 6. **Cache requirement:** - If the technology/equipment vendor provides for the presence of a cache in the operation of the storage system, then minimum requirements are the following min. 2(storage)x2(controler)x576 GB per node. **Controllers:** - The system include at least 1 node consisting of 2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - Provided using metro nodes (cluster of external hardware storage virtualisation appliances , which are included in proposal.	

				functionality of replication with utilization FC protocol. - Synchronous replication must be possible for a minimum of one LUN and at the same type for many volumes LUN'S, and a change in the number of replicated volumes may not require a change in the physical hardware configuration. - The contents of the cluster volumes must be identical on both systems at any time of the cluster. **Performance requirement:** The combined performance of the equipment must provide a performance of Min. 500,000 IOPS. IOPS are calculated according to the following principle: - Read/write ratio - 70/30; - Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.001 s; **Supported protocols:** - FC, - iSCSI; **Futures:** - The system must include dedicated interfaces for system management (management). **Deduplication:** - The equipment must enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN), volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN);	- Synchronos replication will be provided by the cluster of external hardware storage virtualisation appliances . - The contents of the cluster volumes identical on both systems at any time of the cluster. **Performance requirement:** The combined performance of the equipment provide a performance of Min. 500,000 IOPS. IOPS are calculated according to the following principle: - Read/write ratio - 70/30; - Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.0006 s; **Supported protocols:** FC, iSCSI, NVMe/FC, NVME/TCP, NFS, SMB, FTP and SFTP **Futures:** - The system include dedicated interfaces for system management (management). **Deduplication:** - The equipment enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN), volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN); - The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as:	

				- The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as: data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or possible to exclude the system administrator (optional). - All of the listed functionalities must be licensed (if applicable by vendor provisions) & included in offer and supported by the system in its maximum configuration. **Compression:** - The equipment must have a data compression mechanism in In-Line mode. - Compression must be an integral part of the device and cannot be in any way possible to be turned off or the manufacturer's service (optional). **Snapshot** - The system must provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system must provide at least 300 snapshots for each shared volume; - The system must provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions.	data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or possible to exclude the system administrator (optional). - All of the listed functionalities must be licensed (if applicable by vendor provisions) & included in offer and supported by the system in its maximum configuration. **Compression:** - The equipment have a data compression mechanism in In-Line mode. - Compression an integral part of the device and cannot be in any way possible to be turned off or the manufacturer's service (optional). **Snapshot** - The system provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system provide at least 512 snapshots for each shared volume; - The system provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions. - Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only difference with original data).	

				- Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only difference with original data). - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:** The solution must encrypt all stored data with the minimum with the AES-256 or stronger algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution. The encryption key must be stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment must have an analytical platform or VM in the form of a portal available by a web browser. - The platform should automatically collect logs from the device and present them in the form of graphs and reports. - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if it's used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion.	- The system include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:** The solution encrypt all stored data with the minimum with the AES-256 or stronger algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution. The encryption key stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment have an analytical platform or VM in the form of a portal available by a web browser. - The platform should automatically collect logs from the device and present them in the form of graphs and reports. - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if it's used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion. - The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components:	

				- The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components: - The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN. - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. - The portal must have function to create reports from capacity, performance, prediction of future space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal must enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** Min. x 1GE management; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included.	- The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN. - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. - The portal have function to create reports from capacity, performance, prediction of future space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** 1GE management; 2(storage) x4 x 32Gb FC SFP+, identical, with SFP+ SR MM module included. **Supported operating environments:** Microsoft Windows Server; Red Hat Enterprise Linux; VMware (VMware ESXi); **Interfaces:** **Power supplies included:**	

				Supported operating environments: Microsoft Windows Server; Red Hat Enterprise Linux; VMware (VMware ESXi); **Interfaces:** **Power supplies included:** Min. 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare. **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	Min. 2 hot-plug PSU with support for 1+1 redundancy with power cables c13-c14(0.6 m); **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	
Lotul nr. 6 Sisteme de stocare SAS SSD tip 2	PowerStore 5200T	SUA	Dell	Echipament nou și nerecondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Storage SAS SSD **Form Factor:** min. 2U Rack mounting included; **Availability:**	Echipament nou și nerecondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Storage NVMe/Flash, PowerStore 5200T **Form Factor:** 2U Rack mounting included; **Availability:**	

				The equipment must be working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%, - lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers, - lack of decrease in the required performance in the event of a failure of half of the controllers, - 100% full capacity reading, - The system must have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data must be available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. - The equipment must allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. - The equipment must have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a breakdown of two carriers, the device must provide uninterrupted access to all data on the device. - The equipment must allow to safely disable the device that does not cause user **data** loss.	The equipment working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%, - lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers, - lack of decrease in the required performance in the event of a failure of half of the controllers, - 100% full capacity reading, - The system must have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data must be available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. - The equipment must allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. - The equipment must have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a breakdown of two carriers, the device must provide uninterrupted access to all data on the device. - The equipment must allow to safely disable the device that does not cause user **data** loss.	

				Type Drives: SAS SSD. **Capacity:** min. usable space 200 TB (considering min. RAID 6) Hot Spare optional (If the equipment may not contain spare components that are not used during the operation of the device (e.g. spare controller, Hot Spare disk). **RAID (if the equipment involves the use of RAID):** - Support Pass-through mode; - RAID 6, 10. **Cache requirement:** - If the technology/equipment vendor provides the presence of a cache in the operation of the storage system, then its minimum requirements are the following min. 128GB per node. **Controllers:** - The system must include at least 1 node consisting of min.2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - The equipment must have the functionality of synchronous replication enabling the creation of the Active-Active cluster from both equipments (between two server rooms located in separate buildings) and provide all hardware components necessary to implement the functionality of replication with utilization FC protocols. - Synchronous replication must be possible for a minimum of one LUN and at the same type for many volumes LUN'S, and a change in the number of replicated volumes may not require a change in the physical hardware configuration.	**Type Drives:** NVMe/Flash. **Capacity:** min. usable space 209,02 TB (considering min. RAID 6), effective capacity; Hot Spare optional (If the equipment may not contain spare components that are not used during the operation of the device (e.g. spare controller, Hot Spare disk). **RAID (if the equipment involves the use of RAID):** - RAID 6 **Cache requirement:** - If the technology/equipment vendor provides the presence of a cache in the operation of the storage system, then its minimum requirements are the following min. 576GB per node. **Controllers:** - The system must include at least 1 node consisting of min.2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - Provided using metro nodes (cluster of external hardware storage virtualisation appliances , which are included in proposal. - Synchronos replication will be provided by the cluster of external hardware storage virtualisation appliances. - The contents of the cluster volumes must be identical on both systems at any time of the cluster. **Performance requirement:**	

				- The contents of the cluster volumes must be identical on both systems at any time of the cluster. **Performance requirement:** The combined performance of the equipment must provide a performance of Min. 300,000 IOPS. IOPS are calculated according to the following principle: - Read/write ratio - 70/30; - Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.001 s; **Supported protocols:** - FC, - iSCSI, **Futures:** - The system must include dedicated interfaces for system management (management). **Deduplication:** - The equipment must enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN) volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN). - The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as: data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or	The combined performance of the equipment must provide a performance of Min. 300,000 IOPS. IOPS are calculated according to the following principle: - Read/write ratio - 70/30; - Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.00065 s; **Supported protocols:** FC; iSCSI; NVMe/FC, NVME/TCP NFS, SMB, FTP and SFTP **Futures:** - The system must include dedicated interfaces for system management (management). **Deduplication:** - The equipment must enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN) volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN). - The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as: data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or possible to exclude the system administrator (optional).	

				possible to exclude the system administrator (optional). - All of the listed functionality must be licensed (if applicable by vendor provisions) & included in offer and supported by the storage system in its maximum configuration level. **Compression:** - The equipment must have a data compression mechanism in In-Line mode. - Compression must be an integral part of the device and cannot be in any way possible to be turned off by the administrator or the manufacturer's service (optional). **Snapshot:** - The system must provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system must provide at least 300 snapshots for each shared volume; - The system must provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions. - Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only on the difference with original data). - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:**	- All of the listed functionality must be licensed (if applicable by vendor provisions) & included in offer and supported by the storage system in its maximum configuration level. **Compression:** - The equipment must have a data compression mechanism in In-Line mode. - Compression must be an integral part of the device and cannot be in any way possible to be turned off by the administrator or the manufacturer's service (optional). **Snapshot:** - The system must provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system must provide at least 512 snapshots for each shared volume; - The system must provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions. - Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only on the difference with original data). - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:** The solution must be able to encrypt all stored data with the minimum the AES-256 or stronger	

				The solution must be able to encrypt all stored data with the minimum the AES-256 or stronger algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution. The encryption key must be stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment must have an analytical platform or VM in the form of a portal available via a web browser. The platform should automatically collect logs from the device and present them in the form of graphs and reports: - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if is used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion. - The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components: - The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN.	algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution. The encryption key must be stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment must have an analytical platform or VM in the form of a portal available via a web browser. The platform should automatically collect logs from the device and present them in the form of graphs and reports: - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if is used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion. - The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components: - The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN. - The system must include a performance monitoring and prioritization mechanism for	

				- The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. - The portal must have function to create reports from capacity, performance, prediction of future space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal must enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** Min 1 x 1GE management; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included; **Supported operating environments:** Microsoft Windows Server; Red Hat Enterprise Linux; VMware (VMware ESXi); **Power supplies included:** Min. 2 hot-plug PSU with support for min. 1+1 redundancy with power cables c13-c14(0.6 m);	Storage QoS applied at the volume and LUN levels. - The portal must have function to create reports from capacity, performance, prediction of future space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal must enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** 1 x 1GE management; 4 x 32Gb FC SFP+, identical, with SFP+ SR MM module included; **Supported operating environments:** Microsoft Windows Server; Red Hat Enterprise Linux; VMware (VMware ESXi); **Power supplies included:** Min. 2 hot-plug PSU with support for min. 1+1 redundancy with power cables c13-c14(0.6 m); **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani(60 luni integral) de tipul "Next Business Day" **Termeni și condiții:**	

				Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire) - conform Anexei la Anunțul de participare. **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință; Toate componentele sunt actuale și nu sunt promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu includ limitări hardware sau software.	
Lotul nr. 7 Sisteme de stocare SAS SSD tip 3	PowerStore 5200T	SUA	Dell	Echipament nou și nerecondiționat, produs minim trim. I anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Brand name internațional). Configuraţia echipamentului trebuie să fie compusă din componente reciproc compatibile şi să asigure funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Storage SAS SSD **Form Factor:** min. 2U Rack mounting included; **Availability:** The equipment must be working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%, - lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers,	Echipament nou și nerecondiționat, produs după plasarea comenzii, minim va fi trim. IV anul 2024, corespunzător tipului de dispozitive de nivel Enterprise, produs de producători renumiți (Dell). Configuraţia echipamentului este compus din componente reciproc compatibile şi asigură funcţionarea optimă a sistemului în ansamblu. **Type:** Enterprise Storage NVMe/Flash, PowerStore 1200T **Form Factor:** min. 2U Rack mounting included; **Availability:** The equipment working in Symmetric Active-Active mode, which means that in the case of 100% utilization, ensures: - obtaining high availability at 99,9999%,	

				- lack of decrease in the required performance in the event of a failure of half of the controllers, - 100% full capacity reading, - The system must have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data must be available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. - The equipment must allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. - The equipment must have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a breakdown of two carriers, the device must provide uninterrupted access to all data on the device. - The equipment must allow you to safely disable the device that does not cause user **data** loss. **Type Drives:** SAS SSD. **Capacity:** Min. usable space 30 TB (considering min. RAID 6), Hot Spare optional (If the equipment may not contain spare components that are not used	- lack of decrease in the required equipment efficiency in the event of a failure of half of the controllers, - lack of decrease in the required performance in the event of a failure of half of the controllers, - 100% full capacity reading, - The system must have built-in mechanisms for updating program versions without compromising its availability and loss of access to data. The data must be available in cases of: - failure of one power supply line, - failure of any controller, - failures of any two user data carriers, - failures of any port of FC/ISCSI, - failure of any RAM module or any controller processor. - The equipment must allow hot replacement (without stopping access to data) of the following components: controllers, power supplies, fans, front-end and back-end ports, drives. - The equipment must have been resistant to a simultaneous failure of a minimum of any two drives/NVMe/flash, regardless of the scale and configuration of the solution. In the event of a breakdown of two carriers, the device must provide uninterrupted access to all data on the device. - The equipment must allow you to safely disable the device that does not cause user **data** loss. **Type Drives:** NVMe/Flash. **Capacity:** Min. usable space 38,93 TB (considering min. RAID 6), effective capacity	

				during the operation of the device (e.g. spare controller, Hot Spare disk). **RAID(if the equipment involves the use of RAID):** - Support Pass-through mode; - RAID 6, 10. **Cache requirement:** - If the technology/equipment vendor provides the presence of a cache in the operation of the storage system, then its minimum requirements are the following min. 64GB per node. **Controllers:** - The system must include at least 1 node consisting of min.2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - The equipment must have the functionality of synchronous replication enabling the creation of the Active-Active cluster from both equipments (between two server rooms located in separate buildings) and provide all hardware components necessary to implement the functionality of replication with utilization FC protocols. - Synchronous replication must be possible for a minimum of one LUN and at the same type for many volumes LUN'S, and a change in the number of replicated volumes may not require a change in the physical hardware configuration. - The contents of the cluster volumes must be identical on both systems at any time of the cluster. **Performance requirement:** The combined performance of the equipment must provide a performance of Min. 200,000 IOPS.	Hot Spare optional (If the equipment may not contain spare components that are not used during the operation of the device (e.g. spare controller, Hot Spare disk). **RAID(if the equipment involves the use of RAID):** - RAID 6. **Cache requirement:** - If the technology/equipment vendor provides the presence of a cache in the operation of the storage system, then its minimum requirements are the following min. 192GB per node. **Controllers:** - The system must include at least 1 node consisting of min.2 controllers in HA (high availability) mode. **Cluster requirement and replication:** - Provided using metro nodes (cluster of external hardware storage virtualisation appliances , which are included in proposal. - Synchronos replication will be provided by the cluster of external hardware storage virtualisation appliances . - The contents of the cluster volumes must be identical on both systems at any time of the cluster. **Performance requirement:** The combined performance of the equipment must provide a performance of Min. 200,000 IOPS. IOPS are calculated according to the following principle: - Read/write ratio - 80/20;	

				IOPS are calculated according to the following principle: - Read/write ratio - 80/20; - Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.001 s; **Supported protocols:** - FC, - iSCSI **Futures:** - The system must include dedicated interfaces for system management (management). **Deduplication:** - The equipment must enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN) volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN). - The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as: data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or possible to exclude the system administrator (optional). - All of the listed functionality must be licensed (if any) & included in offer and supported by the storage system in its maximum configuration level. **Compression:**	- Block size - 16K/32K/64K; - Sequential and random I/O; - Delay – 0.00053 s; **Supported protocols:** FC; iSCSI; NVMe/FC, NVME/TCP NFS, SMB, FTP and SFTP **Futures:** - The system must include dedicated interfaces for system management (management). **Deduplication:** - The equipment must enable deduplication functionality for volumes accessible at block level (iSCSI/FC LUN) volumes and globally for each system. - The equipment must enable compression functionality for block-level volumes (iSCSI/FC LUN). - The deduplication and compression functionality will not impose restrictions on the simultaneous use of other functions, such as: data replication, thin provisioning, backups, volume cloning. - The equipment must have the data deduplication mechanism in In-Line mode. Deduplication cannot be stopped in any way or possible to exclude the system administrator (optional). - All of the listed functionality must be licensed (if any) & included in offer and supported by the storage system in its maximum configuration level. **Compression:**	

				- The equipment must have a data compression mechanism in In-Line mode. - Compression must be an integral part of the device and cannot be in any way possible to be turned off by the administrator or the manufacturer's service (optional). **Snapshot:** - The system must provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system must provide at least 300 snapshots for each shared volume; - The system must provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions. - Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only on the difference with original data). - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:** The solution must be able to encrypt all stored data with the minimum the AES-256 or stronger algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution.	- The equipment must have a data compression mechanism in In-Line mode. - Compression must be an integral part of the device and cannot be in any way possible to be turned off by the administrator or the manufacturer's service (optional). **Snapshot:** - The system must provide snapshot functionality in Safe mode; - Snapshot functionality must be applicable at least at the LUN level; - The system must provide at least 512 snapshots for each shared volume; - The system must provide efficient snapshot functionality so that its use does not impact system performance by more than 10%. - Snapshot functionality should be applicable to at least LUNs, without imposing restrictions on the use of other functions. - Snapshot functionality should be cost-effective so that snapshot copies take up minimal space when created (only on the difference with original data). - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels. **Encryption:** The solution must be able to encrypt all stored data with the minimum the AES-256 or stronger algorithm and encrypt all drives/NVMe/flash supported in the device. Data encryption cannot affect the performance of the solution.	

				The encryption key must be stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment must have an analytical platform or VM in the form of a portal available via a web browser. - The platform should automatically collect logs from the device and present them in the form of graphs and reports: - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if is used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion. - The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components: - The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN; - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels; - The portal must have function to create reports from capacity, performance, prediction of future	The encryption key must be stored by default on the equipment and generated in a way that prevents the data from reading from the drives/NVMe/flash removed from the device. **Monitoring:** The equipment must have an analytical platform or VM in the form of a portal available via a web browser. - The platform should automatically collect logs from the device and present them in the form of graphs and reports: - Monitoring of the used space with a data reduction indicator based on deduplication algorithms and compression without thin provisioning if is used; globally for the device and locally for the LUN's. - The platform must enable the prediction of space growth along with the analysis of future expansion. - The system must include an application component and/or hardware, as appropriate, for monitoring, reporting and detailed event collection of at least the following physical and logical components: - The portal must have the performance history and real time data of individual resources, taking into account the parameters: latency, Read & Write IOPS, and bandwidth; globally for the device and locally for the LUN; - The system must include a performance monitoring and prioritization mechanism for Storage QoS applied at the volume and LUN levels; - The portal must have function to create reports from capacity, performance, prediction of future	

				space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal must enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** Min. 1 x 1GE management; min. 2 x 32Gb FC SFP+, identical, with SFP+ SR MM module included; **Supported operating environments:** 1. Microsoft Windows Server; 2. Red Hat Enterprise Linux; 3. VMware (VMware ESXi); **Power supplies included:** min. 2 hot-plug PSU with support for min. 1+1 redundancy with power cables c13-c14(0.6 m); **Cerințe obligatorii pentru prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare. **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință;	space, authorization logs to the device, level and technical support time. - Displaying the status of performed operations such as snapshots, synchronous replication etc. - Displaying warnings about threats to information about logging users and performed executing commands. - The portal must enable the simulation of capacity increase depending on the type of application. - Algorithm for verifying the correct configuration and the possibilities of upgrading device/cluster. - Displaying system consumption with optimization guidelines. **NICs included:** 1 x 1GE management; 4 x 32Gb FC SFP+, identical, with SFP+ SR MM module included; **Supported operating environments:** 4. Microsoft Windows Server; 5. Red Hat Enterprise Linux; 6. VMware (VMware ESXi); **Power supplies included:** min. 2 hot-plug PSU with support for min. 1+1 redundancy with power cables c13-c14(0.6 m); **Prestarea garanției și a serviciilor de suport (deservire)** - conform Anexei la Anunțul de participare, 5 ani (60 luni integral) de tipul "Next Business Day" **Termeni și condiții:** Toate cerințele sunt minime și obligatorii; O cerință nu trebuie să limiteze o altă cerință;	

				Toate componentele trebuie să fie actuale și să nu fie promovate ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu trebuie să includă limitări hardware sau software.	Toate componentele sunt actuale și nu sunt promovat ca EOS (sfârșitul vânzării/suportului) / EOL (sfârșitul duratei de viață); Extinderea memoriei (ram) și a capacității de stocare nu includ limitări hardware sau software.	

Numele, Prenumele:Vitalie Bîrsan În calitate de:Administrator

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