

3. مەبلەغى : 10 ۋىتسە (مەبلەغى) چۇ ئىمىت جۇمھۇرىيەت سەنئەتچىلىكى مەھسۇلاتلىرى
 ھەر سەنئەتچى رەسۇم ئايرىم-ئايرىم سۆزبەسەتچىلىكى چۈشەندۈرۈلگەن.
 چۈشەندۈرۈلگەن تەسۋىرلەرنى چۈشەندۈرۈش 2 ۋىتسە بۇ. ھەر بىر سەنئەتچى 10 ۋىتسە
 بۇ. ھەر سەنئەتچىنىڭ چۈشەندۈرۈلگەن مەبلەغى سەي ھەسەتچىلىكى بۇ.

10. ۋىتسە رەسۇملىرى

ر. ۋىتسە رەسۇملىرى چۈشەندۈرۈلگەن ھەسەتچىلىكى ۋىتسە رەسۇملىرى چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى
 ئىشلىتىش ۋىتسە رەسۇملىرى بۇ ۋىتسە رەسۇملىرى چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى.

ر. ھەر بىر سەنئەتچى رەسۇملىرى چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى
 چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى (تەسۋىرلەش ۋىتسە رەسۇملىرى) ھەر بىر سەنئەتچى چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى
 سەنئەتچى ۋىتسە رەسۇملىرى 0.05% ھەر بىر ۋىتسە رەسۇملىرى 1% ھەر بىر ۋىتسە رەسۇملىرى ھەر بىر سەنئەتچى
 ۋىتسە رەسۇملىرى 2% ھەر بىر ۋىتسە رەسۇملىرى 10% ھەر بىر ۋىتسە رەسۇملىرى ۋىتسە رەسۇملىرى
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ر. چۈشەندۈرۈلگەن ۋىتسە رەسۇملىرى ۋىتسە رەسۇملىرى (شۇنداقلا ۋىتسە رەسۇملىرى) ۋىتسە رەسۇملىرى 2 (ھەر)
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11. ھەر بىر سەنئەتچى

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(ANNEX 1) دَرَجَاتِ مَطْبُوعِ

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Technical Specification

| 1. Blade Enclosure | | |
|--------------------|--|---------|
| # | Minimum Requirement | Qty |
| 1.1 | Form Factor: 6U | 01 Unit |
| 1.11 | Device Bay: Should support minimum 16 half-height blade servers | |
| 1.12 | IO Module: Should support up to 3 redundant interconnect modules | |
| 1.13 | IO Module Protocols: Ethernet, Fibre Channel, InfiniBand, iSCSI, SAS should be supported | |
| 1.14 | Required Interconnect Module: Two (02) Converged Blade Switch <ul style="list-style-type: none"> • 8 x 10Gb Ethernet downlinks to server blade NIC Adapters • 4 SFP+ external uplink ports - 10Gb Ethernet or 2/4/8Gb auto-negotiating Fibre Channel connections • 2 x 10Gb shared internal cross connects for redundancy • VLAN Tagging, Pass-Thru and Link Aggregation supported on all uplinks | |
| 1.15 | Required Power Modules: N+1 Redundant Hot Pluggable Power Supplies | |
| 1.16 | Required Cooling: Minimum four (4) hot pluggable and redundant cooling fans. | |
| 1.17 | Required Management Module: One (01) Enclosure Management module with dedicated LAN ports for management and built-in KVM module | |
| 1.18 | Required Software: Comprehensive management software for all modules on the enclosure and blade servers | |
| 1.19 | Required Connectivity: Two (2) 10GbE SFP+ to SFP+ 5m Direct Attach Copper Cable required cables to connect Core Switch | |
| 1.2 | Installation and Configuration: Installation and configuration of the Blade Solution <ul style="list-style-type: none"> • Should be installed by vendor certified engineers. • Rack mounting and cabling • Update all blade components to latest stable firmware • Blade server, blade interconnect, and management module installation • Interconnect configuration for SAN, Server and Management traffic segregation • Link aggregation configuration for interconnect module • Alert and logging configuration • Creation of configuration documentation | |
| 1.21 | Warranty: Minimum 3-Years Warranty for Parts and Services for the Hardware including on-site support service. | |
| 1.22 | Training: On the job training on Blade Solution Administration for 3 IT Staff | |



| 2. Blade Servers | | |
|------------------|--|---------|
| # | Minimum Requirement | Qty |
| 2.1 | Form Factor: Half-height Blade server | 02 Unit |
| 2.11 | Processor: Two (02) x Intel Xeon-Silver 4114 (2.2GHz/10-core/85W) | |
| 2.12 | DIMM Slot: Minimum 16 DIMM Slots | |
| 2.13 | Memory: Four (08) x 16GB Dual Rank x4 DDR4-2666 Registered Memory Kit | |
| 2.14 | LOM: Dual-port 10GbE Flex-10 Flexible LOM network adapter <ul style="list-style-type: none"> • Up to 40Gb/s bi-directional near line rate throughput • Support for Tunnel Offload (NVGRE, VxLAN) • Jumbo Frame supported • Checksum & Segmentation Offload • Network Partitioning (NPAR) and Single-Root I/O Virtualization (SR-IOV) • Supports accelerated iSCSI or iSCSI boot and FCoE. | |
| 2.15 | Mez: Dual-port 10GbE Flex-10 Flexible network adapter | |
| 2.16 | Drive Support: Two (2) hot-plug small form factor (SFF) SAS drive bays | |
| 2.17 | Storage: Required Minimum Two (2) hot-plug 300GB SAS 12G 10K SFF disks | |
| 2.18 | Installation and Configuration: Installation and configuration of the Blade Servers <ul style="list-style-type: none"> • Should be installed by vendor certified engineers. • Installation and configuration of one VMware vCenter Server • Installation of latest VMware ESXi Server • VMware cluster and high availability configuration and failover testing • Existing server VM migration to blade server assistance for up to 10 VMs • VM storage migration to new SAN storage assistance for up to 10 VMs • Traffic segregation configuration at VMware vswitch level • Server traffic should be configured for active active multiple paths • Server storage traffic should be configured as per best practice for multi-pathing • Creation of configuration documentation | |
| 2.19 | Warranty: Minimum 3-Years Warranty for Parts and Services for the Hardware including on-site support service. | |
| 2.2 | Training: On the job for 3 IT Staff | |

| 3. SAN Storage | | |
|----------------|--|---------|
| # | Minimum Requirement | Qty |
| 3.1 | Controller Type: Active/Active Storage Controller supporting redundant configuration <ul style="list-style-type: none"> • Hot-pluggable controller • No Single Point of failure including Array Controller card, Cache memory, FAN, Power supply etc. | 01 Unit |
| 3.11 | Controller Cache: Offered Storage Array shall be given with Minimum of 8GB cache per controller in a single unit. <ul style="list-style-type: none"> • Shall have support for SSD/Flash based Cache • Cache shall be backed up in case of power failure for indefinite time either using batteries or capacitors or any other equivalent technology. | |
| 3.12 | Capacity: The Storage Array shall be offered with the following configuration: <ul style="list-style-type: none"> • 06 x 2.4TB 12G SAS 10K SFF (2.5in) Enterprise Hard Drive. | |



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|------|--|
| | <ul style="list-style-type: none"> • 02 x 800GB 12G SSD SFF (2.5in) Enterprise SSD. |
| 3.13 | <p>Front-end Ports:</p> <ul style="list-style-type: none"> • Shall be support minimum of four (04) x 16 Gbps FC ports & (04) x 10Gbps ISCSI ports per array. • Should have flexibility to use all above ports either as FC or ISCSI by replacing the requisite SFP. • Shall provide the additional SFP accordingly |
| 3.14 | <p>Disk Drive Support:</p> <ul style="list-style-type: none"> • SFF drives - shall support minimum 300GB, 600GB, 1.2TB, 1.8TB hot-pluggable Enterprise SFF SAS hard drives, 400GB, 800GB, 1.6TB, 3.2TB SSD along with SAS MDL 1.0TB, 2.0TB • LFF drives - shall support minimum 2TB, 4TB, 6TB, 8TB, 10TB, 12TB drives. |
| 3.15 | <p>Scalability:</p> <ul style="list-style-type: none"> • Shall support SFF and LFF drives with the addition of required disk enclosures. • Shall be scalable to minimum of 90 number of drives or greater than 300TB using SFF drives. |
| 3.16 | RAID Support: Support Raid 1 , 1+0 , 5 and Raid 6 |
| 3.17 | Software: Comprehensive software License should be supplied for array based snapshot and array based thin provisioning. |
| 3.18 | Data Tiering: Should support automated Sub-Lun Data tiering in real time fashion across different type of drives within a given pool like SSD, SAS, NL-SAS etc. |
| 3.19 | Multi-path: Multi-path and load balancing software shall be provided, if vendor does not support MPIIO functionality of Operating system. |
| 3.19 | OS and Clustering Support: Should support industry-leading Operating System platforms including: Windows 2012 / 2016, VMware and Linux. Offered Storage Shall support all above operating systems in Clustering. |
| 3.2 | Warranty: Minimum 3-Years Warranty for Parts and Services for the Hardware including on-site support service. |
| 3.21 | <p>Installation and Configuration: Should provide installation and configuration of the storage system.</p> <ul style="list-style-type: none"> • Should be installed by vendor certified engineers. • Installation of the array into the rack • Confirmation of appropriate OS patch levels and firmware versions • Verification and update (as needed) of prerequisite array and host bus adapter (HBA) firmware versions • Install and activate any included software license • Deployment of the array as per industry best practice • Configuration of multipath software instances for each installed physical host • Creation of configuration documentation |
| 3.22 | Training: On the job training for 3 IT Staff |



4. Core Switch

| # | Minimum Requirement | Qty |
|------|--|---------|
| 4.1 | Ports: <ul style="list-style-type: none"> • 12 RJ-45 autosensing 1/10GBase-T ports • 4 SFP+ 1/10GbE ports • 1 dual-personality (RJ-45 or mini USB) serial console port • 1 RJ-45 out-of-band management port | 02 Unit |
| 4.11 | Power Supply: <ul style="list-style-type: none"> • 2 power supply slots • Dual-Redundant Power Supply required | |
| 4.12 | Air flow: Front to Back | |
| 4.13 | Packet buffer size: 4 MB, 512 MB flash | |
| 4.14 | Mounts in an EIA standard 19-inch rack, mounting accessories should be provided | |
| 4.15 | Performance: <ul style="list-style-type: none"> Throughput Up to 200 Mpps Routing/Switching capacity 320 Gbps MAC address table: 16k entries | |
| 4.16 | Features: <ul style="list-style-type: none"> • Secure Web browser-based management • SNMPv1, v2 and v3 • Dual flash image • Port mirroring • NTP • IEEE 802.1AB • QoS • IEEE 802.3X • ACL, IEEE 802.1X, ARP Protection, STP BPDU, STP root guard • L2 Switching, IEEE 802.1Q, STP • L2 Static routing • Link aggregation: LACP | |
| 4.17 | Installation and Configuration: Should provide installation and configuration for core switch. <ul style="list-style-type: none"> • Should be installed by vendor certified engineers. • Rack mounting and cabling • Redundant uplink cabling from blade interconnects • Redundant SAN cabling from SAN storage • Blade chassis management and storage management cabling • SAN traffic, Server traffic and Management network traffic segregation • Update to latest stable firmware • Link failover and redundancy testing for SAN and Server traffic • Creation of configuration documentation | |
| 4.18 | Warranty: Minimum 3-Years Warranty for Parts and Services for the Hardware including on-site support service. | |
| 4.19 | Training: On the job training for 3 IT Staff | |



| 5. Next Generation Firewall | | |
|-----------------------------|--|---------|
| # | Minimum Requirement | Qty |
| 5.1 | <p>System Performance:</p> <ul style="list-style-type: none"> • Basic firewall throughput: 7 Gbps • IPS throughput with mix traffic: 450 Mbps • NGFW (Firewall, IPS and Application Control enabled) throughput: 350 Mbps • Threat Protection throughput (Firewall, IPS, Application Control and Malware Protection Enabled): 250 Mbps • Concurrent Sessions: 1.9 Million • New Sessions/s: 28,000 • IPsec VPN throughput: 3.8 Gbps • SSL-VPN throughput: 240 Mbps • Supported HA Config: Active/Passive, Active/Active | 01 Unit |
| 5.11 | <p>Ports:</p> <ul style="list-style-type: none"> • 02 x GE RJ45 WAN • 02 x GE RJ45 HA port • 02 x GE SFP Port • 02 x GE RJ45 MGMT • Console port • 12 x GE RJ45 Ports | |
| 5.12 | <p>Security Subscription: 1 Year - Web Filtering, Malware Protection, IPS, Antispam, Antivirus, Botnet, Virus Outbreak Protection, Application Control</p> <p>Support Subscription: 1 Year - 8x5 Support, Hardware Replacement, Firmware Upgrades</p> | |
| 5.13 | <p>Other: Mounts in an EIA standard 19-inch rack, mounting accessories should be provided</p> <p>Power: 240V Single AC power supply</p> | |
| 5.14 | <p>Installation and Configuration:</p> <ul style="list-style-type: none"> • Should be installed by certified engineers. • Rack mounting and cabling • Update to latest stable firmware • Application control policy configuration • IPS configuration • Web filtering configuration • Malware protection configuration • Network segregation and routing configuration for up to 5 subnets / 5 VLANs • Firewall monitoring, logging and alert configuration • NAT configuration and DMZ configuration • Creation of configuration documentation | |
| 5.15 | Training: On the job training on Administration for 3 IT Staff | |

| 6. Antivirus | | |
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| # | Minimum Requirement | Qty |
| 6.1 | Endpoint Business Security - 12 Months Sub (Recommended Brands: Kaspersky, Bitdefender, Symantec) | 150 |



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| 6.12 | <p>Installation and Configuration:</p> <ul style="list-style-type: none"> • Installation and configuration of antivirus server • Installation of license • Configuration of security update policies and centralized distribution policies • Optimal security policy for desktop endpoints and server endpoints. • Securing antivirus configuration and control | |
| 6.13 | Training: On the job training on Administration for 3 IT Staff | |

| 7. Server Virtualization | | |
|--------------------------|--|-----|
| # | Minimum Requirement | Qty |
| 7.1 | VMware vSphere Standard x 4 sockets Basic Support/Subscription VMware vSphere Standard for 1 year | 1 |
| 7.2 | VMware vcenter server standard x 1 Basic Support/Subscription VMware vcenter server standard for 1 year | |
| 7.3 | <p>Installation and Configuration:</p> <ul style="list-style-type: none"> • Installation and configuration of one VMware vCenter Server • Installation of latest VMware ESXi Server • VMware cluster and high availability configuration and failover testing • Existing server VM migration • Traffic segregation configuration at VMware vswitch level • Server traffic should be configured for active active multiple paths • Server storage traffic should be configured as per best practice for multi-pathing • Configuration and documentation | |
| 7.4 | Training: On the job training on Administration for 3 IT Staff | |

| 8. Backup Software | | |
|--------------------|--|-----|
| # | Minimum Requirement | Qty |
| 8.1 | <p>SMB Backup Software</p> <ul style="list-style-type: none"> • Supports Virtual and Physical server backup • Licensed for four (04) sockets with 1-year basic technical support and software updates • Recover failed VM in less than five minutes • Granular recovery for Microsoft Active Directory, Microsoft SQL, Microsoft Exchange • VM replication for disaster recovery • Supported OS: vSphere 6.x, vCenter Server 6.x, Windows Server 2012 and later • Real-time monitoring, reporting and alerting • Capacity planning and forecasting • Resource optimization and configuration tracking | 1 |
| 8.11 | <p>Installation and Configuration:</p> <ul style="list-style-type: none"> • Installation of backup server • Backup storage configuration • Backup job(s) configuration for Fileservers • Backup job(s) configuration for Application Servers | |



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| | <ul style="list-style-type: none"> • Backup job(s) configuration for Domain Controllers • Backup job(s) configuration for Supported Mail Servers • Backup job(s) configuration for VMs • Backup scheduling • Backup and restore testing • Configuration and documentation | |
| 8.12 | Training: On the job training on Administration for 3 IT Staff | |

| 9. UPS and Rack Accessories | | |
|-----------------------------|--|---------|
| # | Minimum Requirement | Qty |
| 9.1 | 02 x APC Smart-UPS C SRT 5KVA Rack mount 230V | 01 Unit |
| 9.2 | 20 x APC 1U 19" Black Modular Toolless Airflow Management Blanking Panel | |
| 9.3 | 1 x 6U Cable management panel | |
| 9.4 | Installation | |

مہتمم مسؤلیہ نائٹنگل

❖ ڈیٹا سنٹر سپلائی (ANNEX 1) کیلئے مہتمم مسؤلیہ نائٹنگل کے ذریعے فراہم کردہ مہتمم مسؤلیہ

• ڈیٹا سنٹر نائٹنگل کے ذریعے فراہم کردہ مہتمم مسؤلیہ نائٹنگل کے ذریعے فراہم کردہ مہتمم مسؤلیہ

مہتمم مسؤلیہ نائٹنگل کے ذریعے فراہم کردہ مہتمم مسؤلیہ نائٹنگل کے ذریعے فراہم کردہ مہتمم مسؤلیہ 7846848 کے ذریعے فراہم کردہ مہتمم مسؤلیہ

