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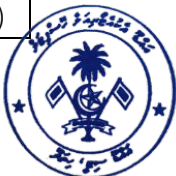


ANNEX 1

TECHNICAL SPECIFICATION / COMPLIANCE OF SERVER SYSTEM

Database Servers – 2 Qty

| Description | Required Specification |
|---------------------------|---|
| Form factor | 2U Rack Mount Server |
| Processor | Two (2) 2nd Generation Intel Xeon processor |
| Processor Cores | Minimum 16 cores per processor |
| RAM | 4x 64GB RDIMM, 3200MT/s, Dual Rank, ECC Registered DIMM Module |
| Hard Disk Capacity | 2 x 900GB 15K RPM SAS 2.5in Hot-plug Hard Drive |
| Number of Hard Disk Bays | Support up to 8 SFF hot-swap drive bays |
| RAID Controller | SAS RAID Controller supporting 8 internal SAS or SATA drives Raid Levels 0,1,5,6,10 |
| Networking ports | 2 x 1GbE Dual port 10G SFP+ Daughter Card, Dual port 10G SFP+ Add-on Card 2 x Single port FC HBA 16GB Card Should provide with necessary transceivers & FC \ DAC Cables |
| Management Port | 1x GbE dedicated management port |
| Management | Should provide Integrated Remote Access Management and Controller with Enterprise Features Should Provide Service & Support for Management Software throughout the support period |
| Power supply | Dual, Hot-plug, Redundant power supply, minimum 750W |
| Mechanical | Sliding Rails with Cable Management Arm Lockable front bezel |
| Warranty | 3-year Parts, 3-year Labor, 3-Year Onsite support with next business day response |
| Defective Media Retention | Should allow to keep storage media if it is defective and requires replacement while under warranty |
| Manufacture Authorization | Authorization letter should be directly from the manufacturer (Compulsory) |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Servers / Install and Configuration of Hyper-V or OS and related Setup |
| OS | Red Hat Enterprise Linux |
| Training | Server administration and Management training for AEH IT staffs (Minimum – 3) |



VM Servers – 2 Qty

| Description | Required Specification |
|--|---|
| Form factor | 2U Rack Mount Server |
| Processor | Two (2) 3rd Generation Intel Xeon processor |
| Processor Cores | Minimum 16 cores per processor |
| RAM | 4 x 64GB 3200MHz DDR4 ECC Registered DIMM Module |
| Hard Disk Capacity | 2 x 900GB 15K RPM SAS 2.5in Hot-plug Hard Drive |
| Number of Hard Disk Bays | Support up to 16 SFF hot-swap drive bays |
| RAID Controller | SAS RAID Controller supporting 8 internal SAS or SATA drives Raid Levels 0,1,5,6 |
| Networking ports | 2 x 1GbE Dual port 10G SFP+ Daughter Card, Dual port 10G SFP+ Add-on Card 2 x Single port FC HBA 16GB Card Should provide with necessary transceivers & FC \ DAC Cables |
| Expansion Slots | Support a total of up to six I/O expansion slots |
| Management Port | 1x GbE dedicated management port |
| Management | Should provide Integrated Remote Access Management and Controller with Enterprise Features Should Provide Service & Support for Management Software throughout the support period |
| Power supply | Dual, Hot-plug, Redundant power supply, minimum 1400W |
| Mechanical | Sliding Rails with Cable Management Arm Lockable front bezel |
| Warranty | 3-year Parts, 3-year Labor, 3-Year Onsite support with next business day response |
| Defective Media Retention | Should allow keeping storage media if it is defective and requires replacement while under warranty |
| Manufacture Authorization letter should be directly from the authorized vendor | Authorization letter should be directly from the manufacturer (Compulsory) |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Servers / Install and Configuration of VMware ESXi Server and related Setup |
| Training | Server administration and Management training for AEH IT staffs (Minimum – 3) |



SAN Storage – 1 Qty

| Description | Required Specification |
|------------------------------|---|
| Form factor | 2U Rack Mount SAN Storage |
| Controllers | 2 hot-swappable per chassis (dual active) |
| RAID levels | RAID 0, 1, 5, 6, and 10 |
| Controller system memory | 16GB Cache per controller (32GB total) |
| Capacity | 25TB Usable Capacity (after RAID 10) <u>Auto tiering</u> Hard disks must be SSD and SAS (HYBRID) |
| Host connectivity | 8x 8/16 Gb FC SFP+ host ports (SW fiber optics) (4 ports per controller) Should provide with necessary 16Gb FC Universal SFP+ Module & FC Cables Should provide with necessary transceivers & FC \ DAC Cables |
| Drive expansion connectivity | 2 x 12Gb SAS Mini-SAS (SFF-8644) |
| Host OS Support | Microsoft Windows Server; Red Hat Enterprise Linux (RHEL); SUSE Linux Enterprise Server (SLES); VMware vSphere. |
| Power supply | Power supplies 580W Redundant |
| Management ports | 1x 1 GbE port (RJ-45) per controller |
| Mechanical | Storage Rack Mount Kit 2U |
| Warranty | 3-year Parts, 3-year Labor, 3-Year Onsite support with next business day response |
| Defective Media Retention | Should allow to keep storage media if it is defective and requires replacement while under warranty |
| Manufacture Authorization | Authorization letter should be directly from the manufacturer (Compulsory) |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Storage /Present Storage to VMware ESXi Host Server and related Setup |
| Training | Storage administration and Management training for AEH IT staffs (Minimum – 3) |

Server virtualization and consolidation plus business continuity

| Description | Required Specification |
|---------------------------|---|
| Hypervisor | VMware vSphere 7 Enterprise for 4 Sockets - 3 Years Production Support |
| Management | VMware VCentre Standard x 1 Instance with 3 Years Production Support |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Storage /Present Storage to VMware ESXi Host Server and related Setup |
| Training | vCenter Server administration and Management training for AEH IT staffs (Minimum – 3) |
| Manufacture Authorization | Compulsory (Authorization letter should be directly from the authorized vendor) |
| Support | Minimum 3 year online support with subscription |

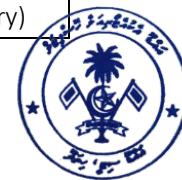


Network Storage Switch 10G x 2 (Optimized for SAN)

| Description | Required Specification per Switch |
|---------------------------|---|
| Form Factor | 1U Rack Mount |
| 10G Ports | Minimum 20 x Port SFP+ |
| 25G Ports / 40G Ports | Minimum 4 x 25G SFP28 / 2x 40G QSFP+ |
| Management Layer | Layer 3 |
| Hardware Stacking | Minimum 2 Units |
| Power Supply | 1+1 Hot-swappable Power Supplies |
| 10G Base-T Transceivers | 6 |
| 10G SFP+ Transceivers | 12 |
| Management Layer | Layer 3 |
| Optical Patch Code | 20 x LC to LC Duplex OM4 – 3M |
| Direct Attached Cables | 1 x 25G SFP28 Passive Direct Attach Copper Twinax Cable 1M |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Switch and related Setup |
| Warranty | 3-years Parts, 3-year Labor, 3-Year Onsite support with next business day response |
| Training | Network Switch administration and Management training for AEH IT staff (Minimum – 3) |
| Manufacture Authorization | Authorization letter should be directly from the manufacturer (Compulsory) |

Backup Storage

| Description | Required Specification |
|---------------------------|--|
| Form Factor | 1U/2U Rack Mount |
| CPU | Intel® Xeon Based Processor |
| System Memory | 8GB DDR4 |
| Drive Bay | 12 x 3.5"/2.5" HDD/SSD |
| HDD Type | 3.5" SATA III / SATA II HDD 2.5" SATA III / SATA II HDD SSD |
| Power Supply | 1+1 Hot-swappable Power Supplies |
| Network Ports | Minimum 2 x Gigabit LAN ports Minimum 2 x 10G SFP+ Ports – with Transceivers and 3M Patch Codes |
| Rack Rails | Should be included |
| Hard Disk | 4 x12TB NAS HDD 3.5" Internal NAS HDD or Equivalent |
| Installation & Setup | Rack Mount, Power, and Data Cabling, /Initial Configuration of Switch and related Setup |
| Warranty | 3-years Parts, 3-year Labor, 3-Year Onsite support with next business day response |
| Training | Backup Storage administration and Management training for AEH IT staff (Minimum – 3) |
| Manufacture Authorization | Authorization letter should be directly from the manufacturer (Compulsory) |



Backup Software

| Description | Required Specification |
|---------------------------|--|
| License Type | Per Workload |
| Number of Work Loads | 20 |
| License Period | 3 years |
| Features | <p>Create image-based, incremental backups of VMware vSphere, Microsoft Hyper-V, Create image-based, incremental backups of Windows-based and Linux-based physical servers and workstations. Instantly verify VMware vSphere and Microsoft Hyper-V VM backups; get a report with screenshots of test-recovered machines : Boot VMware vSphere and Microsoft Hyper-V VMs directly from backups, migrate booted VMs to production if necessary Instantly restore files and folders to their original location, to a custom location (local folder or CIFS/NFS share), or forward via email as an attachment. : Create and maintain VMware vSphere and Microsoft Hyper-V VM replicas, which are identical copies of source VMs.</p> |
| Installation & Setup | Initial Configuration of Backup Software and related Setup |
| Training | Backup Software administration and Management training for AEH IT staffs (Minimum – 3) |
| Manufacture Authorization | Authorization letter should be directly from the manufacturer (Compulsory) |
| Support | Should provide Minimum 3 year online support |

