**1. Database Server for CBS:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.** | **Features** | **Specification** | **Bidder’s response** |
| **1** | **Quality** | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| **2** | **Brand** | To be mentioned by the bidder |  |
| **3** | **Model** | To be mentioned by the bidder |  |
| **4** | **Quantity** | Two (02) |  |
| **4** | **Environmental** | Maintain International Quality Environmental Safety Standard |  |
| **5** | **Form factor** | Rack mountable and maximum 2U |  |
| **6** | **Processors** | Should propose with 2x Intel latest generation Processors. Each processor should have minimum 3.3 GHz clock speed and 12 cores, 24.75M Cache |  |
| **7** | **Chipset** | Intel chipset compatible with the offered processors. |  |
| **8** | **Internal Storage** | Server should be proposed with 4 Nos 480GB SSD SATA Mix Use SSD Drives. And should support at least 16 Nos HDD/SSD as future upgradability. |  |
| RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60 |  |
| RAID controller should be proposed with minimum 2GB of cache module. |  |
| **9** | **Memory** | Should have at least 24 DIMM slots per server and support minimum up to 3TB of DDR4 2933 MHz memory. |  |
| Should be proposed with minimum 512 GB of minimum 2933MT/s dual rank DDR4 Memory. |  |
| Support for advanced memory redundant technologies like memory mirroring, sparing, failed DIMM isolation etc. |  |
| **10** | **Graphics** | Should support up to 16 MB video memory |  |
| **11** | **Network** | Should have 2x 1 GbE adapter and 2x Dual Port 10GbE modules and Dual Port 10GbE BASE-T Adapter |  |
| **12** | **Fibre Channel** | Should be proposed with minimum 2x Single port 16Gbps FC HBA with modules |  |
| **13** | **DVD** | Should be proposed with internal optical DVD drive |  |
| **14** | **PCIe Slots** | Should support up to 8 PCIe Generation 3.0 slots |  |
| **15** | **Management** | Should support out of band upgrades, Agentless out-of-band management, integrated diagnostics and Power monitoring and reporting. |  |
| Should support industry standard management protocols like IPMI v2 and SNMP v3 |  |
| Should have One 1-Gbps RJ-45 management port |  |
| Should have HTML5 based management GUI. |  |
| Should support multiple management interfaces including web user interface and command line interface. |  |
| Automatic Configuration of management port, using a central repository for the configurations and XML files to configure the server |  |
| Automatic updates of all firmware, using a central repository to handle the upgrade |  |
| Should support System Lock Down (Locks down configuration and firmware, protecting the server from inadvertent or malicious changes) |  |
| **16** | **Security Feature** | Should support System Erase (instant secure erase) including NVMe drives |  |
| Should support Rapid OS Recovery (Allows users to boot a trusted backup OS image from a hidden boot device) |  |
| Should support Enhanced UEFI secure boot with custom certificates |  |
| Should support dynamically enabled USB ports (The USB ports should support dynamically enabled and disabled without rebooting the server) |  |
| Should support silicon root of trust |  |
|  |
| **17** | **Ports** | ●Front ports: Video, 2 x USB 2.0, available USB 3.0, dedicated Micro-USB port for direct remote access management controller ● Rear ports: Video, serial, 2 x USB 3.0, dedicated remote access management network port ●Video card: VGA ●Serial connector |  |
| Should have 6 hot plugs fans with redundancy |  |
| **18** | **Others** | Supports hot swappable energy efficient redundant power supply |  |
| Rail Kit, Bezel Kit and cable management arm to be provided along with the server |  |
|  |  |
| **19** | **Operating Systems** | Should support Microsoft Windows Server, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), Vmware |  |
| **20** | **Warranty & Support** | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  System should have label for support contacts to mail or phone through TFN. Proposing Hardware Brand should have local depot for smooth after sales support and service. |  |

**2. Application Server for CBS:**

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| --- | --- | --- | --- |
| **Sl.** | **Features** | **Specification** | **Bidder’s Response** |
| **1** | **Quality** | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| **2** | **Brand** | To be mentioned by the bidder |  |
| **3** | **Model** | To be mentioned by the bidder |  |
| **4** | **Quantity** | Two (02) |  |
| **4** | **Environmental** | Maintain International Quality Environmental Safety Standard |  |
| **5** | **Form factor** | Rack mountable and maximum 2U |  |
| **6** | **Processors** | Should propose with 2x Intel latest generation Processors. Each processor should have minimum 2.4 GHz clock speed and 16 cores, 24M Cache |  |
| **7** | **Chipset** | Intel chipset compatible with the offered processors. |  |
| **8** | **Internal Storage** | Server should be proposed with 4 Nos 480GB SSD SATA Mix Use SSD Drives. And should support 16 Nos HDD/SSD as future upgrabality. |  |
| RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60 |  |
| RAID controller should be proposed with minimum 2GB of cache module. |  |
| **9** | **Memory** | Should have at least 24 DIMM slots per server and support minimum up to 3TB of DDR4 2933 MHz memory. |  |
| Should be proposed with minimum 256 GB of at least **2933MT/s** dual rank DDR4 Memory. |  |
| Support for advanced memory redundant technologies like memory mirroring, sparing, failed DIMM isolation etc. |  |
| **10** | **Graphics** | Should support up to 16 MB video memory |  |
| **11** | **Network** | Should have 2x 1 GbE adapter and 2x Dual Port 10GbE modules and Dual Port 10GbE BASE-T Adapter |  |
| **12** | **DVD** | Should proposed with internal optical DVD drive |  |
| **13** | **PCIe Slots** | Should support up to 8 PCIe Generation 3.0 slots |  |
| **14** | **Management** | Should support out of band upgrades, Agentless out-of-band management, integrated diagnostics and Power monitoring and reporting. |  |
| Should support industry standard management protocols like IPMI v2 and SNMP v3 |  |
| Should have One 1-Gbps RJ-45 management port |  |
| Should have HTML5 based management GUI. |  |
| Should support multiple management interfaces including web user interface and command line interface. |  |
| Automatic Configuration of management port, using a central repository for the configurations and XML files to configure the server |  |
| Automatic updates of all firmware, using a central repository to handle the upgrade |  |
| **15** | **Security Feature** | Should support System Lock Down (Locks down configuration and firmware, protecting the server from inadvertent or malicious changes ) |  |
| Should support System Erase (instant secure erase) including NVMe drives |  |
| Should support Rapid OS Recovery (Allows users to boot a trusted backup OS image from a hidden boot device ) |  |
| Should support Enhanced UEFI secure boot with custom certificates |  |
| Should support dynamically enabeled USB ports (The USB ports should support dynamically enabled and disabled without rebooting the  server ) |  |
| Should support silicon root of trust |  |
| **16** | **Ports** | ●Front ports: Video, 2 x USB 2.0, available USB 3.0, dedicated Micro-USB port for direct remote access management controller ● Rear ports: Video, serial, 2 x USB 3.0, dedicated remote access management network port ●Video card: VGA ●Serial connector |  |
|  |
| **17** | **Others** | Should have 6 hot plugs fans with redundancy |  |
| Supports hot swappable energy efficient redundant power supply |  |
| Rail Kit, Bezel Kit and Cable Management arm to be provided along with the server |  |
| **18** | **Operating Systems** | ● Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , VMware |  |
| **19** | **Warranty & Support** | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  System should have label for support contacts to mail or phone through TFN. Proposing Hardware Brand should have local depot for smooth after sales support and service. |  |

**3. Mail Server**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.** | **Features** | **Specification** | **Bidder’s Response** |
| **1** | **Quality** | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| **2** | **Brand** | To be mentioned by the bidder |  |
| **3** | **Model** | To be mentioned by the bidder |  |
| **4** | **Quantity** | Two (02) |  |
| **4** | **Environmental** | Maintain International Quality Environmental Safety Standard |  |
| **5** | **Form factor** | Rack mountable and maximum 2U |  |
| **6** | **Processors** | Should propose with 2x Intel latest generation Processors. Each processor should have minimum 2.4 GHz clock speed and 16 cores, 24M Cache |  |
| **7** | **Chipset** | Intel chipset compatible with the offered processors. |  |
| **8** | **Internal Storage** | Server should be proposed with 4 Nos 480GB SSD SATA Mix Use SSD Drives. And should support 16 Nos HDD/SSD as future upgrabality. |  |
| RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60 |  |
| RAID controller should be proposed with minimum 2GB of cache module. |  |
| **9** | **Memory** | Should have at least 24 DIMM slots per server and support minimum up to 3TB of DDR4 2933 MHz memory . |  |
| Should be proposed with minimum 256 GB of at least **2933MT/s** dual rank DDR4 Memory. |  |
| Support for advanced memory redundant technologies like memory mirroring, sparing, failed DIMM isolation etc. |  |
| **10** | **Graphics** | Should support up to 16 MB video memory |  |
| **11** | **Network** | Should have 2x 1 GbE adapter and 2x Dual Port 10GbE modules  and Dual Port 10GbE BASE-T Adapter |  |
| **12** | **Fibre Channel** | Should be proposed with minimum 2x Single port 16Gbps FC HBA with modules |  |
| **13** | **DVD** | Should proposed with internal optical DVD drive |  |
| **14** | **PCIe Slots** | Should support up to 8 PCIe Generation 3.0 slots |  |
| **15** | **Management** | Should support out of band upgrades, Agentless out-of-band management, integrated diagnostics and Power monitoring and reporting. |  |
| Should support industry standard management protocols like IPMI v2 and SNMP v3 |  |
| Should have One 1-Gbps RJ-45 management port |  |
| Should have HTML5 based management GUI. |  |
| Should support multiple management interfaces including web user interface and command line interface. |  |
| Automatic Configuration of management port, using a central repository for the configurations and XML files to configure the server |  |
| Automatic updates of all firmware, using a central repository to handle the upgrade |  |
|  |
| **16** | **Security Feature** | Should support System Lock Down (Locks down configuration and firmware, protecting the server from inadvertent or malicious changes ) |  |
| Should support System Erase (instant secure erase) including NVMe drives |  |
| Should support Rapid OS Recovery (Allows users to boot a trusted backup OS image from a hidden boot device ) |  |
| Should support Enhanced UEFI secure boot with custom certificates |  |
| Should support dynamically enabeled USB ports (The USB ports should support dynamically enabled and disabled without rebooting the  server ) |  |
| Should support silicon root of trust |  |
| **17** | **Ports** |  |  |
| ●Front ports: Video, 2 x USB 2.0, available USB 3.0, dedicated Micro-USB port for direct remote access management controller ● Rear ports: Video, serial, 2 x USB 3.0, dedicated remote access management network port ●Video card: VGA ●Serial connector |  |
| **18** | **Others** | Should have 6 hot plugs fans with redundancy |  |
| Supports hot swappable energy efficient redundant power supply |  |
| Rail Kit, **Bezel Kit** and cable management arm to be provided along with the server |  |
| **19** | **Operating Systems** | ● Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , VMware |  |
| **20** | **Warranty & Support** | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  System should have label for support contacts to mail or phone through TFN. Proposing Hardware Brand should have local depot for smooth after sales support and service |  |

**4. Others Server (BACH/BEFTN, RTGS, E-KYC, Utility Server BU )**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.** | **Features** | **Specification** | **Bidder’s Response** |
| **1** | **Quality** | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| **2** | **Brand** | To be mentioned by the bidder |  |
| **3** | **Model** | To be mentioned by the bidder |  |
| **4** | **Quantity** | Four (04) |  |
| **4** | **Environmental** | Maintain International Quality Environmental Safety Standard |  |
| **5** | **Form factor** | Rack mountable and maximum 2U |  |
| **6** | **Processors** | Should propose with 2x Intel latest generation Processors. Each processor should have minimum 2.1 GHz clock speed and 12 cores, 18M Cache |  |
| **7** | **Chipset** | Intel chipset compatible with the offered processors. |  |
| **8** | **Internal Storage** | Server should be proposed with 4 Nos 1.2TB SAS 10K HotPlug HDD And should support 16 Nos HDD/SSD as future upgrabality. |  |
| RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60 |  |
| RAID controller should be proposed with minimum 2GB of cache module. |  |
| **9** | **Memory** | Should have at least 24 DIMM slots per server and support minimum up to 3TB of DDR4 2933 MHz memory . |  |
| Should be proposed with minimum 192 GB of Minimum **2933MT/s** dual rank DDR4 Memory. |  |
| Support for advanced memory redundant technologies like memory mirroring, sparing, failed DIMM isolation etc. |  |
| **10** | **Graphics** | Should support up to 16 MB video memory |  |
| **11** | **Network** | Should have 2x 1 GbE adapter and 2x Dual Port 10GbE modules  and Dual Port 10GbE BASE-T Adapter |  |
| **12** | **DVD** | Should proposed with internal optical DVD drive |  |
| **13** | **PCIe Slots** | Should support up to 8 PCIe Generation 3.0 slots |  |
| **14** | **Management** | Should support out of band upgrades, Agentless out-of-band management, integrated diagnostics and Power monitoring and reporting. |  |
| Should support industry standard management protocols like IPMI v2 and SNMP v3 |  |
| Should have One 1-Gbps RJ-45 management port |  |
| Should have HTML5 based management GUI. |  |
| Should support multiple management interfaces including web user interface and command line interface. |  |
| Automatic Configuration of management port, using a central repository for the configurations and XML files to configure the server |  |
| Automatic updates of all firmware, using a central repository to handle the upgrade |  |
|  |  |
| **15** | **Security Feature** | Should support System Lock Down (Locks down configuration and firmware, protecting the server from inadvertent or malicious changes ) |  |
| Should support System Erase (instant secure erase) including NVMe drives |  |
| Should support Rapid OS Recovery (Allows users to boot a trusted backup OS image from a hidden boot device ) |  |
| Should support Enhanced UEFI secure boot with custom certificates |  |
| Should support dynamically enabeled USB ports (The USB ports should support dynamically enabled and disabled without rebooting the  server ) |  |
| Should support silicon root of trust |  |
| **16** | **Ports** |  |  |
| ●Front ports: Video, 2 x USB 2.0, available USB 3.0, dedicated Micro-USB port for direct remote access management controller ● Rear ports: Video, serial, 2 x USB 3.0, dedicated remote access management network port ●Video card: VGA ●Serial connector |  |
| **17** | **Others** | Should have 6 hot plugs fans with redundancy |  |
| Supports hot swappable energy efficient redundant power supply |  |
| Rail Kit and cable management arm to be provided along with the server |  |
| **18** | **Operating Systems** | ● Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , VMware |  |
| **19** | **Warranty & Support** | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  System should have label for support contacts to mail or phone through TFN. Proposing Hardware Brand should have local depot for smooth after sales support and service |  |

**5. Virtualization Server:**

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| --- | --- | --- | --- |
| **Sl. No.** | **Features** | **Specification** | **Bidder’s Response** |
| **1** | **Quality** | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| **2** | **Brand** | To be mentioned by the bidder |  |
| **3** | **Model** | To be mentioned by the bidder |  |
| **4** | **Quantity** | Four (04) |  |
| **4** | **Environmental** | Maintain International Quality Environmental Safety Standard |  |
| **5** | **Form factor** | Rack mountable and maximum 2U |  |
| **6** | **Processors** | Should propose with 2x Intel latest generation Processors. Each processor should have minimum 2.8 GHz clock speed and 24 cores, 36M Cache |  |
| **7** | **Chipset** | Intel chipset compatible with the offered processors. |  |
| **8** | **Internal Storage** | Server should be proposed with 3 Nos 1.2TB SAS 10K HotPlug HDD And should support 16 Nos HDD/SSD as future upgrabality. |  |
| RAID controller should support RAID 0, 1, 5, 6, 10, 50, and 60 |  |
| RAID controller should be proposed with minimum 2GB of cache module. | . |
| **9** | **Memory** | Should have at least 24 DIMM slots per server and support minimum up to 3TB of DDR4 2933 MHz memory. |  |
| Should be proposed with minimum 1 TB of at least **2933MT/s** dual rank DDR4 Memory. |  |
| Support for advanced memory redundant technologies like memory mirroring, sparing, failed DIMM isolation etc. |  |
| **10** | **Graphics** | Should support up to 16 MB video memory |  |
| **11** | **Network** | Should have Quad Port 1GbE BASE-T Network Card  and 2x Dual Port 10GbE BASE-T Adapter |  |
| **12** | **Fibre Channel** | Should be proposed with minimum 2x Single port 16Gbps FC HBA with modules |  |
| **13** | **DVD** | Should proposed with internal optical DVD drive |  |
| **14** | **PCIe Slots** | Should support up to 8 PCIe Generation 3.0 slots |  |
| **15** | **Management** | Should support out of band upgrades, Agentless out-of-band management, integrated diagnostics and Power monitoring and reporting. |  |
| Should support industry standard management protocols like IPMI v2 and SNMP v3 |  |
| Should have One 1-Gbps RJ-45 management port |  |
| Should have HTML5 based management GUI. |  |
| Should support multiple management interfaces including web user interface and command line interface. |  |
| Automatic Configuration of management port, using a central repository for the configurations and XML files to configure the server |  |
| Automatic updates of all firmware, using a central repository to handle the upgrade |  |
|  |  |
| **16** | **Security Feature** | Should support System Lock Down (Locks down configuration and firmware, protecting the server from inadvertent or malicious changes ) |  |
| Should support System Erase (instant secure erase) including NVMe drives |  |
| Should support Rapid OS Recovery (Allows users to boot a trusted backup OS image from a hidden boot device ) |  |
| Should support Enhanced UEFI secure boot with custom certificates |  |
| Should support dynamically enabeled USB ports (The USB ports should support dynamically enabled and disabled without rebooting the  server ) |  |
| Should support silicon root of trust |  |
| **17** | **Ports** |  |  |
| ●Front ports: Video, 2 x USB 2.0, available USB 3.0, dedicated Micro-USB port for direct remote access management controller ● Rear ports: Video, serial, 2 x USB 3.0, dedicated remote access management network port ●Video card: VGA ●Serial connector |  |
| **18** | **Others** | Should have 6 hot plugs fans with redundancy |  |
| Supports hot swappable energy efficient redundant power supply |  |
| Rail Kit and cable management arm to be provided along with the server |  |
| **19** | **Operating Systems** | ● Should support Microsoft Windows Server ,Red Hat Enterprise Linux (RHEL) ,SUSE Linux Enterprise Server (SLES) , VMware |  |
| **20** | **Warranty & Support** | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  System should have label for support contacts to mail or phone through TFN. Proposing Hardware Brand should have local depot for smooth after sales support and service |  |

**6. Technical Specifications for Server Farm Switch:**

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| --- | --- | --- | --- |
| **Sl.** | **Item** | **Specification** | **Bidder’s Response** |
| 1 | Brand | Same Brand of offered server  is preferable |  |
| 2 | Quality | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance Bidder must submit appropriate documents for the certifications. |  |
| 3 | Model | To be mentioned by the bidder |  |
| 4 | Country of origin | To be mentioned by the bidder |  |
| 5 | Country of manufacturer | To be mentioned by the bidder |  |
| 6 | Quantity | Two (2) |  |
| 7 | Architecture | Should be provided with-   * Min. 48x 1/10GBASE-T ports, * Min. 6x 40GbE QSFP+ ports with 2x 40Gb QSFP+ transceivers * 1 x RJ-45 serial console port * 1 x RJ-45 out-of-band management port * 1 x USB 2.0 |  |
| 8 | Memory and processor | * Flash memory: 1GB; * Packet buffer size: 12MB, * SDRAM: 4GB |  |
| 9 | Performance | * 10 Gbps Latency: < 1071 (64-byte packets) * Routing/Switching capacity: 1440 Gbps * MAC address table size: 208000 entries * Routing table size: 16000 entries (Ipv4), 8000 entries (Ipv6) |  |
| 10 | Management | * SNMPv1/ SNMPv2c/SNMPv3 sFlow (RFC 3176) * Dual flash images * Command-Line Interface (CLI) * Network Time Protocol (NTP) * Web browser * IEEE 802.1s Multiple Spanning Tree Telnet |  |
| 11 | Quality of Service (QoS) | * Weighted Deficit Round Robin (WDRR) * Source IP (Ipv4/Ipv6) * Explicit Congestion Notification (ECN) * VLAN * Flow control * Layer 3 managed switch |  |
|  | Security | * Access Control Lists (ACLs) * RADIUS/TACACS+ * Secure shell * IEEE 802.1X and RADIUS network logins * Dynamic ARP protection * Port security |  |
| 12 | Power and Cooling | Redundant Power Supply option with five fan tray slots. |  |
| 13 | Installation services, manage & control | Access to OEM experts via phone, web, or both |  |
| Connect devices to OEM for real-time diagnosis, alerts, and information |  |
| 14 | Warranty & services | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance. |  |
| Proposing Hardware Brand should have local depot for smooth after sales support and service |  |

**7. Software for – Virtualization**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1** | **Software for - Virtualization** | **Feature** | **Specifications** | **Bidder’s Response** |
| **Brand** | Any International Reputed Brand |  |
| **Part no.** | To be mentioned by the bidder. |  |
| **Quantity** | 8 Units/Processors license |  |
| **Warranty** | 3 years full |  |
|  | Virtualization software shall provide a Virtualization layer that sits directly on the bare metal server hardware with no dependence on a general purpose OS for greater reliability and security |  |
| Virtualization software shall be in Leaders Quadrant of 2016 Gartner Magic Quadrant for x86 Server Virtualization Infrastructure for continuous last 4 years |  |
| Virtualization software shall have the capability to create Virtual machines with upto 128 vitual processors and 4 TB virtual RAM in virtual machines for all the guest operating system supported by the hypervisor |  |
| Virtualization software should support live Virtual Machine migration from one physical host to another and between virtual switches with enhanced CPU compatibility and without the need for shared storage |  |
| Virtualization software should have the ability to live migrate Virtual machines files from one storage array to another without any Virtual Machine downtime. It sould support this migration from one storage protocol to another (ex. FC, iSCSI, NFS, DAS) |  |
| Virtualization software shall have High Availability capabilities for the virtual machines in the sense, if in case one server fails all the Virtual machines running on that server shall be automatically restarted to another physical server running same virtualization software. The feature should be independent of Guest Operating System Clustering and should work with FC/ iSCSI SAN and NAS shared storage |  |
| The virtualization solution should provide a storage efficient backup solution which utilizes patented variable-length deduplication, rapid recovery and WAN-optimized replication for DR. It should integrate with virtualization solution and provide a simple user interface making it an easy and effective backup tool. It should also provide agentless, image-level VM backups to disk and application-aware protection for business-critical applications (e.g., Exchange, SQL Server, etc.) along with WAN-efficient, encrypted backup replication across sites. |  |
| Virtualization software should have the provision to provide zero downtime, zero data loss and continuous availability for the applications running in virtual machines in the event of physical host failure, without the cost and complexity of traditional hardware or software clustering solutions. This option should be supported for upto 8 virtual cpu per virtual machine |  |
| The solution should provide option for securing virtual machines with offloaded antivirus and antimalware solutions without the need for agents inside the virtual machine with integration with 3rd party Anti-Virus/Anti-Malware solutions |  |
| The solution should support for increasing capacity by adding CPU,Memory or any other devices to virtual machines on an as needed basis without any disruption in working or downtime for the virtual machines |  |
| The solution should enable abstraction for external storage (SAN and NAS) devices by means of making them virtual machine aware |  |
| The solution should provide a content library to provide simple and effective centralized management for VM templates, virtual appliances, ISO images, and scripts |  |
| The solution should provide support or placing critical virtualization components (such as the hypervisor) into memory regions identified as “reliable” on supported hardware. This would further protect components from an uncorrectable memory error |  |
| The solution should have Special Big Data Extensions which should support multiple Hadoop distributions and make it seamless for IT to deploy, run and manage Hadoop workloads on one common platform leading to achieve higher utilization, reliability and agility |  |
| Virtualization software shall be able to dynamically allocate and balance computing capacity across collections of hardware resources aggregated into one unified resource pool with optional control over movement of virtual machines like restricting VMs to run on selected physical hosts. |  |
| The solution should be able to automate energy efficiency in Distributed Resource Scheduler clusters by continuously optimizing server power consumption within each cluster |  |
| Virtualization Software Should support live Virtual Machine migrations across Physical Hosts, between virtual switches, between two different virtualzation managers or between servers physically separated over a long distance leading upto 100ms of network latency |  |
| The solution should be capable of providing Proactive High Availability, VM-level Encryption, Integrated Containers, Centralized Network Management, Rapid Deployment and Provisioning. |  |
| The solution should be able to create a cluster out of multiple storage datastores and automate load balancing by using storage characteristics to determine the best place for a virtual machine’s data to reside, both when it is created and when it is used over time. |  |
| Virtualization software should provide network traffic-management controls to allow flexible partitioning of physical NIC bandwidth between different network-traffic types and allow user-defined network resource pools, enabling multi-tenancy deployment, and to bridge virtual and physical infrastructure QoS with per resource pool 802.1 tagging. |  |
| The solution should be able to set quality-of-service priorities for storage for guaranteed access to resources |  |
| The solution should allow one PCI express (PCIe) adapter to be presented as multiple separate logical devices to the virtual machines which in turn should enable users with the ability to offload I/O processing and reduce network latency |  |
| The solution should be able to virtualize server-side flash providing a high performance read cache layer that dramatically lowers application latency |  |
| The solution should have support to deliver the full benefits of NVIDIA hardware-accelerated graphics to virtualized solutions |  |
| The solution should provide a virtual switch which can span across a virtual datacenter and multiple hosts should be able to connec to it. This in turn will simplify and enhance virtual-machine networking in virtualized environments and enables those environments to use third-party distributed virtual switches |  |
| The solution should provide feature which can perform quick, as-needed deployment of additional virtualized hosts. When the service is running, it can push out update images, eliminating patching and the need to schedule patch windows. |  |
| Virtualization management software console shall provide capability to monitor and analyze virtual machines, and server utilization and availability with detailed performance graphs. |  |
| Virtualization management software console should allow cloning of both powered on and powered off virtual machines. |  |
| Virtualization management software should provide a global search function to access the entire inventory of multiple instances of virtualization management server, including virtual machines, hosts, datastores and networks, anywhere from within Virtualization management server. |  |
| Virtualization management software should support user role and permission assignment (RBAC) |  |
| The management solution for hypervisor should provide Single-Sign-On capability which should dramatically simplify administration by allowing users to log in once to access all instances or layers of management without the need for further authentication. |  |
| The management should provide Orchestration facility which would simplify installation and configuration of the powerful workflow engine in Management. The workflows should be launched directly from the Web Client itself |  |
| The Virtualization software must be perpetual, no trial versions accepted. | . |
| The vendor must provide support for 24 Hours/Day, 7 Days/Week, 365 Days/Year |  |
| Support must Contain unlimited number of support requests, within active Support and Subscription contract with Principal |  |
| **2** | **Software for - Virtualization Management** | **Feature** | **Required Specifications** |  |
| **Brand** | Any International Reputed Brand |  |
| **Part no.** | Please mention |  |
| **Quantity** | **01 Unit license** |  |
| **Virtual Machines Management Software** | Virtualization management software console shall provide a single view of all virtual machines, allow monitoring of system availability and performance and automated notifications with email alerts. |  |
| The management software should provide means to perform quick, as-needed deployment of additional hypervisor hosts. This automatic deployment should be able to push out update images, eliminating patching and the need to schedule patch windows. |  |
| The virtualization should have capability to simplify host deployment and compliance by creating virtual machines from configuration templates. |  |
| Virtualization management software should have integrated Physical Host and Virtual Machine performance monitoring including CPU, Memory, Disk, Network, Power, Storage Adapter, Storage Path, Cluster services, Virtual machine data stores. |  |
| Virtualization management software console shall provide reports for performance and utilization of Virtual Machines. It shall co-exist and integrate with leading systems management vendors |  |
| Virtualization management software console shall provide capability to monitor and analyze virtual machines, and server utilization and availability with detailed performance graphs. |  |
| Virtualization management software console shall allow to Move a powered off virtual machine from one physical server to another by dragging and dropping the virtual machine icon. |  |
| Virtualization management software console shall provide Interactive topology maps to visualize the relationships between physical servers, virtual machines, networks and storage. |  |
| Virtualization management software console shall provide the Manageability of the complete inventory of virtual machines, and physical servers with greater visibility into object relationships. |  |
| Virtualization management software should provide a global search function to access the entire inventory of multiple instances of virtualization management server, including virtual machines, hosts, data stores and networks, anywhere from within Virtualization management server. |  |
| Virtualization management software should support user role and permission assignment (RBAC) |  |
| Virtualization management software should allow you to deploy and export virtual machines, virtual appliances in Open Virtual Machine Format (OVF). |  |
| Virtualization management software should allow reliable and non-disruptive migrations for Physical/ Virtual machines running Windows and Linux operating systems to virtual environment. |  |
| Virtualization management software should include provision for automated host patch management with no VM downtime |  |
| Virtualization management software should generate automated notifications and alerts, and can trigger automated workflows to remedy and pre-empt problems. |  |
| Virtualization management software should be able to integrate into existing standard EMS systems. |  |
| The management solution for hypervisor should provide Single-Sign-On capability which should dramatically simplify administration by allowing users to log in once to access all instances or layers of management without the need for further authentication. |  |
| The management should provide Orchestration facility which would simplify installation and configuration of the powerful workflow engine in Management. The workflows should be launched directly from the Web Client itself. |  |
| The Virtualization software must be perpetual, no trial versions accepted |  |
| The vendor must provide support for 24 Hours/Day, 7 Days/Week, 365 Days/Year |  |
| Support must Contain unlimited number of support requests, within active Support and Subscription contract with Principal |  |
| **3.** |  | Warranty | Three (3) years proactive support should be configured. |  |

**9.** **Specifications for Data Centre storage**

| **Sl** | **Item** | **Minimum Requirement** | **Bidder’s Specification** |
| --- | --- | --- | --- |
| 1 | Quality Certifications | ISO 9001/9002 or higher for manufacturer, FCC Class A/B, Energy Star for quality assurance. The OEM Brand should be recognized as leader in Gartner’s Magic Quadrant. Bidder must submit appropriate documents for the certifications. |  |
| 2 | Brand | To be mentioned by the bidder |  |
| 3 | Model | To be mentioned by the bidder |  |
| 4 | Quantity | 01 (One) |  |
| 5 | Country of Origin | To be mentioned by the bidder |  |
| 6 | Country of Manufacture | To be mentioned by the bidder |  |
| 7 | Country of Shipment | To be mentioned by the bidder |  |
| 11 | System architecture | The storage systems should have integrated architecture for block, file, and VMware VVols with concurrent support for native NAS, iSCSI, and Fibre Channel protocols. |  |
| Should have a dual-controller full-switching architecture and services will not be interrupted when any of the controllers are faulty or removed. |  |
| The disk processor enclosure / controller enclosure should have minimum 24 numbers of disks or higher |  |
|  | Should support FC and iSCSI interfaces for host connectivity and for drive connectivity, each storage processor connects to one side of each of two redundant pairs of four-lane x 12 Gb/s Serial Attached SCSI (SAS) buses, providing continuous drive access to hosts in the event of a storage processor or bus fault. |  |
| Expansion | Should supports up to 700 disks without additional controllers. |  |
| Capacity Requirements | The Storage Arrays should be configured with minimum 10TB SSD, 33TB SAS & 10TB NL SAS usable capacity considering **RAID5/RAID 6** and without deduplication and compression. Also necessary hot spare drive should be configured for each tier. |  |
| 13 | Front End Ports | Should have minimum 4 x 16Gbps FC ports and 4 x 10Gbps Ethernet ports. And should support minimum 20 x FC ports as future upgradability. |  |
| 14 | Back End Connectivity | Should have minimum 4 ports with (4\*12 Gbps) or higher backend |  |
| 15 | Storage Controller | Offered Storage Array should be proposed with minimum of 96GB cache per controller and provide 192 GB cache for the whole system. (excluding performance acceleration modules, NAS cache, Flash Cache, PAM, or SSD Cache) |  |
| 16 | RAID | Offered storage system should support RAID 1/0, RAID10, RAID5, RAID6 or equivalent |  |
|  | QoS | Provide intelligent quality of service function with full capacity software license based on volumes or ports that uses traffic control to ensure core service quality and allocates resources for top-priority services. |  |
|  | Tier automatic migration | The storage system should be proposed with auto tiering function with full capacity software license. It can provide Two tiering with SSD,-SAS, and SSD-NL-SAS. |  |
|  | Cache Data Backup in Power Failure | In case of power failure, system should ensure that there is no loss of data and battery backup for cache should be provided. Also, the data should be de-staged to internal flash or disk drives for higher protection of data |  |
|  | Snapshots & Clone | Should be provided with point in time snapshots function with full capacity software license. Minimum 1000 such snapshots per array should be possible. Should be provided with clone feature with full capacity software license that data is synchronized from the primary LUN (logical unit number) to the secondary LUN by default and can recover the latest data once the primary LUN fault. |  |
|  | All software license required should be ready from day one. |  |
|  | Deduplication | Should support data deduplication to improve space utilization efficiency. |  |
|  | Reliability | Provides redundant power modules, fan modules, controllers, and caches under the power failure protection. And non-disruptive online micro-code upgrades in order to ensure no single point of failure. |  |
|  | It should support hot plugging and hot swapping of critical components with minimal disruption. |  |
|  | Replication | Should be proposed remote replication function with full capacity software license, provides Fibre Channel– and IP-based replication, and offers a GUI-based management page to allow users to customize intervals for remote, asynchronous data transfer. |  |
|  | Compatibility | Obtains certificates of SMI-S or later and provides screenshots and official website links. It should support all industry leading operating systems including Windows 2003, 2008, 2012 server, Sun Solaris, IBM AIX, HP-UX, VMware, Citrix Xen, Hyper-V, Oracle Linux, RedHat, SUSE, Apple Mac OS. The new storage should integrate the existing storage |  |
|  | Manageability | 1. Provide standard storage device management software via GUI/Web-based and CLI (Include volume management, resource allocation, host access control, data security etc.) 2. Should be proposed with Cloud-based storage analytics management tools to easily monitor, analyze, and troubleshoot the storage environment from anywhere |  |
|  | Online upgrade | Supports the online upgrade function that automatically upgrades the version without any manual intervention after the upgrade package is manually imported. |  |
|  | Warranty | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance.  Proposing Hardware Brand should have depot for smooth after sales support and service. |  |

**10. SAN Switch**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl.** | **Description** | **Item’s Specifications** | **Bidder’s Response** |
| 1 | Brand | Please Specify |  |
| 2 | Model | To be mentioned by the bidder |  |
| 3 | Country of origin | To be mentioned by the bidder |  |
| 4 | Manufacturing Country | To be mentioned by the bidder |  |
| 5 | Quantity | Two (2) |  |
| 6 | Rack Form Factor | 1U Rack form factor with rail kit. |  |
| 7 | Number of ports | Should be provided with min. 24x 16Gbps SFP+ transceivers. |  |
| 8 | Port activation | Should be provided with min. 24 activated port.  Auto-sensing of 4, 8, **16, and 32** Gbps port speeds; 10 Gbps and optionally programmable to fixed port speed | . |
| 9 | Switch Aggregated bandwidth & Latency | Should have **768** Gbps end-to-end full duplex & latency less then <**900** nanoseconds |  |
| 10 | SAN Orchestration | Should have tightly integration with the proposed storage system. |  |
| 11 | FC Cables | Should be provided with 12x 15meter LC/LC OM4 FC cable and 12x 5meter LC/LC OM4 FC cable each switch |  |
| 12 | Manageability | Should be provided with web browser management tools |  |
| 13 | Warranty | Three (03) years 24x7 OEM warranty with-   * Proactive monitoring, issue detection, notification and automated case creation * Predictive analysis for issue prevention * Service available 24 hours per day, 7 days per week including OEM holidays.   Warranty support SKU with detailed line items BoQ should be attached with the technical compliance. |  |

**11: Disk based Integrated Backup Appliance:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl** | **Item** | **Item’s Specifications** | **Bidder’s Response** |
| 1 | Brand Name | Any international reputed brand to be mentioned by bidder |  |
| 2 | Model | To be mentioned by the bidder |  |
| 3 | Country of Origin | To be mentioned by the bidder |  |
| 4 | Country of Manufacturer | To be mentioned by the bidder |  |
| 5 | Backup License | 8TB Capacity Base licensee/50 Universal Host/VM with 3 years Subscription base license. |  |
| 6 | Appliance Type | Supply and install 2U Disk based Appliance/Server Base Solution |  |
| 6 | Capacity and features | Theproposed integrated backup appliance/Server Base Solution must bundled/Separate Solution with backup software and backup storage/Server within 2U. |  |
| The proposed integrated backup appliance/Server Base Solution must include backup agents/Agentless for database such as MS SQL, Oracle DB and SAP HANA. |  |
| The proposed integrated backup appliance /Server Base Solution must include an ESXi/Windows Server 2019 std with 40 vCPU |  |
| The proposed integrated backup appliance /Server Base Solution must provide at least 8TB usable storage capacity after raid and de-duplicated usable capacity and be able to expand to 96 TB usable capacity within 2U |  |
| The proposed integrated backup appliance/Server Base Solution must be able to upgrade its after de- duplicated usable capacity with a minimum |  |
| 7 | Appliance specification | Appliance must have backup software within offered package. Bidder shall supply Backup software with Appliance/Server Base Solution” shall support enterprise level backup. |  |
| The proposed integrated backup storage/Server Base Solution Min. support 16 slot for 3.5” 12TB SAS Hard disk drive with standard RAID. |  |
| The proposed integrated backup storage/Server Base Solution must be within 2U in rack |  |
| The proposed integrated backup storage/Server Base Solution must come with minimum Dual-Processor Xeon Silver latest Min 10 Core |  |
| The proposed integrated backup storage/Server Base Solution must come with 256 GB RAM or higher |  |
| The proposed integrated backup storage/Server Base Solution must come with 240 GB SSD capacity Boot Optimized Storage Solution Card or higher capacity | . |
| Write performance capacity Min 3TB/hour |  |
| The proposed integrated backup storage must come with 2 x 10Gbit Ethernet ports or 8x 10G SFP Optical Links and/or 2x 16 Gb FC and provide all proposed SFP transceiver from day one |  |
| 8 | Warranty | Next Day Onsite Service by manufacturer for 3 yrs with 24 x 7 x 365 Technical Support & Assistance. | . |
|  | Proposing Hardware Brand should have local depot for smooth after sales support and service. |