Terms of Reference (ToR)

for

Procurement of Network Equipment and Server Upgradation

Project Objective

The objective of this project is to supply, install, integrate, configure, test, and commission Network equipment (firewall, switch, etc.) and servers (GPU-enabled and non-GPU server) into the existing virtualized infrastructure environment, ensuring full compatibility with the current Proxmox cluster, FC SAN-based centralized storage, Ceph cluster for server internal storage, firewall/security policies, and high-availability setup.

The bidder shall be responsible for end-to-end implementation, including hardware installation, software configuration, cluster integration, storage integration, GPU enablement, migration support, testing, documentation, and knowledge transfer.

All features specified in this RFP (LoT 1 & 2) shall be available, licensed, and fully operational with the proposed solution. Any feature requiring additional licenses must be explicitly stated.

Existing Environment

The bidder shall take note that the existing environment includes:

1. Virtualization Environment: Proxmox
2. Cluster: HA- 3 node cluster (Dell PowerEdge: R740)
3. Storage: NetApp Storage (E2800 both production & backup)
4. SAN switch: Cisco MDS 9132T 32X32G FC)
5. Access Switch: Cisco Catalyst 1000 series.
6. Ceph cluster: Server internal storage cluster
7. IP Telephone
8. Backup Solution: Proxmox Backup Solution
9. Connection to TWAN/GovNet2.0, IPSEC VPN & so on.
10. Current VPN Users: 80

The successful bidder shall ensure that all new deployments are fully compatible with the existing environment equipment without disrupting business operations or delaying the projetc.

Scope of Work

Equipment to be supplied:

SN	Particulars	Qty	Remarks
LoT I: Supply, installation configuration of Network Equipment			
1	Firewall	2	The quantity may decrease or increase as per our requirement
2	Core Switch	1	
3	Switches	2	
4	Access Point	1	
5	Cat6 Cable (Roll)	1	
6	Connectivity & Cabling (Complete End-to-End Solution for New and Existing Infrastructure)	Lumpsum	
7	Rack 42U with 2 Smart PDU, distant cable of 5m each	1	
8	SFP		
8.1	Compatible with Existing cisco SAN switch 32G	8	
8.2	Compatible with Existing Dell Server PowerEdge R740	4	
LoT II: Supply, installation, configuration, commencing & integration of Servers			
1	Server (HBA card Dual Port must be included to be integrated with existing storage solution)	2	
2	Server – GPU Enabled (HBA card Dual Port must be included to be integrated with existing storage solution)	1	
3	Connectivity & Cabling (Complete End-to-End Solution for New and Existing Infrastructure)	Lumpsum	

COMMON CONNECTIVITY & CABLING REQUIREMENTS (APPLICABLE TO ALL LOTS - Mandatory)

1. The bidder shall supply all fiber patch cords, SFP/SFP+/SFP28/QSFP transceivers, Ethernet patch cords, and any accessories required for new equipment for complete connectivity and integration with existing equipment.
2. Connector types (e.g., LC, SC, etc.), fiber type (Single Mode / Multi Mode), and interface compatibility shall be determined and proposed by the bidder based on both the proposed solution and existing infrastructure.
3. The bidder shall be fully responsible for ensuring interoperability between all supplied and existing equipment.
4. The solution shall be fully compatible, tested, and operational upon delivery and commissioning.
5. All cables shall be properly labeled, managed, and documented.
6. No additional cost shall be entertained for any missing, incompatible, or incorrectly proposed components required for complete functionality.

LoT I : Supply, Installation & Configuration of Network Equipment

Eligibility Criteria

1. The bidder should provide the Manufacturer Authorization Form (MAF) from the OEM. Failure to submit the MAF from the OEM will be considered non-responsive and will be rejected.
2. The bidder should submit CVs of expert personnel with supporting documents.
3. The bidder should have at least one certified network engineer with minimum 5 years of experience.
4. The bidder should have deployed at least 3 similar types of projects.
5. The joint venture and consortium will not be allowed.
6. The bidder should provide Valid Trade license & Tax Clearance.
7. The bidder should provide a Datasheet.
8. The bidder must visit the site (MANDATORY)

General Requirement for LoT I (Network Equipment)

1. The bidder shall register all the network equipment procured under the Client's name.
2. The bidder shall configure/replicate all the existing configurations in current firewall (BGP, IPSEC, NAT so on) to new firewall.
3. The bidder shall configure firewalls in HA and test the failover.
4. The bidder shall configure new network segmentation as per the client's requirement.
5. The bidder shall configure all the existing networking devices if required while configuring new devices.
6. The bidder shall ensure that all necessary network, security, and firewall configurations required for the new servers are fully aligned with the existing environment. This shall include:
    - Ensuring connectivity
    - Proxmox management
    - Cluster communication
    - Ceph communication
    - SAN/Storage Services
    - GPU service requirements
    - VM workload traffic
7. The bidder shall help in configuration of network part for server configuration in LoT II if required by client and validate that the new servers are subject to the same security posture as the existing environment.
8. The bidder shall confirm that no configuration changes weaken the current security framework.
9. The bidder shall ensure all the configuration is done in accordance with industry best practices.
10. The bidder must provide a c13-c14 cable for all the devices.
11. The bidder shall label and properly arrange all the cables.

12. The bidder shall have a rollback plan if the configuration doesn't go as planned in the new firewall.
13. The bidder shall ensure that all the devices quoted shall not be declared EOL/End of Sale for the next five years. Failing to compile will lead to disqualification.

Technical Specification

I. Firewall

General Requirement:

1. The bidder to submit detailed Bill of Material covering OEM part code and quantity of all offered appliances, accessories licenses, OEM warranty etc. along with the bid.
2. The proposed Firewalls should support Active-Passive and Active-Active Failover from day 1.
3. Every gateway security control feature mentioned in this tender shall not have any licensing restrictions on number of users or any other parameter and shall be supplied for unlimited users' license.
4. The bidder should quote for license bundle both if applicable, with AI enabled & without AI, the client will decide on which to take.
5. Any third-party products (hardware database, license etc.) required to achieve the desired solutions shall be provided with the solution and shall be under bidder's scope.

SN	Specification	Minimum Required Specification
1	Preferred Model brand	FortiGate (Bidder can quote for equivalent or higher device of any brand)
2	Form Factor	1U
3	CPU	Multi-core architecture
4	Firewall Throughput	≥ 65 Gbps
5	NGFW Throughput (FW + App Control + IPS)	≥ 19 Gbps
6	Memory	Minimum 32 GB (Recommended ≥64 GB)
7	Storage	Minimum 480 GB SSD/ NVMe(Recommended ≥ 960GB)
8	Threat Prevention (FW + IPS + AV + Anti-Bot, enterprise mix)	≥ 10 Gbps
9	IPS Throughput	≥ 31 Gbps
10	IPsec VPN Throughput	≥ 28 Gbps
11	SSL/TLS Inspection Throughput	≥ 8 Gbps
12	New Sessions per Second	≥ 250,000 /sec
13	Concurrent Sessions	≥ 10 –15 million
14	SSL-VPN + IPSec VPN	The firewall solution shall support both SSL-VPN and IPsec VPN functionalities. The solution must provide: ○ Built-in VPN capabilities without requiring additional hardware components ○ Support for high concurrent VPN sessions (preferably unlimited or as per appliance capacity) ○ Secure remote access for users and site-to-site connectivity.

		○ Centralized management and monitoring of VPN connections. Any licensing requirements for VPN functionality must be clearly stated.
15	Virtual Domains / Multi-Tenancy	≥ 10 logical instances (VDOM / VSX) for VM & client isolation. Mention if a more license is required.
16	Port Density	Support for: 1G / 10G / 25G / 40G / 100G interfaces Combination of Copper and Fiber ports Minimum: ≥ 8 x GE RJ45 ≥ 4 x 10GE/1GE SFP+ (with transceivers, vendor needs to provide needs to populate SFP 4 x 25GE/10GE SFP28/SFP+ (vendor needs to provide needs to populate SFP) Management Port 1X 1GE RJ45 HA port 1x2.5/1GE RJ45
17	High Availability (HA)	Active-Active & Active-Passive; stateful session failover
18	Redundant Power Supplies	Dual hot-swappable PSU from Day 1
19	SD-WAN & Advanced Routing	Application-aware SD-WAN; static, dynamic (OSPF/BGP), policy-based routing; load balancing
20	Threat Prevention Stack	IPS, ID, AV, Anti-Bot, Anti-Spam, App Control, URL Filtering, DNS Filtering, Sandbox
21	AD / Identity Integration	Active Directory, LDAP, RADIUS, SSO
22	Geo-IP Filtering	Country-based allow/block policies
23	QoS / Traffic Shaping	Per-policy QoS; bandwidth management; traffic prioritization, per user traffic shaping.
24	IPS Profile Granularity	Custom signatures; virtual patching; protocol-level inspection
25	Zero Trust Network Access (ZTNA)	User/device verification before application access
26	Centralized Management Console	Single-pane-of-glass; multi-device policy management; role-based access. Mention if a separate appliance needs to be purchased, or a VM will work.
27	Log Management & Analytics	Centralized logs; compliance reporting; real-time dashboards. Should be able support integration with third party application
28	Gartner HMF MQ 2025 Leader	MANDATORY
29	Warranty & Support Duration	Minimum 3 years; 24x7 TAC; next business day (NBD) HW replacement; firmware updates included. A letter stating the same for post service support must be submitted
30	Subscription / License Scope (But not limited to)	Firewall, IPS, AV, App Control, URL Filtering, DNS Filtering; unlimited users; no per-user charge.
31	Web Application Firewall (WAF)	WAF for public-facing portal protection (integrated or separate appliance acceptable)
32	Cloud Sandbox / Zero-Day Protection	File sandboxing; content disarm & reconstruction (CDR); mobile malware protection
33	Manufacturer Authorization	Required (Mandatory)

Core-Switch

Preferred cisco, since most of our switches are of the cisco ecosystem. However, bidders can quote devices of different brands with equivalent or higher specifications.

SN	Specification
1	**General**
1.1	The switch shall be a fixed-form factor, enterprise-grade Layer 3 core/aggregation switch.
1.2	Designed for: Campus core / data center edge High-Performance routing and switching
1.3	Must be OEM branded, production-grade (no whitebox)
1.4	Must support non-blocking architecture
2	**Hardware Architecture**
2.1	Switching capacity: ≥ 2 Tbps
2.2	Forwarding rate: ≥ 150 Mpps
2.3	Architecture: Dedicated switching ASIC (no CPU-based forwarding) Non-blocking switching fabric
2.4	Buffer: Adequate for enterprise core (vendor to specify)
3	**Interface Requirements**
3.1	Minimum: 24 × 1/10/25G SFP28 ports 4 × 40/100G QSFP+/QSFP28 uplink ports (all SFP port should be populated)
3.2	Ports must support: 1G / 10G / 25G auto-negotiation (SFP-based) Breakout capability (preferred)
3.3	Transceivers: Must support OEM-certified optics Third-party compatibility allowed (optional)
4	**Layer 2 Features**
4.1	IEEE 802.1Q VLAN (≥ 4000 VLAN IDs)
4.2	Spanning Tree: STP, RSTP, MSTP
4.3	Link Aggregation: LACP (IEEE 802.3ad)
4.4	MAC address table: ≥ 80,000 entries
4.5	Jumbo frames: ≥ 9000 bytes
5	**Layer 3 Features**
5.1	IPv4 & IPv6 support: Static routing RIPv2 / RIPng OSPFv2 / OSPFv3 BGP (mandatory)

5.2	Routing scale: ≥ 200,000 routes (IPv4 & IPv6)
5.3	VRRP or equivalent (HSRP/VRRP compatible)
5.4	Inter-VLAN routing (wire-speed)
6	**Advanced Features**
6.1	VXLAN support (mandatory)
6.2	EVPN (preferred)
6.3	MPLS L2/L3 VPN (preferred – Cisco advantage)
6.4	Segment routing (optional but strong Cisco bias)
7	**QoS & Security**
7.1	ACL scale: ≥ 16,000 QoS entries ≥ 25,000 security ACL entries
7.2	QoS: Classification, marking, shaping, policing
7.3	Security: DHCP snooping Dynamic ARP inspection IP Source Guard Control Plane Policing (CoPP)
8	**System & Memory**
8.1	CPU: x86-based or equivalent control plane CPU
8.2	Memory: ≥ 16 GB DRAM
8.3	Flash: ≥ 16 GB internal storage
9	**High Availability**
9.1	Redundancy: Dual hot-swappable power supplies Redundant fans
9.2	Features: Non-stop forwarding (NSF) Graceful restart
9.3	Virtualization: Stack / Virtual Chassis / MLAG / VSS equivalent
10	**Management & Automation**
10.1	CLI + Web GUI + API support
10.2	Must support: NETCONF / RESTCONF SNMP v1/v2/v3
10.3	Telemetry / streaming telemetry (preferred)
11	**Physical & Environmental**
11.1	Form factor: 1RU rack-mountable
11.2	Power: AC (90–264V) or DC options
11.3	Operating temperature: 0°C to 40°C minimum
12	**Licensing**
12.	Base license must include Full Layer 2 + Layer 3 features
12.	Advanced features (VXLAN, automation, telemetry): Can be license-based
12.	Subscription-based licensing allowed (DNA / equivalent)

13	**Power supply: Redundant (1+1) from Day 1**
14	**Warranty: Minimum one year with OEM Warranty**
15	**Manufacturer Authorization: Required (Mandatory)**

Switch

Preferred cisco, since most of our switches are of cisco ecosystem. However, bidders can quote devices of different brands with equivalent or higher specifications.

Sl. No	Requirement
1	**General Section**
1.1	Switch shall be enterprise-grade, stackable Layer 3 access switch
1.2	Solution shall be OEM-branded (no whitebox solutions)
1.3	All hardware and software components shall be from same OEM
2	**Port Configuration**
2.1	Minimum 24 x Multigigabit Ethernet ports, All SFP port must populated if applicable.
2.2	Ports shall support 10G/5G/2.5G/1G/100 Mbps
2.3	Support IEEE 802.3bz Multigig standard
2.4	RJ45 interface for all access ports
3	**Power Over Ethernet (PoE)**
3.1	All ports shall support minimum 60W PoE per port
3.2	Support IEEE 802.3at (PoE+) and 802.3bt
3.3	Minimum PoE budget of 720W
3.4	Expandable PoE budget to ≥1000W
4	**Uplink Capability**
4.1	Switch shall support fixed or modular uplinks
4.2	Minimum 4 x 10G SFP+ uplinks (SFP populated)
4.3	Expandable upto 25G uplinks (SFP28)
4.4	Uplink modules shall be field replaceable if modular
5	**Performance**
5.1	Switching capacity ≥ 500 Gbps
5.2	Forwarding rate ≥ 300 Mpps
5.3	Non-blocking architecture
6	**Stacking**
6.1	Support physical stacking or virtual chassis
6.2	Stacking bandwidth ≥ 400 Gbps
6.3	Minimum 8 switches in a stack
7	**Layer 2 & 3 Features**
7.1	Support IEEE 802.1Q VLAN tagging with minimum 4000 VLAN IDs
7.2	Support dynamic VLAN registration (MVRP or equivalent mechanism)

7.3	Support IPv4 routing including Static, RIPv1/v2, and OSPFv2
7.4	Support IPv6 routing including Static, RIPng, and OSPFv3
7.5	Support IEEE 802.3x flow control
7.6	Support Layer 2 Protocol Tunneling (L2PT)
7.7	Support IEEE 802.1ad (Q-in-Q tunneling)
7.8	BGP support (preferred)
7.9	VRRP/HSRP or equivalent
7.10	Inter-VLAN routing capability
8	**High Availability**
8.1	Redundant hot-swappable power supplies
8.2	Redundant hot-swappable fans
8.3	Support In-Service Software Upgrade (ISSU)
9	**Security**
9.1	IEEE 802.1X authentication
9.2	MAC Authentication Bypass (MAB)
9.3	DHCP snooping
9.4	Dynamic ARP Inspection
9.5	IP Source Guard
10	**Convergence & QoS**
10.1	Support IGMP v1, v2, v3 and IGMP snooping
10.2	Support Protocol Independent Multicast (PIM) in Sparse (SM), Dense (DM) and Source-Specific (SSM) modes
10.3	Support multicast VLAN functionality (MVR or equivalent)
10.4	Support Multicast Listener Discovery (MLD) snooping for IPv6
10.5	Support LLDP-MED for VoIP integration and device discovery
10.6	Support QoS traffic policing including one-rate two-color and two-rate three-color markers
11	**Advance Features**
11.1	Support hardware-based telemetry and performance monitoring with timestamping capabilities for traffic analysis
11.2	Support policing and rate-limiting of traffic destined to CPU (Control Plane Protection or equivalent)
11.3	Support port security with Sticky MAC address learning
11.4	Support Ethernet OAM (802.1ag) and cable diagnostics (TDR or equivalent)
11.5	Support Zero Touch Provisioning (ZTP) via DHCP or equivalent for automated deployment
11.6	Support automatic software version synchronization for stack members
11.7	Support EVPN-VXLAN-based fabric architecture for campus network segmentation
11.8	Support micro segmentation using Group-Based Policy (GBP) or equivalent
11.9	Support IPv6 QoS including classification, marking, scheduling, and traffic shaping
11.10	Support Ethernet ring protection mechanism (ERPS/REP or equivalent)
11.11	Support DHCP snooping, Dynamic ARP Inspection (DAI), IP Source Guard, and Neighbor Discovery Inspection
11.12	Support flow-based telemetry (NetFlow/sFlow or equivalent) with capability to monitor traffic flows, detect anomalies, measure latency, and identify drop reasons

11.13	Support captive portal functionality (controller-based or embedded)
12	**Performance & Scale**
12.1	Switching bandwidth: 272 Gbps or more
12.2	Throughput: 240 Mpps or more
12.3	MAC Address entry in hardware: 32,000 or more
12.4	ARP entries - 32,000 or more
12.5	IEEE802.3ad (LACP) with 128 LAGs per system and 8 ports per LAG
12.6	Number of VLAN supported: 4,000
12.7	Jumbo frames of 9,192 bytes
12.8	IPv4 unicast routes: 30,000 or more host routes IPv6 unicast routes: 16,000 or more host routes
12.9	Number of ACL entries in hardware per system:4,000 or more VLAN based ingress
13	**Management**
13.1	Web GUI + CLI management
13.2	Support REST API / automation
13.3	Telemetry / streaming analytics support
13.4	Integration with centralized management platform
14	**Hardware**
14.1	1RU rack-mountable
14.2	Front-to-back airflow
14.3	Suitable for enterprise/data center deployment
15	**Warranty & support**
15.1	Minimum 1 year, OEM warranty
15.2	24x7 TAC support
15.3	Software updates included
16	**Power Supply: Redundant (1+1)**
17	**MAF Required.**

Access Point

Must be Compatible with New Generation/model MacBook.

SN	Specification	Details
1	Standard	Wifi6E, Wifi 7 (802.11be) Tri-bands
2	Bands	2.4 GHz + 5 GHz + 6Hz
3	MIMO	4x4 on 5 GHz, 4x4 on 6 GHz
4	MLO	Yes, MacBook M4 and above, bonds 5+6 GHz simultaneously
5	Max Rate	11.5 Gbps Aggregated
6	Uplink	2.5 GbE (PoE++ / 802.3bt) or 1 x1/ 2.5/5/10GbE PoE port
7	Controller	Standalone (Preferred) If controller can run on VM, the cost must be reflected.

8	WPA3	Capable, yes (WPA3-Personal + Enterprise)
9	802.11r/k/v	Yes, fast roaming for MacBooks
10	Windows	Full support, negotiates 2.4/5 GHz for older NICs
11	Warranty	At least one year for both software and hardware.

LoT II -Supply, Installation, Configuration and Integration of Servers

Eligibility Criteria

1. The bidder should provide the Manufacturer Authorization Form (MAF) from the OEM. Failure to submit the MAF from the OEM will be considered non-responsive and will be rejected.
2. The bidder should submit CVs of expert personnel with supporting documents.
3. The bidder should have at least one virtualization and one storage certified engineer with a minimum of 5 years of similar work experience.
4. The bidder should have at least one experienced network engineer who will carry out the network activity during the project implementation.
5. The bidder should have at least one backup solution engineer with a minimum of 5 years of similar work experience.
6. The bidder should have deployed at least 3 similar types of projects.
7. The joint venture and consortium will not be allowed.
8. The bidder should provide Valid Trade license & Tax Clearance.
9. The bidder should provide Datasheet for all equipment.
10. The bidder must visit the site (MANDATORY)

General requirement for LoT II (GPU enabled & non-GPU servers)

1. The bidder shall integrate both the GPU and non-GPU servers with the existing centralized storage environment through Fibre Channel over SAN switch.
2. The bidder shall provide c13-c14 for all the devices.
3. The bidder shall ensure that all the devices quoted for shall not be declared as EOL/End of Sale for the next five years. Failing to compile will lead to disqualification.

a. SAN-FC Storage Integration

This bidder shall:

- Install and configure FC HBA cards, compatible with SAN switch.
- Zoning, mapping, and connectivity through existing SAN switch
- Multipath configuration
- LUN discovery and presentation
- Verification of read/write access
- Configuration of storage access in Proxmox cluster

- Validation that both new servers can use the shared storage in the same manner as existing servers.

b. Ceph Cluster Integration

The bidder shall:

- Configure the internal storage drives of the new GPU server and non-GPU server for inclusion in the existing Ceph cluster.
- Add the internal storage devices of the new servers as new Ceph OSDs.
- Rebalance and expand the Ceph cluster without causing instability to existing services.
- Ensure Ceph health returns to HEALTH_OK after expansion.
- Verify that the expanded Ceph cluster is properly visible and usable from the Proxmox environment.
- Ensure proper configuration of:
    - Monitor / manager integration where applicable
    - OSD deployment
    - Network segregation if required
    - Replication and recovery behavior
    - Performance and fault tolerance

The bidder shall assess and confirm whether the current Ceph design, replication policy, and node count remain suitable after adding new nodes.

c. Proxmox Version Standardization

The bidder shall:

- Review the current Proxmox version running on the existing cluster nodes.
- Ensure that all existing servers and newly proposed servers operate on the same supported Proxmox version.
- Upgrade existing Proxmox nodes where necessary to maintain cluster compatibility.
- Carry out version upgrades in a controlled manner without impacting production workloads.
- Ensure cluster health, quorum, services, VM operation, and storage connectivity remain stable after upgrading.
- Provide rollback plans and recovery procedures before carrying out any upgrade activity.

d. High Availability (HA) Configuration and Testing

The bidder shall configure and validate High Availability (HA) for the expanded server environment.

This bidder shall include:

- Verification that the new servers are properly added to the HA-capable cluster.
- Configuration of HA policies for selected test VMs.

- Failover testing between cluster nodes.
- Validation of VM restart / migration behavior during node failure scenarios.
- Testing of HA functionality for workloads hosted on shared storage.
- Testing of HA behavior for workloads on Ceph-backed storage.
- Verification of cluster quorum and recovery operations.

"The bidder must ensure compatibility with the existing SAN switch, FC optics/modules, cable types, and storage protocols. All the necessary accessories must be provided by the bidder (even if it's not mentioned in the RFP) for successfully deployment of the project."

Server

1. The bidder shall register servers procured under the client's name.
2. The bidder to submit detailed Bill of Material covering OEM part code and quantity of all offered appliances, accessories licenses, OEM warranty etc. along with the bid.
3. The bidder shall supply the server as per approved technical specifications.
4. The bidder shall configure the server with all necessary firmware, BIOS, RAID, network, HBA, and management settings.
5. The bidder installs the proxmox version 8.4 & above.
6. The bidder shall Ensure the servers participates fully in:

    - Cluster communication
    - Resource scheduling
    - VM hosting
    - HA services
    - Centralized storage
    - Ceph storage cluster.
    - VM migration.
    - Any other configuration required.

SN	Specification	Minimum Requirement
1	**General Specification**	
1.1	Server Type	Enterprise Rack Server (2U preferred)
1.2	Virtualization (VM workloads)	Must Support Proxmox VE 8.4 & above
1.3	OEM Requirement	OEM-certified, production-grade.
2	**Processor**	
2.1	Processor Type	Intel Xeon 6 or AMD EPYC 9004/9005
2.2	Number of CPUs	Dual CPU
2.3	Core per CPU	Min 32 cores per CPU
2.4	Features	Virtualization support (VT-x/ AMD-V), AVX Support
3	**Memory**	
3.1	Installed RAM	Minimum 960 GB, expandable to 2TB,
3.2	Expandability	Upto 2 TB or higher
3.3	Type	RDIMM ECC, ECC, SDDC, Mirroring, Sparing
4	**Storage**	

4.1	Boot Drive & RAID	2 x 960 SDD SAS, (RAID 1)
4.2	Local Storage	4 x 1.92TB SSD SATA Read Intensive 6Gbps 512e 2.5in Hot-plug AG Drive, 1 DWPD
5	**Network Interface**	
5.1	Data Network	Minimum 2 × 10GbE SFP+ ports (SFP included), additional 2 x 10GbE ethernet Port (optional but Preferred)
5.2	Management	Dedicated 1 × 1GbE port
5.3	Future Ready	25Gb support (optional but preferred)
5.4	features	LACP, SR-IOV, Jumbo Frames, PXE
6	**SAN Connectivity (Mandatory)**	
6.1	FC HBA	Dual port 32G/64G Fibre Channel HBA (compatible with existing cisco SAN switch - MDS 9132T 32X32G FC)
6.2	Connectivity	Compatible with existing Cisco SAN switch (LC fiber)
6.3	Configuration	Multipathing support required
7	**Expansion Slots**	
7.1	PCIe Slots	Minimum 4–6 PCIe Gen4/Gen5 slots
7.2	Drive Bays	Minimum 8–12 SFF (2.5") bays
8	**Management**	
8.1	Remote Management	iDRAC / iLO / CIMC or equivalent
8.2	Features	Remote console, power control, monitoring
8.3	Automation	API support preferred
9	**Power Supply & Cooling**	
9.1	PSU	Redundant (1+1)
9.2	Efficiency	Platinum / Titanium
9.3	cooling	Standard enterprise cooling
9.4	Optimization	Must support 24×7 operation
10	**Warranty & Support**	
10.1	Warranty	3 years
10.2	Support	24x7 OEM support
10.3	Response	NBD / 4-hour (preferred)
11	**GPU Slot Provisioning**	
11.1	Slot	At least two for future expansion
12	**MAF**	Required

Server-GPU Enabled

1. The bidder shall register servers procured under the client's name.
2. The bidder to submit detailed Bill of Material covering OEM part code and quantity of all offered appliances, accessories licenses, OEM warranty etc. along with the bid.
3. The bidder shall supply, install configuration and test server with supported enterprise GPU(s) for Proxmox Environment.
4. The bidder shall supply all the required accessories such as power cable (C13-c14), LC cables, SFP, and so on for commissioning the GPU server incompatible with existing equipment mentioned above.
5. The bidder shall install Proxmox version that supports GPU integration in Proxmox environment for the proposed GPU.
6. The bidder shall configure server BIOS, PCIe settings, GPU settings, HBA, network, and firmware required for virtualization & GPU to use.
7. The bidder shall be responsible for supplying, installing, configuring, and testing required GPU drivers, license, kernel modules, and virtualization-related packages compatible with Proxmox Environment.
8. The bidder shall integrate the server into the same existing Proxmox & ceph cluster.
9. The bidder shall configure and test the server so that virtual machines can successfully utilize GPU resources (vGPU & passthrough for each GPU), ensuring the GPU is properly recognized and operational within supported VMs for both Windows and Linux hosts.
10. The bidder shall demonstrate successful allocation and operation of GPU resources from VM level.
11. The bidder shall clearly state whether the implementation supports:
12. Full GPU passthrough to a VM, and/or
13. Shared GPU / vGPU capability across multiple VMs
14. Where shared GPU/vGPU is proposed, the bidder shall be responsible for all required software, driver, licenses, configuration, and functionality for successfully deployment,
15. The bidder ensure that the server participates fully in:
    - Cluster communication
    - Resource scheduling
    - VM hosting
    - HA services
    - Centralized storage
    - Ceph storage cluster.
    - Any other required configuration.

SN	Specification	Minimum Requirement
1	**General**	
1.1	Server Type	Enterprise Rack Server (2U preferred)
1.2	Use Case	Virtualization + AI/GPU workloads
1.3	Virtualization	Should support Proxmox VE 8.4 or later
1.4	Integration	Must integrate with FC SAN + Ceph cluster
1.5	OEM Requirement	OEM-certified, production-grade
2	**Processor**	
2.1	Processor Type	Intel Xeon 6 OR AMD EPYC 9004/9005
2.2	Number of CPUs	Dual CPU

2.3	Core per CPU	Minimum 32 cores per CPU
2.4	Features	VT-x/AMD-V, AVX, AVX-512 support
3	**Memory**	
3.1	Installed RAM	Minimum 960 GB, expandable.
3.2	Expandability	Up to 2 TB or higher
3.3	Type	RDIMM ECC
4	GPU	
4.1	GPU Support	Minimum 2 GPUs, scalable to 4 (optional, but preferred) GPU Type: NVIDIA RTX6000 or H200 or equivalent
4.2	GPU Architecture	Mixed GPU deployment (compute + vGPU)
4.3	GPU Capability	Passthrough + vGPU support. The solution must demonstrate: **Ability to assign:** o One full GPU (compute GPU) to a single VM (passthrough) o Multiple virtual GPU instances (vGPU profiles) from a single GPU to multiple VMs **Bidder must:** o Provide supported vGPU profiles o Specify number of VMs supported per GPU
5	**Storage**	
5.1	Boot Drive	2 x 960GB SSD (RAID 1)
5.2	Local Storage	4 x 1.92TB SSD
6	**Network**	
6.1	Data	2 x 10GbE SFP+ (SFP populated) Optional but preferred (additional slot 10GbE Ethernet Port)
6.2	Management	1 x 1GbE
6.3	Future Ready	25GbE support (optional but preferred)
6.4	features	LACP, SR-IOV, Jumbo Frames, PXE
7	**SAN**	
7.1	FC HBA	Dual port 32G/64G (Compatible with E2800 & Cisco SAN switch - MDS 9132T 32X32G FC)
7.2	Connectivity	SAN FC based. Compatible with E2800 & Cisco SAN switch - MDS 9132T 32X32G FC
8	**Expansion**	
8.1	PCIe Slots	Minimum 4–6 PCIe Gen4/Gen5 slots
8.2	Drive Bays	Minimum 8–12 SFF (2.5") bays
9	**Management**	iDRAC/iLO/CIMC
10	**Power Supply & Cooling**	
10.1	PSU	Redundant (1+1)
10.2	Capacity	2000W-3500W (GPU dependent)
10.3	Efficiency	Platinum / Titanium

10.4	Cooling	GPU graded cooling
10.5	Optimization	Must support 24×7 operation
10.6	Operation	Continuous AI workload capable
11	Hypervisor compatibility	
11.1	The proposed solution must be fully compatible with: ○ Proxmox VE Environment Must support: ○ GPU passthrough for compute GPU ○ vGPU functionality for virtualization GPU ○ Bidder must confirm compatibility with: • NVIDIA vGPU software /driver, etc.(latest supported version)	
12	**Warranty & Support**	
12.1	Warranty	3 years
12.2	Support	24x7 OEM support
12.3	Response	NBD / 4-hour (preferred)
13	**MAF**	**Mandatory**

"For LOT II: Preferred Brand is Dell, as all our existing cluster is of Dell ecosystem. However, bidders can quote for devices of different Brand with equivalent or higher specification."

Key Conditions / Vendor Responsibility Clause

The bidder shall be fully responsible for end-to-end compatibility with the proposed solution with the existing environment mentioned above. Any additional components, licenses, software modules, and drivers so on, to meet the technical specifications and successful completion for the awarded Lot, shall be bidder's responsibility, whether or not explicitly mentioned in Terms of Reference.

No part of the solution shall be considered complete until all of the following are achieved:

- Proxmox version standardized across all nodes
- New GPU and non-GPU servers integrated into Proxmox cluster
- SAN storage integrated to new servers
- Servers Internal storage added into Ceph cluster
- Firewall/security configuration aligned
- GPU functional inside VM(s) for both Windows/Linux host.
- HA tested successfully

Testing and Acceptance Requirements

The bidder shall perform complete testing and submit test reports for client approval. Any partial implementation or non-functional integration shall be treated as incomplete delivery.

Warranty and Post-Implementation Support

The bidder shall provide:

- Warranty support for supplied hardware as specified in the specification.
- Installation and configuration support during warranty period.
- Resolution support for integration-related issues.,
- Support for cluster, GPU, storage, and HA-related issues arising from implementation
- OEM-backed support where applicable

Documentation Deliverables

The bidder shall submit the following documents upon successful implementation (For both LoT).

- Knowledge transfer, Configuration & Credential detail document.

Evaluation Criteria (Lot 1)

The bidders will be evaluated based on the following evaluation criteria for Lot I:

Sl. No	Criteria	Points Allocated	Maximum Score
1	**Specific experience of the bidder/firm relevant to the assignment** ***Note: Submit as per the format (Annexure I)***		**20**
	• Have deployed at least 3 similar types of project ***(10 Points)*** • Have deployed less than 3 similar types of project ***(0 Points)***	**20**	
2	**Adequacy of the proposed methodology and work plan in responding to the Terms of Reference**		**45**
	2.1 Technical Approach and Methodology • Very Good ***(25 Points)*** • Good ***(20 Points)*** • Satisfactory ***(15 Points)*** • Poor ***(10 Points)***	**25**	
	2.2 Work Plan • Very Good ***(20 Points)*** • Good ***(15 Points)*** • Satisfactory ***(7 Points)***	**20**	
3	**Key Professional staff qualifications and competence for the Assignment** ***Note: Bidder shall submit Curriculum Vitae (CV) as per the format (Annexure II)***		**35**
	3.1 Certified Network Engineer	**20**	
	a) Qualification - Master/Bachelor's degree in IT/Computer Science or a relevant field. • Certified ***(10 Points)*** • Not certified ***(0 points)***	**10**	
	b) Experience – Professional experiences in similar works/projects • 5 and Above Works ***(10 Points)*** • Up to 4 Works ***(8 Points)*** • Up to 3 Works ***(5 Points)*** • Up to 2 Works ***(0 Points)***	**10**	
	3.1 Technician	**15**	
	a) Qualification – Diploma in Computer Network or equivalent	**5**	
	b) Experience – Professional experiences in similar works/projects • 5 and Above Works ***(10 Points)*** • Up to 4 Works ***(8 Points)*** • Up to 3 Works ***(5 Points)*** • Up to 2 Works ***(0 Points)***	**10**	
	Total		**100**

Selection Criteria (Lot 2)

The bidders will be evaluated based on the following evaluation criteria for Lot I:

Sl. No	Criteria	Points Allocated	Maximum Score
1	**Specific experience of the bidder/firm relevant to the assignment** ***Note: Submit as per the format (Annexure I)***		**10**
	• Have deployed at least 3 similar types of project ***(10 Points)*** • Have deployed less than 3 similar types of project ***(0 Points)***	**10**	
2	**Adequacy of the proposed methodology and work plan in responding to the Terms of Reference**		**40**
	2.1 Technical Approach and Methodology • Very Good ***(20 Points)*** • Good ***(15 Points)*** • Satisfactory ***(10 Points)*** • Poor ***(5 Points)***	**20**	
	2.2 Work Plan • Very Good ***(20 Points)*** • Good ***(15 Points)*** • Satisfactory ***(7 Points)***	**20**	
3	**Key Professional staff qualifications and competence for the Assignment** ***Note: Bidder shall submit Curriculum Vitae (CV) as per the format (Annexure II)***		**50**
	3.1 Virtualization Certified Engineer	**15**	
	a) Qualification - Master/Bachelor's degree in IT/Computer Science or a relevant field. • Certified ***(5 Points)*** • Not certified ***(0 points)***	**5**	
	b) Experience – Professional experiences in similar works/projects • 5 and Above Works ***(10 Points)*** • Up to 4 Works ***(8 Points)*** • Up to 3 Works ***(6 Points)*** • Up to 2 Works ***(0 Points)***	**10**	
	3.2 Storage Certified Engineer	**15**	
	a) Qualification - Master/Bachelor's degree in IT/Computer Science or a relevant field • Certified ***(5 Points)*** • Not certified ***(0 points)***	**5**	
	b) Experience – Professional experiences in similar works/projects • 5 and Above Works ***(10 Points)*** • Up to 4 Works ***(8 Points)*** • Up to 3 Works ***(6 Points)*** • Up to 2 Works ***(0 Points)***	**10**	

	3.4 Backup Solution Engineer	**15**	
	a) Qualification - Master/Bachelor's degree in IT/Computer Science or a relevant field	**5**	
	b) Experience – Professional experiences in similar works/projects • 5 and Above Works ***(10 Points)*** • Up to 4 Works ***(8 Points)*** • Up to 3 Works ***(6 Points)*** • Up to 2 works ***(0 Points)***	**10**	
	3.3 Network Engineer	**5**	
	a) Qualification - Master/Bachelor's degree in IT/Computer Science or a relevant field	**2**	
	b) Experience – Professional experiences in similar works/projects • At least 1 or more work experience ***(3 Points)*** • No work experience ***(0 Points)***	**3**	
	Total		**100**

Note:

- *All the key professional staffs mentioned shall be submitted and supported by relevant documents. Non-submission of documents shall be considered as non-responsive.*
- Minimum scored required to qualify through the technical proposal is: **70 Points**

The formula for determining the financial scores is the following:
Sf = 100 X Fm/F*, in which Sf is the financial score, Fm is the lowest price and F is the price of the proposal under consideration.*

The weights given to the Technical and Financial Proposals are:

Technical Weightage = 60% and
Financial Weightage = 40%

The **Definition** of **Sub-criteria** under **"Adequacy of the proposed methodology and Work Plan"** are stated below:

a. Technical Approach and Methodology:

Poor: The technical approach and / or methodology are inappropriate or very poorly presented, indicating that the bidder has misunderstood important aspects of the scope of the work.

Satisfactory: The Way to carry out the different activities of the TOR is discussed generically. The approach is standard and not specifically tailored to the assignment.

Good: The proposed approach is discussed in full details, and the methodology is specifically tailored to the characteristics of the assignment and flexible enough to allow its adaptation to changes that may occur during the execution of the work.

Very Good: In addition to the requirements listed above "Good", important issues are approached in an innovative and efficient way, indicating that the consultants have understood the main issues of the

assignment and have outstanding knowledge of new solutions. The proposal details ways to improve the results and the quality of the assignment by using state-of-the-art approaches, methodologies and knowledge.

b. Work Plan:

Satisfactory: The activity schedule omits important tasks; the timing of activities and correlation among them is inconsistent with the approach and / or methodology proposed. There is lack of clarity and logic in the sequencing.

Good: All key activities are included in the activity schedule, but they are not detailed. There are minor inconsistencies between timing, assignment outputs, and proposed approach.
Very Good: The work plan fits the TOR well, all important activities are indicated in the activity schedule and their timing is appropriate and consistent with the assignment outputs; and the interrelation between the various activities is realistic and consistent with proposed approach.

Annexure:

Annexure I: FORM TECH I: Consultant's Organization and Experiences

A - Consultant's Organization

[*Provide here a brief description of the background and organization of your firm/entity and each associate for this assignment.*]

A brief description of the Consultant's organization and an outline of the recent experience of the Consultant on assignments of a similar nature is required. In the case of a joint venture/consortium/association, this information should be provided for each partner. For each assignment, the outline should indicate the names of Sub-Consultants/Professional staff who participated, the duration of the assignment, the Contract amount, and the Consultant's involvement. Information should be provided only for those assignments for which the Consultant was legally contracted by the Company as a corporation or as one of the major firms within a joint venture/consortium/association. Assignments completed by individual Professional staff working privately or through other consulting firms cannot be claimed as the experience of the Consultant, or that of the Consultant's associates, but can be claimed by the Professional staff themselves in their CVs.

B - Consultant's Experience

[*Using the format below, provide information on each assignment for which your firm, and each associate for this assignment, was legally contracted either individually as a corporate entity or as one of the major companies within an association, for carrying out consulting services similar to the ones requested under this assignment. Use 20 pages maximum, listing in the order of most recent first.*]

Firm's Name:

<table>
<tr><td>Assignment Name:</td><td>Approx. value of the contract (in BTN):</td></tr>
<tr><td rowspan="3">Company:
Address:</td><td>Duration of Assignment (months):</td></tr>
<tr><td>Total number of staff months of the assignments:</td></tr>
<tr><td>Approximate value of the services provided by your firm under the contract (BTN)</td></tr>
<tr><td>Start date (month/year):
Completion date (month/year):</td><td>No. of professional staff-months provided by associated Consultants:</td></tr>
<tr><td>Name of associated Consultants, if any:</td><td>Name of senior professional staff of your firm involved and functions performed (indicate most significant profiles such as Project Director/Coordinator, Tema Leader):</td></tr>
<tr><td colspan="2">Narrative description of Project:</td></tr>
<tr><td colspan="2">Description of actual services provided by your staff within the assignment:</td></tr>
</table>

Annexure II: FORM TECH II: Curriculum Vitae (CV) for Proposed Professional Staff

1. Proposed Position [*only one candidate shall be nominated for each position*]:
_____

2. Name of Firm [*Insert name of firm proposing the staff*]:
_____

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3. Name of Staff [*Insert full name*]:
_____

4. Date of Birth: _____ Nationality:
_____

5. Education [*Indicate college/university and other specialized education of staff member, giving names of institutions, degrees obtained, and dates of obtainment*]: _____

6.Membership of Professional Associations:
_____

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7. Other Training [*Indicate significant training since degrees under 5 - Education were obtained*]: _____

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8. Countries of Work Experience: [*List countries where staff has worked in the last ten years*]: _____

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9. Languages [*For each language indicate proficiency: good, fair, or poor in speaking, reading, and writing*]:
_____
____

10. Employment Record [*Starting with present position, list in reverse order every employment held by staff member since graduation, giving for each employment (see format here below):*
dates of employment, name of employing organization, positions held.]:
From [Year]_____: To [Year]: _____
Employer: _____
Positions held: _____

11. Detailed Tasks Assigned *[List all tasks to be performed under this assignment]*	12. Works Undertaken that Best Illustrates Capability to Handle the Tasks Assigned *[Among the assignments in which the staff has been involved, indicate the following information for those assignments that best illustrate staff capability to handle the tasks listed under point 11.]* Name of assignment or project: _____ Year: _____ Location: _____ Company: _____ Main Project Features: _____ Positions Held: _____ Activities performed: _____

13. Certification:
I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes me, my qualifications and my experience. I understand that any willful misstatement herein may lead to my disqualification or dismissal, if engaged.

_____Date: _____

[Signature of staff member or authorized representative of the staff] *Day/Month/Year*

Full name of authorized representative:
_____