



**DEPARTMENT OF NATIONAL REGISTRATION
REQUEST FOR PROPOSAL**

RFP 2026-01

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Proposal Submittal Due Date

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To

Department of National Registration

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DNR Virtualization Software and DC Upgrading

Reference: RFP 2026-01

Date: 6th May 2026

1. Background

Department of National Registration intends to procure an integrated IT infrastructure solution comprising enterprise-grade Servers, converged and backup Storage Systems, Virtualization Platform, Core Network Switches and interactive smart board systems to support data center operations. This Statement of document defines the minimum technical, commercial, and service requirements for the tender.

2. Bill Of Quantity

- 2 Nos of Enterprise Servers and related Virtualization Licenses
- 1 Nos of Hybrid Storage
- 1 Nos of Backup Storage
- 1 Nos of Core Switch
- 1 Nos of Display Board for NOC/SOC Operations

3. Scope of Work

The successful Bidder shall provide end-to-end responsibility for the delivery of the complete solution.

3.1 Servers

Supply enterprise-grade servers, perform installation, configuration, firmware updates, and validation.

- Supply enterprise-grade rack or blade servers as per the Bill of Quantities (BoQ)
- Ensure servers are new, unused, and from an OEM-authorized source
- Perform physical installation and rack mounting in the Client's data center
- Configure BIOS, firmware, RAID, and management interfaces
- Install and configure server management tools (e.g., iDRAC, iLO, XClarity)

- Apply recommended firmware and security updates
- Validate server health and performance

3.2 Virtualization Software

Install and configure virtualization platform with HA, live migration, and security controls.

- Supply required virtualization software licenses (where applicable)
- Install and configure the virtualization platform (e.g., VMware, Hyper-V, KVM, or equivalent)
- Create and configure:
 - Virtual clusters
 - Resource pools
 - Datastores
 - Virtual networks and VLANs
- Integrate virtualization with storage and backup systems
- Implement access control and role-based permissions

3.3 Converged Storage System

Supply and configure SAN/NAS storage systems, integrate with virtualization, and perform testing.

- Supply high-availability storage systems as per BoQ (SAN / NAS / HCI as applicable)
- Install and cable storage systems including controllers, disks, and network connectivity
- Configure storage pools, RAID levels, and volumes/LUNs
- Enable redundancy, failover, and performance optimization features
- Configure storage integration with virtualization platform
- Perform storage performance and resiliency validation
- Provide storage management and monitoring setup

3.4 Backup Storage System

Supply and configure backup storage systems, integrate with converged storage system above, and perform testing.

- Supply enterprise-grade backup storage hardware/appliance with required licenses and accessories.
- Install and configure backup repositories, retention policies, security, and system integration.
- Perform test backups and restores to validate data integrity and recovery functionality.
- Configure redundancy and data protection mechanisms as per best practices.
- Integrate backup storage with existing servers and virtualization environment (if applicable).
- Provide backup configuration documentation and operational handover to Client staff.

3.5 Core Network Switches

Supply, install, configure, and test redundant enterprise core switches and integrate with infrastructure.

- Configure core switches according to approved design, including:
 - VLANs and IP addressing
 - Trunking and link aggregation (LACP)
 - Routing protocols (e.g., OSPF, BGP, static routing if required)
 - High-availability features (VSF / vPC / MLAG / Stack / Chassis redundancy)
- Implement security configurations, including:
 - Access control lists (ACLs)
 - Port security
 - Management plane protection
- Integrate core switches with:

- Servers
- Storage systems
- Virtualization platform
- Existing network (if applicable)

3.6 Interactive Smart Board

Supply, Install and configure interactive smart board for meeting rooms.

- Supply OEM-certified interactive smart boards with all required accessories (mounts, pens, cables).
- Install, mount, and configure firmware/software; integrate with PCs and presentation systems.
- Perform functional testing and provide on-site demonstration and user orientation.
- Ensure compatibility with commonly used operating systems and collaboration tools.
- Apply latest firmware updates and recommend OEM configuration settings.
- Provide basic user documentation and warranty information at handover.

4. Statement of Compliance

4.1 Servers and virtualization Software.

Category	Specification Requirement	Bidder Response	Remarks
Enterprise Server Nodes			
Model	To be mentioned by the bidder		
Country of origin	To be mentioned by the bidder		
Manufacturing Country	To be mentioned by the bidder		
Form Factor	2U Rack Mount		
Processor	Minimum Dual Intel Xeon Gold 6430 (2.1GHz/32-Core/160MB/270W per processor)		
Memory	4 Nos x 32GB DDR5 RDIMM Memory		
RAID Controller	PCIE 4.0 X8 ,4GB cache, RAID 0,1,5,6,10,50,60, Support Super Cap and Sideband Management		
SSD	2 x 960GB SSD 2.5" Hot-Plug		
Power Supply	Dual Fully Redundant (1+1) Hot-Plug Power Supply		
Network	Dual Port 10/25Gbe SFP28(with SFP)		
Remote Management	Remote Management with Virtual Console and Virtual USB		
Rack Rails	Ready Rails Sliding Rails with Cable Management Arm		
Warranty	Should provide 3-year 7 x 24 Support		
Connectivity Accessories	Necessary Connectivity Accessories will be provided		
Installation, testing and commissioning	Installation, testing and commissioning with necessary accessories		
Virtualization	Virtualization/Hypervisor license should be provided for 3 Server nodes with Dual-Processors each.		
	All virtualization/hypervisor licenses should be perpetual		
	Software Support and Services should be provided for xx Years.		

Virtualization Software			
Basic Requirement	Virtualization/Hypervisor license should be provided for 10 CPU sockets. (5-Servers with dual processors)		
	All virtualization/hypervisor licenses should be perpetual.		
Compute virtualization	Should support online adjustment of VM specifications, including CPU and memory resources. The adjustment should take effect without the need of restart.		
	After a VM is deleted, should be moved to the recycle bin. VMs in the recycle bin can be restored.		
	Should allow to configure whether to enable HA for VMs upon storage faults or not to handle storage faults to ensure high service availability.		
	Should allow to create consistency snapshots for VMs. When a fault occurs, services can be quickly restored to the state at point in time when the snapshot was created.		
	Should support GPU virtualization. A physical GPU can be virtualized into multiple vGPUs to meet the requirements of 3D applications that comply with latest DirectX and OpenGL standards.		
	Should allow GPUs and SSDs of hosts to be passed through to VMs, improving the overall VM performance.		
	During VM startup and running, the system should periodically check the load of each host in a cluster and migrates VMs among different hosts to implement load balancing among hosts in the cluster.		
Storage virtualization	The virtualization platform should support local disks, IP SAN, FC SAN, and NAS.		
	Should allow to configure CHAP information before interconnection with a remote storage device to improve data security. Can configure the storage IP address and port ID of the connected storage device.		

	Should allow to migrate only VM storage. Can specify the configuration mode of destination disks and migration rate control during migration setting.		
Network virtualization	Should support interconnection with network overlay SDN. At least one node can be deployed to manage network overlay SDN.		
	Should allow to configure virtual switches. Can configure security groups, DHCP isolation, and broadcast suppression to ensure VM network security.		
	Should support SR-IOV passthrough. The software emulation layer is bypassed in network transmission, and data is directly allocated to VMs, reducing the I/O overhead at the software emulation layer.		
	Should support virtual switch-level user-mode switching technology (OVS+DPDK), allowing high-performance network forwarding, and improving data processing performance and throughput, as well as the work efficiency of application programs on the data plane.		
	Virtual switches should be able to use principal and subordinate VLANs (MUX VLAN) to implement communication or isolation between VM network devices in the same port group. Reduce VLAN ID consumption and simplifies network maintenance.		
Management capability	Should provide graphical indicator monitoring on hosts and VMs. Users can customize the monitoring period. The monitoring indicators include the CPU usage, memory usage, disk usage, disk I/Os, and network traffic rates. Users can also export monitoring data.		
	Should support alarms for various indicators, including but not limited to the CPU usage, memory usage, disk usage, storage I/O latency, partition usage, and virtualization		

	domain resource usage. Users can customize alarm thresholds.		
	Should support SNMP v2c/v3 to facilitate unified monitoring on the virtualization platform by a third-party monitoring system.		
	Should allow to mask specified alarms. The masked alarms will not be displayed in the alarm information.		
	Should support log recording of operations performed by O&M personnel on the O&M system. The system O&M personnel can view the logs but cannot delete them.		
DR	Should support agentless backup software from the same vendor. VMs can be backed up to storage devices without installing backup clients on the VMs. Full back up, incremental backup, and scheduled backup should be supported.		
Compatibility	Should allow to set VM live migration across different CPU generations by cluster. Servers with different CPU models from the same CPU vendor can be deployed in the same logical cluster, and VMs can be live migrated between servers with different CPU models without interrupting services.		
Security	Should allow to safely delete VMs on the GUI. When a VM is deleted, the underlying storage space is zeroed out to prevent data from being maliciously restored.		
	The management system should be able to interconnect with legacy LDAP and LDAPS to simplify account and permission management.		
	The system should support role-based O&M. The system should have three roles, namely system administrator, security administrator, and security auditor, meeting the permission separation requirements in high-security scenarios.		

	Should allow to replace the default certificates used for communication between different nodes to ensure O&M security.		
Support	Minimum 1 (One) year of software support should be provided for this appliance from the date of commissioning		
Installation, testing and commissioning	Installation, testing and commissioning support should be provided		

4.2 Converged Storage

Category	Specification Requirement	Bidder Response	Remarks
Brand	Internationally Reputed brand (To be mentioned by the Bidder) and the OEM of the proposed brand must be in the leader Quadrant in latest Gartner’s Magic Quadrant for primary storage.		
Model	To be mentioned by the bidder		
Country of origin	To be mentioned by the bidder		
Manufacturing Country	To be mentioned by the bidder		
System architecture	Offered Storage array must be a Hybrid Array, which should support HDD, SAS SSD		
	The storage system uses a symmetric active-active architecture. LUNs do not belong to any controller. When multiple controllers are configured, service loads are balanced among all controllers with a difference of CPU usage less than 5%. Service loads of a single LUN are balanced among all controllers.		
	Offered Storage array should be 2 U disk and controller integration architecture. A 2 U controller enclosure should support a maximum of 25 disks.		

	Offered Storage Array should be configured with minimum Two Controllers and support scale out to Eight or more controllers		
	Integration of SAN and NAS: SAN and NAS services share the same storage pool and are managed on the same management interface (GUI redirection and login for the second time are not allowed, and LUNs cannot be used as the storage space of file systems). Resources are shared, and no NAS gateway is required. NAS (including NFS and CIFS), IP SAN, and FC SAN protocols are supported.		
Controller	Two controllers should be configured. The controllers must use multi-core processors, and the total number of cores of a single controller processor should be greater than or equal to 20. CPU frequency should be 2.1 GHz or better.		
Cache	The total level-1 cache capacity of the system is greater than or equal to 64 GB, and the level-1 cache capacity of any controller is greater than or equal to 32 GB (excluding any performance acceleration module, FlashCache, PAM, SSD cache, or SCM).		
Disk Scalability	Offered Storage Array should support up to minimum 800 disks.		
Capacity	The single storage array shall be offered with 96TiB (100TB) usable capacity after RAID6 without Deduplication and Compression		
Raid	The Storage array should support Controller based RAID Levels: RAID 5, and RAID 6 and Three disk. RAID-TP is able to tolerate simultaneous failure of three disks.		
Front End Ports	The Storage Array should be provided with minimum 8 x 1Gbps and 8 x 10 Gbps iSCSI interface with required transceiver.		

Back End Connectivity	The Storage Array should be provided the back-end disk channel bandwidth greater than 192 Gbit/s		
Quality of Service Control	The storage system should support QoS control, that is, control traffic by LUN, LUN group, or host. Two QoS policies should be provided: upper limit control and minimum performance assurance. Burst traffic control should be supported. Should support tenant-level and file system-level QoS assurance to ensure that the storage system supports file system QoS control. Provides two QoS policies: upper limit control and minimum performance assurance, and supports burst control of QoS.		
Quota	Quotas can be set for directories, users, and user groups. Quota includes space soft quota, space hard quota, file quantity soft quota, and file quantity hard quota. If the hard quota is exceeded, the system immediately forbids writes. If the soft quota is exceeded, the system generates an alarm but still allows writes within the grace period. After the grace period elapses, the system immediately forbids writes. Quota limits can be set for any directories.		
Log Audit	The log audit function is provided to record user operations transmitted over protocols, including user login information and operations such as creation, deletion, and modification.		

Snapshot	<p>The storage system should support snapshots for LUNs and File Systems.</p> <ol style="list-style-type: none">1. ROW lossless snapshot mode is used.2. The system supports at least 60,000 snapshots for a single LUN and 1 million snapshots for the entire system. 4096 snapshots for a file system, and the entire system supports 32,000 file system snapshots.3. The system creates a snapshot every 1 minute (or at a shortest interval of 3 seconds). Screenshots of the visualized management interface are required. Data can be restored using the snapshot at any point in time. Snapshots at other points in time are not lost.4. Snapshots do not compromise performance. System performance will not decrease as the number of snapshots increases. System latency stays shorter than 1 ms with the snapshot function enabled.5. Cascading snapshots are supported with a maximum of eight cascading levels.6. Data can be restored using the snapshot at any point in time on the management interface, and snapshots at other points in time are not lost.		
Clone	<p>The storage system should support the clone function for LUN and file System. After a secondary LUN of a clone pair is created, it can be mapped to a host for I/O access without waiting for data synchronization to complete. Services on the source LUN are not affected. Immediately available clones can be created. Clone consistency groups,</p>		

	incremental synchronization, and reverse incremental synchronization are supported. Multiple clones can be created for the same file. Cross-tenant clone is supported.		
Remote replication	The storage system should support synchronous remote replication and online capacity expansion of replication LUNs. The capacity is modified on one end and synchronized to the peer end, without affecting the status of synchronous replication and host services. Should support asynchronous and synchronous replication of file systems.		
Multi-tenancy	The storage system should support the multi-tenancy function for SAN. This function isolates storage resources, networks, and services. A client can access only shares of a tenant through the tenant's logical data port. In addition, tenant self-management is supported.		
Multi-pathing	The proposed storage should provide dedicated multi-pathing software (not the multi-pathing software of the operating system) to support failover and load balancing. The multi-pathing software should run on Windows, Linux, AIX, Solaris, and other mainstream OSs.		
WORM	The storage system should support file system WORM and time period configuration for WORM, ensuring the security of key service files and complying with laws and regulations.		
VMware Integration	Should support interconnection with VAAI-SAN, VAAI-NAS, VVol 2.0, SRM, vMSC, vRO and vROps.		
Non-Disruptive Upgrade	Offered storage should support Non-Disruptive Upgrade. During an upgrade, the storage no need requires controller restart and services need to be switched over between controllers to ensure service continuity.		

Device Management	Should be provided with graphical management software with comprehensive functions, including disk array and volume management software. Provides graphical management, configuration and monitoring software for storage devices.		
Intelligent management and O&M	Should be able to collect statistics on performance indicators (such as usage, IOPS, latency, and bandwidth) of specified objects (controller cache, processors, front-end ports, LUNs, and volume groups) in real time. The sampling interval of performance monitoring data is less than or equal to 5 seconds, and a performance curve of more than 15 minutes can be generated. In addition, users can view and collect statistics on historical performance data of more than 6 months, and view performance data in a specified period (hour, day, week, or month).		
Design and Implementation Scope	Respective OEM to also ensure that the final deployment is done basis the OEM specified and validated design standards and best practices		
Design and Implementation Scope	Bidder should submit BOM of proposed device including the details part numbers and manufacturer's warranty part number		
Warranty	Bidder should submit the required performance document and compliance reference document for the proposed device.		
	Mentioning Manufacturer's warranty should be quoted, minimum 3 (Three) years warranty should be provided for this unit from the date of commissioning		

Installation, testing and commissioning	Installation, testing and commissioning with necessary accessories		
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4.3 Backup Storage System

Category	Specification Requirement	Bidder Response	Remarks
Brand	Internationally Reputed brand (To be mentioned by the Bidder) and the OEM of the proposed brand must be in the leader Quadrant in latest Gartner's Magic Quadrant for primary storage.		
Model	To be mentioned by the bidder		
Country of origin	To be mentioned by the bidder		
Manufacturing Country	To be mentioned by the bidder		
Architecture	The system should integrate backup software, backup storage management, and backup storage software and hardware. Scale-out should be supported to expand nodes. The architecture that separates backup servers and storage is not used, and no management server is required.		
	Should have 24-core 2.6 GHz CPU per controller		
	A single device or node (2 U) should have multiple controllers. The controllers work in active-active mode and can process multiple backup tasks simultaneously. Failure of one controller does not interrupt services.		
	The device should support multiple-controller redundancy. There is no single point of failure caused by the controller.		

	The multi-active architecture should be used. The failure of a single server or controller does not affect the execution of backup tasks. Backup data is not lost, and the available backup capacity is not reduced.		
	A high-speed multi-controller (all controllers) interconnection architecture should be used. The controller interconnection protocol is RDMA.		
	A single node can be connected to an independent disk enclosure for capacity expansion. Computing resources do not need to be expanded at the same time. A maximum of PB-level raw capacity is supported.		
	Backup bandwidth per node should support ≥ 4 TB/hour		
	The total cache capacity in the system should be greater than or equal to 256 GB, and the cache capacity of any controller should be greater than or equal to 128 GB (excluding any performance acceleration module, FlashCache, PAM, SSD Cache, or SCM).		
	10GE/25GE ports are supported.		
	Storage should be provided with 8*1Gb ETH, 4*10Gb ETH(Including Multi-Mode SFP+)		
	A single node should be configured with 2 or more 2-port 12 Gbit/s SAS back-end ports. The total back-end bandwidth is 48 Gbit/s or higher.		
	NL-SAS HDDs and SAS SSD should be supported.		
	Total actual usable capacity should be 65TB after RAID 6.		
	2U Controller enclosure should support 12 x 3.5" disks.		

	Should support RAID5, RAID 6 and tolerating simultaneous failure of three disks where three disks in a RAID group are allowed to fail simultaneously without any data loss or service interruption.		
	Should support maximum usable capacity of 300TB with expansion.		
Software Features	Backup and recovery system should support periodic full backup and incremental backup, remote replication of copies, long-term retention of copies, and live mount of copies.		
	Online backup protection should be supported for Oracle, MySQL, SQL Server, GaussDB, openGauss, PostgreSQL, Dameng, Kingbase, Db2, SAP HANA, Gbase, Informix, OceanBase, TDSQL, TiDB, GoldenDB, Huawei Cloud Stack GaussDB databases. The backup jobs are configured on the GUI. Incremental forever backup for Oracle and MySQL databases should be supported. Deduplication of synthetic copies, remote replication of backup copies, long-term retention of backup copies to objects and tape libraries, and live mount and recovery of backup copies are supported. Instant recovery of Oracle databases should be supported. Online reverse migration of data is automatically performed in the background without manual operations.		

	<p>Should support backup and recovery of NAS and host files, and forever incremental backup. For synthetic copies, Ocean Protect supports data deduplication and compression, backup copy replication, and long-term retention of backup copies to object storage and tape libraries. Live mount of backup copies and granular recovery are also supported.</p>		
	<p>Should support full backup and forever incremental backup of VMware, Fusion Compute, and Huawei Cloud Stack VMs, and live mount and instant recovery of VMware copies Without the need for installing a client on the backup ECS, backup of an ECS is supported and granular recovery of files on the ECS is enabled.</p>		
	<p>Should support Kubernetes container backup, including CSI namespaces, datasets, FlexVolume namespaces, and StatefulSets.</p>		
<p>Software Features</p>	<p>Should support deduplication and compression, back-end deduplication, source deduplication, and deduplicated replication.</p> <p>Should support backup data encryption using the AES256 or SM4 encryption algorithm, improving backup data resilience.</p>		
	<p>Applications such as Oracle, MySQL, MariaDB, TDSQL, VMware, and NAS file system should support backup copy data management and live mount. Users can quickly mount backup copies for data utilization.</p> <p>The unified backup storage pool features scheduled backups and unified storage space for copy data management and live mount. It also supports data reduction and encryption, simplifying management and saving storage space.</p>		

	Each node in the high availability architecture and should support automatic load balancing of backup service flows, which effectively ensures the backup job performance.		
	Should support the configuration of rate limit policies to control traffic or limit bandwidth during local backups, remote replication, and tiered archiving.		
NAS features	Should support NAS storage snapshot backup, implement scan-free incremental backup, and support block-level incremental backup and fine-grained recovery.		
	Should support NAS space sharing through sharing protocols such as NFS and SMB. Supports the SMB failover function, ensuring service continuity in the event of single points of failure.		
Data security	Should support WORM and allows users to set a protection period for a file, during which the file cannot be modified or deleted. Supports Air Gap, which automatically shuts down the physical ports of replication links and replicates data to the isolation zone.		
Agent-free backup	Agent-free backup services should be supported. The storage device provides the forever incremental backup function, which does not occupy service host or network resources. Users do not need to install client plug-ins on the ECS to back up the cloud host. Additionally, fine-grained file-level recovery on the ECS is supported.		

Management and O&M	User and permission management should be supported. The permissions of system administrators, data protection administrators, auditors, and other user roles can be separated. Different resources, functions, quotas, and other backup management permissions can be allocated to different users.		
	Key system information, such as the capacity trend, performance, system I/O response time, IOPS, and bandwidth can be monitored on a GUI for unified O&M and management.		
	The GUI-based inspection tool can be used to inspect the status of data protection software and hardware and backup services.		
	Should support hot swap of disks, power modules, and interfaces without service interruption.		
	Should monitor the service life of SSDs and displays the wear degree and estimated service life of each SSD.		
	Should support GUI-based upgrade of data protection engines/backup software and clients as well as batch upgrade of various client software.		
	Should support centralized monitoring and unified management of data backup. A single GUI is used to centrally manage protected resources, copy data, live mount, recovery drills, backup tasks, and alarm monitoring information. Cluster management is supported.		
	Should support statistics reports for backup and recovery tasks as well as storage space. Supports exporting and sending of report files.		

	Provides 4-hour 24 × 7 OEM support for 3 years.		
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4.4 Core Switch

Category	Specification Requirement	Bidder's Response	Remarks
General Requirements	The proposed ToR switch must be a compact, high-performance Layer 3 switch designed for enterprise and data center edge deployments.		
	It shall be capable of aggregating mixed copper and optical interfaces and supporting multi-speed uplinks at 10G and 25G rates.		
	It must support modular architecture with hot-swappable components including fans and power supplies, and offer future-proof scalability via expansion slots.		
	The switch shall have a 1U form factor and be mountable in a standard 19-inch equipment rack.		
Interface Configurations	The switch must include a minimum of 24 RJ-45 ports supporting up to 1G Ethernet speeds.		
	The switch must include a minimum of 16 SFP+ ports supporting 1G, 2.5G, and 10G Ethernet speeds. These ports must be backward compatible with 1G SFP modules and support both single-mode and multimode fiber transceivers.		
	The switch must include a minimum of 8 SFP28 ports supporting 10G and 25G Ethernet speeds. These ports must auto-negotiate based on inserted transceiver type and		

	support fallback to 10G operation when using compatible SFP+ modules.		
	The switch must include a minimum of 2 QSFP28 ports supporting 40G and 100G Ethernet speeds. These ports must auto-negotiate based on inserted transceiver type.		
	All SFP+ SFP28 and QSFP28 ports must support Digital Optical Monitoring (DOM) for real-time transceiver diagnostics including temperature, voltage, bias current, and optical power levels.		
	The switch must support auto-negotiation and auto-sensing across all SFP+, SFP28 and QSFP28 ports for seamless interoperability with 1G, 2.5G, 10G, and 25G transceivers.		
	The switch must include 1 dedicated out-of-band management Ethernet port (RJ45), supporting 10/100/1000 Mbps operation.		
	A USB Type-A port must be available for firmware upgrades, configuration backup, or log export.		
Performance Requirements	The switch must support a switching capacity of at least 1.5 Terabits per second (Tbps), ensuring full line-rate forwarding across all interfaces under maximum load conditions.		
	The device must support a packet forwarding rate of no less than 1100 million packets per second (Mpps), measured under standard packet sizes and full traffic load.		
	MAC address table capacity must be no less than 64,000 entries, allowing the switch to support large-scale deployments with extensive endpoint diversity.		

	The switch must support jumbo frames with a minimum MTU size of 9,000 bytes, facilitating efficient data transfer for storage, virtualization, and high-performance computing workloads.		
	Routing table must support a minimum of 16,000 IPv4 entries and 8,000 IPv6 entries, enabling robust Layer 3 routing capabilities across dual-stack environments.		
	Layer 2 switching latency must be less than 1 microsecond under typical conditions, ensuring real-time responsiveness for latency-sensitive applications.		
	Programmability must be supported via an open scripting environment or SDK, allowing administrators to automate tasks and customize switch behavior using standard programming languages.		
	The switch must support cloud-based and on-premises management platforms with secure API access, role-based access control, and multi-tenant configuration isolation.		
	The switch must support dynamic traffic engineering features such as Equal-Cost Multi-Path (ECMP) routing and policy-based forwarding to optimize network paths and resource utilization.		
	Support for intelligent stacking technologies must be included, allowing multiple switches to operate as a single logical unit with unified management and redundancy.		
	The switch must support intelligent telemetry features such as NetStream or sFlow for real-time traffic visibility and performance monitoring.		

Power and Cooling Requirements	The switch must be equipped with redundant AC power modules rated at a minimum of 180 Watts, supporting hot-swappable operation and front-to-rear airflow.		
	The switch must include two hot-swappable modular fan units with intelligent speed control and airflow direction compatible with standard rack deployments.		
	The power supply must be hot-swappable and must support front-to-rear airflow to align with standard data center cooling layouts.		
	The power module should support input voltages in the standard AC range and comply with international safety and efficiency standards.		
	Fans must be capable of front-to-rear airflow, with air intake from the port side and exhaust from the power supply side, to match airflow design in typical rack-mounted environments.		
	The system must support fan redundancy, with the ability to operate at reduced capacity in the event of a single fan failure, and generate alarms for fan status.		
	The operational temperature range must be 0°C to 50°C, with relative humidity tolerances between 5% and 95% non-condensing.		
Software and Feature	The switch must support Layer 2/3 switching and routing, including VLANs (802.1Q, QinQ), STP/RSTP/MSTP, LACP, OSPF, RIP, BGP, IGMP, ACLs, QoS, sFlow/NetStream, and dual-image firmware support.		

	The switch must support Native-IP telemetry and integration with IP-based monitoring systems using standard protocols such as gRPC and NetConf.		
	DHCP snooping with Option 82, ARP inspection, and IP source guard		
	ACL-based filtering on Layer 2 to Layer 4 fields, including MAC, IP, and port-based filtering		
	QoS mechanisms including traffic classification, marking, queue scheduling (WRR, SP), policing, and shaping		
	Multicast protocols including IGMP v1/v2/v3 and MLD snooping		
	Port-based and VLAN-based mirroring, traffic monitoring (sFlow or NetStream), and loopback detection		
	Support for firmware upgrades via USB, TFTP, or remote management tools		
	Dual-image firmware support for high availability during updates		
Management Requirements	The switch must support CLI via console and SSH, web-based GUI, SNMP v1/v2c/v3, NTP, Syslog, RESTful API, USB-based config backup, and remote firmware upgrades.		
	The switch must support real-time hardware diagnostics including voltage, temperature, fan speed, and power module status monitoring, with SNMP trap generation on threshold violations.		
	The switch must support loopback testing on individual interfaces and provide per-port error counters for CRC, alignment, and collision statistics.		

	The switch must support Open Programmability System (OPS) allowing Python-based scripts to be deployed for automation, monitoring, and custom control logic.		
Security Requirements	The switch must support 802.1X, MAC-based authentication, RADIUS, TACACS+, SSHv2, HTTPS, storm control, CPU protection, and enforce password complexity policies.		
	The switch must provide mechanisms for broadcast/multicast storm control and CPU protection.		
	Password policies must enforce complexity, requiring at least three types of characters and a minimum of eight characters.		
Compliance and Warranty	All proposed hardware must be CE, FCC, and RoHS compliant.		
	Transceivers and cables must be genuine OEM-certified and below should be included. 12 Nos of 25G Active optical cables 10 Nos of 10G SFP+ Direct attach cables 20 Nos of DLC/PC, DLC/PC 3M OM3 MMF patch cords 20 Nos of DLC/PC,DLC/PC 5M OM3 MMF patch cords 20 Nos of DLC/PC,DLC/PC 3M OM4 MMF patch cords		
	A minimum of 3 years manufacturer hardware warranty must be included.		
	The bidder must supply complete technical datasheets, certificates of conformity, and declaration of compliance with each submission.		

Manufacturer Authorization	The bidder must submit a valid and current Manufacturer Authorization Letter (MAL) issued by the original equipment manufacturer (OEM). This letter must explicitly authorize the bidder to supply, install, and support the proposed equipment as per the specifications outlined in this RFP. Failure to provide this document will result in disqualification of the bid.		
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4.5 Display Board

Category	Specification Requirement	Bidder's Response	Remarks
General Requirements	The All-in-one terminal should include: <ul style="list-style-type: none"> • Interactive Panel; • Video conference codec; • Built-in Speaker; • Built-in microphone; • Built-in camera. • OPS module 		
	System configuration: 8 core CPU, 12 GB RAM, 64GB Flash		
	Provide wall-mounted bracket		
	Projection Dongle which supports wi-fi		
	One remote control		
	86-inch D-LED touch screen, 4K60 resolution		
	Zero-gap bonding		
	Supports anti-glare (AG).		

	Automatically adjusts screen brightness based on light sensing.		
	Optical anti-blue light, protects eyes and doesn't change color.		
	Screen protection up to physical toughened Mohs 7		
	The color gamut is not less than 85% NTSC		
	Typical contrast ratio: 1200: 1. Typical brightness: 350 nits		
	Screen response time: 8ms		
	Supports 20 touch points		
	Touch accuracy: ±1mm		
Camera Requirements	4K30 built-in camera.		
	Horizontal viewing angle: 80°, vertical viewing angle: 50°		
	A built-in privacy cover to physically close the camera.		
	Auto-framing, automatically adjusts the camera based on the location of the participants. The camera displays all participants in a panoramic view and ensures that the participants are displayed in the center.		
	Maintain clarity using 2µm² ultra-large photosite sensor for high SNR		
	Speaker tracking, automatically switch to the close-up picture of speaker without manual intervention. If two people speak alternately, close-ups of the two people are displayed at the same time.		
Microphone Requirements	At least 6 built-in microphone arrays		
	The sound pickup radius at least 12 meters, and the sound pickup angle: 180°.		
	Acoustic baffle to eliminate the impact of environmental noise during the meeting.		

	20 kHz full-frequency audio pickup, sampling frequency: 48 kHz		
	Acoustic echo cancellation (AEC), automatic gain control (AGC), automatic noise reduction (ANR)		
Speaker Requirements	Two built-in speakers, frequency response range:100Hz-20KHz, total power not less than 40 W		
	The device must include an AI audio engine with DNN-based dereverberation, AEC, ANR, AGC, and 12-meter sound pickup using built-in microphones.		
Interface Requirements	Video In: 1 x HDMI 2.0 (4K60) Video Out: 1 x HDMI 2.0 (4K60)		
	Audio In: 1 x 3.5mm Audio Out: 1 x 3.5mm		
	1 x USB Type-A 3.0, support USB flash drive, mouse, keyboard, microphone, speaker, remote control and wireless dongle for projection.		
	1 x USB Type-C, support USB flash device, wireless dongle for projection.		
	1 x Controller Device for the Board		
	1 x 10/100/1000M RJ45 port		
	1 x COM port (RJ45)		
	1 x TOUCH port		
	1 x OPS slot for PC module.		
	Wi-Fi 5 and Wi-Fi 6, IEEE802.11a/b/g/n/ac/ax network protocol		
	Wi-Fi 2.4 GHz and 5 GHz dual-band. Wi-Fi hotspot and Wi-Fi client can be enabled at the same time.		

OPS Module Requirements	The device must support independent built-in OS + OPS Windows OS simultaneously using the same Ethernet cable (network bridge) with seamless switching.		
	The performance should be no less than i5-12450H, 8G DDR4 RAM, and 256G SSD.		
	Interface: Video out: 1 x HDMI 1.4, 1 x DP 1.2. Audio in: 1 x 3.5mm. Audio out: 1 x 3.5mm. USB: 3 x USB Type-A 3.0, 3 x USB Type-A 2.0.		
	Windows 11 IOT enterprise operate system.		
Whiteboard Requirements	Whiteboard must support ≤ 16 ms latency and recognize both shapes and handwritten text into standard formatted text on the fly.		
	The built-in whiteboard supports handwriting, drawing, erasing, marking, saving and zooming the whiteboard. The background color can be changed.		
	The whiteboard supports page turning. A maximum of 100 pages is supported		
	Selectable pen type: pencil, pen, and highlighter. Pen color: color palette.		
	Full-screen annotation: You can take a screenshot of any screen to enter the whiteboard annotation		
	The contents of the whiteboard can be saved locally and edited when you open it for the second time, saved in an external USB flash memory, sent to an email or scan the QR code to take away.		

	When writing on the electronic whiteboard, the hand-drawn graphics can be recognized as standard geometric figures, and the hand-written text can be recognized as standard printed text.		
	The whiteboard supports images insertion.		
Projection Requirements	Wired projection through HDMI cable. Projection resolution support up to 1080p60fps and 4K30fps.		
	Wired projection through USB Type-C cable. Projection resolution support up to 1080p60fps and 4K30fps. When PC is projected to the device, the device can control the PC reversely without extra cables.		
	Wireless projection with projection APP on PC or mobile phone by entering the projection code. Projection resolution support up to 1080p60fps and 4K15fps. When PC is projected to the device, the device can control the PC reversely.		
	Wi-Fi Direct projection. Users do not need to configure a Wi-Fi router or change the network of their mobile phones or PCs during screen projection. Projection resolution: up to 1080P60fps and 4K15fps. When PC is projected to the device, the device can control the PC reversely.		
	Must support Multi-Window with adjustable ratios AND App Multiplier allowing two instances of the same app or two views of the same app.		
	Projection must work peer-to-peer without network registration.		
	Must support reverse control from the board to PC in Wi-Fi Direct mode.		

	Support wireless dongle for one-click projection for PC. Projection resolution: up to 1080p60fps or 4K15fps. The device can control the PC reversely.		
	DLNA projection, during projection, user can use mobile phone to perform other tasks.		
	Miracast projection, support up to 4K30 resolution.		
	Allows users to project through menus on the mobile phone without projection APP.		
	Allows users to use the same projection APP to project screens to OPS Windows.		
Video Conference Requirements	Support video conference function without installation conference APP.		
	Video codec: H.264BP, H.264HP and H.265.		
	Voice codec: G.711A, G.711U, G.729A, G.722, G.722.1C, Opus and AAC-LD.		
	Mainstream video resolution: 1080p 30fps, 720p 60fps, 720p 30fps, 4CIF and CIF		
	Presentation resolution up to 1080p 30fps.		
	The device must natively support H.323 and SIP without installing any third-party conferencing apps.		
	Non-chair conference control: muting/unmuting the microphone, viewing sites, and requesting chair control rights		
	Chair conference control: Add/delete sites, call/disconnect sites, mute/unmute the microphone, end/extend a conference, release chair control rights, view sites, and display the sites that are speaking/mute the speaker site.		
	Conference control with Touch		

	TLS and SRTP encryption, AES media stream encryption.		
	Allows users to expand a screen using HDMI cable. Then the remote video, local video and presentation can be displayed on the two screens respectively.		
	Even if the video packet loss rate reaches 30%, the packet loss compensation technology can be used to provide clear and smooth video services.		
	Even if the network packet loss rate reaches 80%, the voice should be clear and paused but resumed.		
Third-party Video Conference Requirements	Supports third-party video conference APP		
	The camera, microphone and speaker can be used for third-party video conference APP.		
	The camera auto-framing and voice tracking features can be used for third-party video conference APP		
Openness Requirements	Android apps can be installed.		
	Support APP store dedicated to large screens device.		
	Must be manageable via a dedicated enterprise endpoint management solution supporting policy delivery, remote O&M, registration, bulletin board, and configuration templates.		
	Supports APIs, third-party applications can perform registration, conference call, conference control, configuration query, and address book query based on the APIs.		
Special Feature Requirements	Multi-window: The desktop can be divided into two windows that display two applications. User can change the size of the two windows by dragging the windows.		

	Supports BYOM, device hardware capabilities such as microphones, cameras, speakers, and touchscreens can be easily used as peripherals for 3rd party conferences on PC, by using Type-C cables, projection app, or wireless dongle		
	Users must be able to use the device's camera, microphone, speakers, and touchscreen as peripherals on Windows/macOS via Type-C, Wi-Fi Direct, or wireless projection.		
	BYOM must support native AI feature passthrough, including auto-framing and voice tracking		
	The device must support NFC OneHop Projection, enabling mobile devices to connect instantly by tapping on the NFC sensor area.		
	Welcome page without OPS module, the welcome page should contain text and pictures. The font of the text can be edited and the pictures can be customized.		
	Users can quickly customize applications on the home page. Common applications can be placed on the home page for quick search. At least six applications can be configured on the home page.		
	Supports dynamic wallpapers and static wallpapers. Wallpapers can be changed and imported.		
	Clone screen content to another screen via HDMI cable		
	The built-in operating system and the OPS module Windows operating system can use the same network cable to access the network.		
	Network bridge function for terminals that connect to the device through Wi-Fi. The function can be disabled.		

	The IP address can be retained after factory settings are restored.		
	Online upgrades based the OTA(over the air) technology.		
Security Requirements	The password of web portal must comply with complexity. It must contain at least three types of the following characters: letters, digits, and special characters. And the password must contain at least eight characters.		
	Support protocols: TCP/IP, RTP, RTCP, DHCP, DNS, SMTP, SNTP, SSH, HTTP, HTTPS, and TR-069		
Certifications	IECEE CB Certification		
	The bidding Product must have ISO certification		
	The screen must use 4K Soft Light (Zero Color Cast) technology with TÜV Rheinland Low-Blue-Light + Flicker-Free certification.		
Compliance Requirements	Model Number of the proposed product		
	Data Sheet of the proposed model		

PRE-QUALIFICATION

Parties interested in delivering the scope of work outlined shall be required to meet the following **Pre-Qualification Requirements**. Failure to comply with any of the requirements below may result in disqualification of the bid.

a) Experience.

Bidders shall demonstrate having successfully supplied IT hardware and/or software solutions to public or private sector organizations within the **last three (3) years**.

Documentary evidence must be submitted to substantiate such experience. Acceptable forms of proof include, but are not limited to:

- Copies of purchase orders or contracts
- Delivery notes or completion certificates
- Official reference letters from client organizations confirming satisfactory delivery, installation, and/or implementation of similar items

The submitted evidence must clearly indicate the nature of the supplied goods or services, the client's name, and the completion period.

b) Mandatory Documents:

Bidders must submit copies of the following valid and applicable documents as part of their pre-qualification submission:

- Company Registration Certificate
- GST Registration Certificate
- SME Classification Certificate
- Bid Security of 0.05% if bid value exceeds 500,000 MVR
- MIRA Tax Clearance Report (Not older than 3 months)
- Quotation
- Audited Financial Statements for the last two (2) financial years
- Any other documents expressly required or referenced elsewhere in this bidding document

c) Manufacture Authorization / Accreditation:

Any firm that is **not the original manufacturer or producer** of the goods proposed for supply shall be required to submit a valid **Manufacturer's Authorization Letter (MAL)**.

The authorization letter must:

- Be issued by the original manufacturer or principal producer of the goods
- Clearly state that the bidder is authorized to supply, install, and provide after-sales service and support for the specified goods

Failure to submit a valid Manufacturer's Authorization Letter, where applicable, shall render the bid non-responsive.

d) Delivery and Installation Duration

The successful bidder shall be required to complete delivery and installation of all items within **seventy-five (75) calendar days** from the date of receipt of the official Purchase Order/contract.

e) OEM Certified TRaining

The Vendor shall provide OEM-certified training for **two (2) personnel** covering the proposed **storage and compute solutions**. The training must be delivered at an **OEM-authorized and certified training institute**. All associated costs, including but not limited to **course fees, training materials, certification exams, travel, accommodation, meals, and any other related expenses**, shall be included in the Vendor's proposal.

f) Compatibility

The Data Centre has an HPE Server, Storage, Fortinet Switches and Firewall. The proposed equipment, hardware exterior, and software must be fully compatible with the existing hardware and software. The proposed solution must also work with current hardware. In any case, if the items do not appear to complement the existing infrastructure, the proposals may be disqualified.

g) Resources

The vendor **MUST** have the following full-time OEM Certified Professional/Engineer under its payroll to provide all professional services. All relevant engineer(s) certificates and supporting documents shall be included with the proposal. Required certificates of the engineer(s):

Implementation and Technical Support Engineer Certificate:

- IT Project Management or IT Service Management
- OEM Certified Engineers for the proposed Servers, Storage and Networking
- HPE Certified Engineer – HPE Server Solution
- HPE Certified Engineer – HPE Accredited Technical Professional Storage Solution
- Veeam Certified Engineer (VMCE)
- Fortinet Certified Fundamentals in Cybersecurity
- Fortinet Certified Associate in Cybersecurity
- Fortinet Certified Professional Network Security

It is mandatory that the supplier attach a professional certificate of the engineer and other related reference documents. The supplier shall submit the following documents:

- a) Certification copies of the relevant training.
- b) Letter from the organization that the engineer is employed at that organization.
- c) ID card OR passport copy of the engineer.
- d) Contact information of the staff and his/her supervisor in that organization.

The bidder must read, understand, and comply with all areas of this RFQ. Any other information passed during the information session or any information passed via email shall be considered a requirement of this RFQx.

AWARDING CRITERIA

Criteria	Points
Price (lowers price / bidders price X 100)	75
Manufacturer's Authorization Letter	10
Experience 5 Marks per letter of completion within past 3 years	15

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