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No. B.V-7-C/2025-26-C(IT-Infra)-QR CELL

Dated, the 30 July'2025

Subject: - REQUEST FOR COMMENTS OF STAKEHOLDERS /OEM/FIRMS ON DRAFT QRs & TDs OF "IT INFRASTRUCTURE EQUIPMENTS" REGARDING.

The Draft QRs/TDs of following "IT Infrastructure Equipments"

- a) Blade Servers and Chassis for Blade Server
- b) HCI Servers (Hyper Convergent Infrastructure)
- c) IP Based CCTV System (Camera and CCTV Storage)
- d) Layer 2 Access Switch 24 Ports (PoE+)
- e) Layer 2 Access Switch 48 Ports
- f) Layer 2 Switch 24 Ports Non PoE
- g) Layer 3 Access Switch 24 Ports
- h) Layer 3 Access Switch 48 Ports
- i) Layer 3 Core Switch 24 Ports
- j) Network Video Management Software
- k) Next Generation Firewall (NGFW) & Universal Threat Management (UTM)
- l) Rack Server
- m) Storage Server
- n) Unified Storage System and Normal Storage
- o) Web Application Firewall (WAF)

are attached as **Appendix 'A'**. The OEMs/Vendors are requested to forward information of the product, which they can offer and also forward correct specifications of their system against each parameter. Only complied or not complied remarks will not be accepted. The firms are also requested to furnish the following details: -

- Whether you are OEM/Vendor?
- If vendor details of OEM.
- Authorization certificate from OEM.

2. The required information/details may please be forwarded at the following addresses by **14 August'2025**.

Communication Directorate, CRPF

East Block-7, Sec-1, R.K. Puram, New Delhi-110066

Email: comncell@crpf.gov.in

3. An early response is requested.

{Ujjwal Kumar Singh, AC (QR)}
For DIG (Equipment)
Communication & IT Branch
Directorate General, CRPF

QRs/TDs of Blade Servers and Chassis for Blade Server

Chassis for Blade Server

Specification	Value	Trial Directive
Form Factor	Rack Mount	Practically Check-up and verification with OEM Tech Brochure
Size of Blade Server Chassis (RU)	10	
Number of Bays available in Chassis (Number)	Should support 8 Full Blades or 16 Half Blades server	
Chassis is complete with Interconnect Modules, Power supplies, Fans & Management Modules	Should have redundant Modules for Power Supply, Fans and Management Modules	
Chassis Includes all the accessories so that it can be mounted on an Industry Standard 42U Rack	In Compliance	
Chassis is fully populated with Power Supplies Redundancy	N+N, N+1 redundancy	
Chassis is fully populated with fans for cooling with adequate redundancy built in for the entire enclosure & its components	In Compliance	
Chassis has required number of redundant Ethernet Switches/Modules to provide at least two numbers of ports of 10 Gb/s connectivity, Server to Server communication should be in 1:1 non-blocking	Support 4 NIC (2X1g, 2X10G) on each Blade	Practically Checkup and verification with OEM Tech Brochure
Chassis has Redundant fibre channel switch/ modules to provide at least 2 numbers of 16 Gb/s fibre channel connectivity to the external SAN Storage, Server to Server communication should be in 1:1 non-blocking	Optional (As per User Requirement)	
Chassis offered with redundant converged	As per User Requirement	

Switches/modules/Interconnect		
Aggregated LAN Bandwidth (In Gbps)	Min 40	Verification with OEM Tech Brochure
Aggregated SAN Bandwidth (In Gbps)	Min 32	
In case the external / Internal switches/modules are offered to provide connectivity to SAN & LAN, the intermediate interconnect modules should provide 1:1 non-blocking architecture for server to server communication	As per User Requirement	
Chassis / Blade Architecture has redundant Management Module to provide single point of control for intelligent management of the entire console Access for all the Server Blades from the Management Module	Redundant Module for Management	
Report Thermal & Power Information on per Server & per Enclosure basis	Yes	
System remote management should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should have support for multifactor authentication	Yes	Verification with OEM Tech Brochure and Console Software
Server should support agentless management using remote management port	Yes	Verification with OEM Tech Brochure and Console Software
The server should support monitoring and recording changes in the server hardware and system configuration	Yes	
Remote console sharing upto 6 users simultaneously during pre-OS and OS runtime operation, Console replay - Console Replay captures and stores for	Yes	

replay the console video during a server's last major fault or boot sequence		Verification with OEM Tech Brochure and Console Software
Should provide remote firmware update functionality Should provide support for Java free graphical remote console	Yes	
Group Power Control Group Power Capping	Yes	
System should support embedded remote support to transmit hardware events directly to OEM or an authorized partner for automated phone home support	Yes	
Software should support dashboard view to quickly scan the managed resources to assess the overall health of the data center It should provide an at-a-glance visual health summary of the resources user is authorized to view	Yes	
The Systems Management software should provide Role-based security	Yes	
Management software should support integration with popular virtualization platform management software like vCenter, SCVMM and RedHat RHEV	Yes	
Should help to proactively identify out-of-date BIOS, drivers, and Server Management agents and enable the remote update of system software/firmware components	Yes	
The Server Management Software should be of the same brand as of the server supplier	Yes	
Maximum Rated Power for Fully Populated Chassis	3000	Verification with OEM Tech Brochure & Certification
BIS Registration under CRS of Meity	Yes	

BIS Registration number and validity	If available	Verification with OEM Tech Brochure & Certification
On Site OEM Warranty (Years)	1/3/5 Years or As per User Requirement	Verification with OEM Tech Brochure & Certification

Blade Server

Specification

Specification	Value	Trial Directive
Type of Server	Blade	Verification with OEM Tech Brochure and Console Software
Maximum Number of sockets available on chipset	2	
Maximum Number of sockets populated with processor	2	
Processor Make	Intel/AMD or equivalent	
No. of Cores per Processor	Min 16	
Processor Configuration	Latest Intel Xeon (3.10GHz/16-core/22MB/125W) or better or Equivalent AMD	
Chipset compatible with CPU	INTEL / equivalent AMD or better	
Number of PCI Express Slots (Gen 3.0 or higher)	Min 2	
RAM Type	DDR4	Verification with OEM Tech Brochure and Console Software
RAM SIZE (GB)	Min 128	
RAM upgradable upto (GB)	2000 GB	
DIMM Slots (Minimum)	16	
Type of Hard Disk	SAS	
Hard disk drive Capacity (GB)	Min 1200	
Hard disk drive RPM (hot plug or better)	10K	

(RPM)		
RAID Type	1 / 5 / 6 (As per User Requirement)	Verification with OEM Tech Brochure and Console Software
RAID Controller Caches (GB)	1	
Connectivity Ports	FC + Ethernet	
Dual Port Network Card Bandwidth (Gbps)	Min 10 Gbps	
Infiniband Bandwidth (Gbps)	As per User Requirement	
FC HBA Dual port card	Available	
FC HBA Dual port card Speed (Gbps)	Min 16 Gbps	
OS Certifications, Compliance ; support by Windows, Red Hat or Novell.	Yes	Verification with OEM Tech Brochure and Certification
BIS Registration under Compulsory Registration Scheme of Meity	Yes	
BIS Registration Number and its Validity	As per User Requirement	
Declare SPEC int_rate_base 2006 specfp_rate_2006 for 1,2,4,8 processor as applicable	1480	
RoHS Compliance	Yes	
Power Supply	230 +/- 10%, 50 Hz	
Operating Temperature Range (Degree C)	0°C to 45°C (± 5) As per user Requirement	
Operating Humidity(RH) (%)	90% or Better	
On Site OEM Warranty (Year)	1 / 3 / 5 Years or (As per User Requirement)	

QRs/TDs Of HCI Servers (Hyper Convergent Infrastructure)

Specifications

Specification	Values	Trial Directive
Type of HCI offered	Generic node HCI (consisting both Compute and Storage)	Verification with OEM Tech Brochure and Console Software
Total usable Cores available (after installation of HCI software resources required for solution) in the offered solution	Min 44	
Total usable Storage in TB available without using De-duplication, Compression (after installation of HCI software resources required for solution) in the offered solution	Min 8	
Total usable RAM in GB available (after installation of HCI software resources required for solution) in the offered solution	Min 768 GB	
Types of data copies across Cluster available in the offered solution	2	
Number of Nodes offered in HCI Cluster	Min 2	
Number of Sockets offered per Node	2	
Number of Cores per Sockets	Min 22	
Number of populated Processor per Node	2	
Type of Processor offered in the system	Intel Skylake / Xeon series or better or Equivalent AMD (As per user requirement)	
Indicate Processor Model number with Make	Intel Chipset or Equivalent AMD chipset (As per user requirement)	
Type of storage media offered with the solution	SSD Drives	

Total Storage capacity (RAW) offered per node in TB	Min 9.6	
Storage capacity offered per node with SAS drives in TB	As Per User Requirement	
Storage Scalability per node with SAS drives in TB	As Per User Requirement	
Storage capacity offered per node with SSD drives in TB	Min 9.6	
Storage Scalability per node with SSD drives in TB	Min 9.6	
Storage capacity offered per node with NL SAS drives in TB	As Per User Requirement	
Storage Scalability per node with NL SAS drives in TB	As Per User Requirement	
Storage capacity offered per node with NVMe in TB	As Per User Requirement	
Storage Scalability per node with NVMe in TB	As Per User Requirement	
RAM Capacity (Raw) offered per node in GB	Min 768	
RAM scalability per node in GB	Min 1536	
No of cache drives per node	As Per User Requirement	
Cache offered per node in GB	As Per User Requirement	
Cache scalability per node in GB	As Per User Requirement	
Number of Network ports per node	Min 4	Practically Checkup and verification with OEM Tech Brochure
Throughput Per Network port	Min 10 Gbps	Verification with OEM Tech Brochure and Console Software
Type of Network port	SFP +	
Uplink Connectivity for HCI Solution	SFP+	

HCI Interconnect Switches

Specification	Values	Trial Directive
Number of L2 Switches to be offered for Interconnection all the Network Ports in the Cluster	2	Verification with OEM Tech Brochure and Console Software
Indicate Switch Model number with Make	L2 Switch L2	
Throughput Available per port	10 Gbps	
Number of Available Ports for 10 Gbps throughput per Switch	Min 16	
Number of Enabled Ports for 10 Gbps throughput per Switch	Min 8	
Number of Available Ports for 25 Gbps throughput per Switch	As Per User Requirement	
Number of Enabled Ports for 25 Gbps throughput per Switch	As Per User Requirement	
Number of Available Ports for 40 Gbps throughput per Switch	As Per User Requirement	
Number of Enabled Ports for 40 Gbps throughput per Switch	As Per User Requirement	
Number of Available Ports for 100 Gbps throughput per Switch	As Per User Requirement	
Number of Enabled Ports for 100 Gbps throughput per Switch	As Per User Requirement	

Performance

IOPS delivered at 70:30 Read: Write Ratio on 8K block size with latency of 5ms maximum for each node	5000	Verification with OEM Tech Brochure
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Scalability: Any additional node/ storage/ RAM added to the cluster to augment compute/storage/memory capacities, the same performance per node on upgraded node / Storage / RAM	Yes	
ADDITIONAL PERFORMANCE PARAMETER	As Per User Requirement	

HCI Features

Specification	Values	Trial Directive
HCI Features 1	<ol style="list-style-type: none"> 1. HCI have all the features of offered industry standard hypervisor 2. HCI have independently scale storage and compute as and when needed without any downtime. 3. HCI have mechanism for Metadata protection for all offered nodes within the cluster so as to provide high availability and no single point of failure. 5. HCI supports thin provisioning of both storage entities and virtual machine hard disks 6. HCI provides automatic failover in case of hardware failure. 7 VLAN for networking and integrated VM IP"s Management capabilities 8. HCI has security compliance methodology to ensure highly secure environment. 9. HCI has data replication with WAN optimization. 	Verification with OEM Tech Brochure
HCI Features 2	<ol style="list-style-type: none"> 1. HCI provides management through a remote/On premise GUI console. Also provides storage, compute & hypervisor metrics on as per VM /Node level as well as health and monitoring of entire platform. 2. Platform support LDAP Active Directory integration. The clients installed on any major Operating System. 3. Platform supports monitoring via SNMPv3, email alerting via SMTP. 	Verification with OEM Tech Brochure and console software

	<p>4. Capable of creating instant snapshots of virtual machines and maintaining multiple copies of snapshots & clones</p> <p>5. Capability to support native VM/HCI level replication for installed Hypervisor</p> <p>6. Storage policy on individual VM will provide enhanced performance and flexibility to end user for better storage management.</p>	
HCI Features 3	<p>1. Redundant components with no single point of failure in the system</p> <p>2. Single management tool supports multiple clusters</p> <p>3. Management tool is built into the solution, scales with the cluster</p> <p>4. HCI having built-in -security for data</p> <p>5. HCI capable to sustain single power supply failure.</p>	Verification with OEM Tech Brochure
HCI Features 4	<p>1. VM/Node-centric policy-based management.</p> <p>2. Fault tolerance and proactive high availability.</p> <p>3. Supports DRS, Distributed switch</p> <p>4. Stretch cluster support</p> <p>5. Management platform provide out of the box automation and orchestration for appliance based operational tasks.</p> <p>6. Automated disaster recovery.</p> <p>7. Support for VM or APP consistent snapshot/backup.</p> <p>8. Application Lifecycle Management.</p>	Verification with OEM Tech Brochure
HCI Features 5	<p>1. Data at Rest Encryption.</p> <p>2. Management tool is built into the solution, scales with the cluster, and does not require separate hardware infrastructure.</p> <p>3. Integrated/Software based Remote Data recovery/Replication solution.</p> <p>4. Data Integrity Checks.</p> <p>5. Management tool provides visibility of network infrastructure.</p> <p>6. Integrated management for hyper converged infrastructure and virtual</p>	Verification with OEM Tech Brochure and console software

	environments with Storage & Compute/Storage/Network/Compute. 7. Intelligent data distribution across all nodes and uniform capacity utilization across all nodes at all time.	
Additional features of HCI	Backup functionality to be enabled from day-1. Any additional licenses/ Appliance required to be quoted.	Verification with OEM Tech Brochure
Encryption at	VM level.	Verification with OEM Tech Brochure
Supports	Yes	Verification with OEM Tech Brochure
Supported industry protocols by HCI	Yes	Verification with OEM Tech Brochure
HCI capability to support File/Block Services and file/block replication across clusters	As Per User Requirement	Verification with OEM Tech Brochure
Inline data Compression & Deduplication function licenses	Unlimited	Verification with OEM Tech Brochure

HCI Generic Parameters

Specification	Values	Trial Directive
Number of nodes HCI supports in same cluster/deployment, such that any node out of the offered be able to use the storage of all other nodes	Min 16	Verification with OEM Tech Brochure
"Hypervisor to be integrated with SDS"	outside kernel	Verification with OEM Tech Brochure

HCI support	vSphere or Hyper-V or AHV or Hyperflex or HPE Virtualization	Verification with OEM Tech Brochure
"Bare-metal / Non Bare metal type of virtualization hypervisor"	Bare Metal	Verification with OEM Tech Brochure
"Integration with Third Party FC Storage"	As Per User Requirement	Verification with OEM Tech Brochure
"The length of cable connecting the Nodes to the Switch (meters)"	Min 5	Verification with OEM Tech Brochure
Advance features of HCI	As Per User Requirement	Verification with OEM Tech Brochure

Generic Parameters

Specification	Value	Trial Directive
The offered product has support from OEM for	1. Updation for Patches and Bug fixes for software within support period. 2. Upgradation of version software within support period. 3. Service and support from OEM within support period.	Verification with OEM Tech Brochure
Number of Years upto which support is available from OEM for Updation (Patches and Bug fixes) within support period	Min 1/3/5 Years (As per User Requirement)	Verification with OEM Tech Brochure
Number of Years upto which support is available from OEM for Upgradation of version within support period	Min 1/3/5 Years (As per User Requirement)	Verification with OEM Tech Brochure
"Number of years of service and support from OEM"	Min 1/3/5 Years (As per User Requirement)	Verification with OEM Tech Brochure
Installation, & Commissioning	Yes	Verification with OEM Tech Brochure

Number of days Training Provided at Site by OEM	Min 5 Days	Verification with OEM Tech Brochure
Indicate certification available for the offered product	Attached	Verification with OEM Tech Brochure and Certification
Hyper link to Data sheet	Attached	Verification with OEM Tech Brochure

QRs/TDs of IP Based CCTV System (Camera and CCTV Storage)

Specification – CCTV Camera

Specification	Value	Trial Directive
Camera Type		
Type of Camera Housing	DOME /PTZ / Box / Bullet Camera (As per User Department)	Practically Checkup and verification with OEM Tech Brochure
IP Camera	Yes	Verification with OEM Tech Brochure and console software
PTZ Camera	Yes	Practically Checkup and verification with OEM Tech Brochure
Image Sensor		
Image Sensor Type	CMOS	Verification with OEM Tech Brochure
Image Sensor Size	Min 0.34 inch	Verification with OEM Tech Brochure
Camera Image Sensing capacity (Picture Mode)	Min 2MP	Verification with OEM Tech Brochure
Resolution	Full HD (1920 x 1080 Pixel) @ 50/60 FPS	Verification with OEM Tech Brochure
Day/Night Capable	Yes	Verification with OEM Tech Brochure
IR illumination Range(mtr)	Min 50	Verification with OEM Tech Brochure
Optics		
Lens Type	Motorized Varifocal	Verification with OEM Tech Brochure
Focal Length(mm)	Min 4.3-129 mm. P-Iris	Verification with OEM Tech Brochure
Iris Control	Yes	Verification with OEM Tech Brochure
Focus Mode	Auto, Zooming, One Push, Manual	Verification with OEM Tech Brochure
Video		

Frame Rate (fps)	25	Verification with OEM Tech Brochure
Video Compression	H.264, H.265, H.265, MJPEG, MPEG4	Verification with OEM Tech Brochure
Video Streaming	Dual compressed stream	Verification with OEM Tech Brochure
PAN / Tilt / Zoom		
Panning Range	0-360	Verification with OEM Tech Brochure
Pan Speed (deg/sec)	Min 320	
Tilt Range below horizontal (deg)	Min 0-90	
Tilt Range above horizontal (deg)	Min 0-5	
Tilt Speed (deg/sec)	Min 120	
Optical Zoom	Min 30X	
Digital Zoom	Min 16X	
Audio		
Audio Support	Yes	Verification with OEM Tech Brochure
Audio Compression	G.726, G.722.1, G.711	
Audio Streaming	Two-Way	
Number of Audio Input Channel	1	
Number of Audio Output Channel	1	
External Microphone Support	As per User Requirement	
Alarm		
Alarm Support	Yes	Verification with OEM Tech Brochure
Number of Alarm Digital Input	2	
Number of Alarm Relay Output	1	

Pre/Post Alarm Buffer	Yes	
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Security		
Multi-Level User ID/Password	Yes	Verification with OEM Tech Brochure
IP Address Filtering	Yes	
Encrypted Data Transmission	HTTPS (SSL/TSL)	
Performance		
Minimum Illumination for Capturing Color Image	0.5 lux	Verification with OEM Tech Brochure
Electronic Shutter Speed(sec)	1/50 to 1/10000	
WDR (Wide Dynamic Range)	120 dB	
SNR (Signal to Noise Ratio)	50-60	
Auto Exposure	Electronic Level Control	
Features		
White Balance (Indoor/Outdoor/Manual Selectable)	Yes	Verification with OEM Tech Brochure
Auto Gain Control (On/Off selectable)	Yes	
Back Light Compensation	Yes	
Remote Administration (Remote configuration and status using web based tool)	Yes	
Remote System Update Over Network	Yes	
PC Client (PC application client with a channel recording feature support)	Yes	
Web Client (Viewer through HTTP system configuration)	Yes	
On Screen Display in English	Yes	
ONVIF Support	Yes	
Presets	100	

Group Touring	9	
Privacy Zones	24	
Network and Interface		
Supported Protocols	IPv4/v6, TCP/IP, UDP, RTP, RTSP, HTTP, HTTPS, ICMP, FTP, SMTP, DHCP, PPPoE, UPnP, IGMP, SNMP, QoS, ONVIF	Verification with OEM Tech Brochure
IP Support	Static, Dynamic	
Signal Processing	Digital Signal Process	
IPv6 ready	Yes	
Wireless	As per User Requirement	
Simultaneous Connections	20	
Storage		
On Board SD Card Support	Yes	Verification with OEM Tech Brochure and console software
SD Card Memory(GB)	128	Verification with OEM Tech Brochure and console software
Housing		
Installation Type	Outdoor / Indoor	Verification with OEM Tech Brochure
Material of the Housing construction	Plastic / Metal	Practically Checkup and verification with OEM Tech Brochure
Protection	IP 66	Verification with OEM Tech Brochure
Vandal Resistant Housing	Yes	Verification with OEM Tech Brochure
If Yes, IK rating	IK 10	Verification with OEM Tech Brochure
Mounting bracket	Pole Mounted	Verification with OEM Tech Brochure

Power Supply		
Power Input	24 V DC	Verification with OEM Tech Brochure
Power Consumption	26 Watt	
Suitable Adapter Shall be Supplied to Make the Equipment Work on 230 V (+/- 10 %), 50 Hz	Yes	
Operating Condition		
Operating Temperature Range	0°C to +50°C	Verification with OEM Tech Brochure
Relative Humidity Non Condensing (%)	95% or Better	Verification with OEM Tech Brochure
Warranty / Services		
Warranty	1 year or As per User Requirement	Verification with OEM Tech Brochure
Time for Replacement of Defective Product During Warranty Period	72 hour	Verification with OEM Tech Brochure
Supply of Compatible drivers and software included	Yes	Verification with OEM Tech Brochure
Environmental / Certification		
Availability of facility & infrastructure for verification of all parameters, features, and capability with Seller	Yes	Verification with OEM Tech Brochure and Certification
Availability of facility to test signal to noise ratio of camera at 0-01 lux	Yes	
Conformity to Dry Heat test at 55 degree C for 16 hours as per IS :9000 latest	Yes	
Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
Conformity to Cold test at -10 / -20 degree C for 4 hours as per IS: 9000 latest, as applicable	Yes	
BIS Registration for safety general	Yes	

requirements as per IS 13252 (Part 1):latest		
Availability of Type Test Report from Central Govt /NABL/ILAC accredited lab to prove conformity to specification	Yes or As per User Requirement	

Specification – CCTV Video Recorder

Specification	Value	Trial Directive
Type of Recording Device	NVR	Verification with OEM Tech Brochure
IP Camera Support	Yes	Verification with OEM Tech Brochure
PTZ Camera control Support	Yes	Verification with OEM Tech Brochure
Housing construction	Aluminum	Practically Checkup and verification with OEM Tech Brochure
Mounting	Rack Mounted	Practically Checkup and verification with OEM Tech Brochure
Rack Mount configuration	2U / 4U	Practically Checkup and verification with OEM Tech Brochure
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	Verification with OEM Tech Brochure
Video		
Number of Video Input Channels	Min 32	Practically Checkup and verification with OEM Tech Brochure
Number of Non-IP based Video input Channels for HVR	As per User Requirement	Verification with OEM Tech Brochure
Number of IP based Video input Channels for HVR	64	Verification with OEM Tech Brochure
Number of Video Output Channels	2	Practically Checkup and verification with OEM Tech Brochure

Recording Resolution	HD/Full HD/ 4K (3840 × 2160)	Verification with OEM Tech Brochure
Supported Compression Technique	H.264,H.265,MPEG-4,MJPEG,H.265+,H.264+	Verification with OEM Tech Brochure
Maximum Number of cameras to be viewed on a single display	64	Verification with OEM Tech Brochure
Total number of simultaneous local views	4	Verification with OEM Tech Brochure
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	4	Verification with OEM Tech Brochure
Recording Speed for all channels (fps)	25	Verification with OEM Tech Brochure
Minimum Through put (Mbps)	512	Verification with OEM Tech Brochure
Display Image Rate	Real time per channel	Verification with OEM Tech Brochure
Audio		
Audio Support	Yes	Verification with OEM Tech Brochure
Audio Input	1	Verification with OEM Tech Brochure
Audio Output	1	Verification with OEM Tech Brochure
Audio Compression	G.726,G.711,G.722.1,A-Law,U-Law,MP2L2,AAC	Verification with OEM Tech Brochure
Minimum Number of Simultaneous Channels for Two-way Audio Support	1	Verification with OEM Tech Brochure
Security		
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL)	Verification with OEM Tech Brochure
Multi-Level User ID / Password	Yes	Verification with OEM Tech Brochure
Alarm		

Alarm Support	Yes	Verification with OEM Tech Brochure
Alarm Input	16	
Alarm Output	4	
Pre / Post Alarm Buffer	Yes	
Pre-Alarm Recording	30 second	
Post-Alarm Recording	60 second	
Video Content Analytics (VCA)	Motion Detection	
Network protocols / Interface / Operating system		
Operating System Supported	Windows/ MAC/ Linux	Verification with OEM Tech Brochure
Supported Network Protocols	UDP, SNMP, IGMP, DHCP, RTP, RSTP, HTTP, HTTPS, DNS, DDNS, RTSP, RTCP, NTP, UPnP, SMTP, FTP, ICMP, QoS, TCP/IP (for DVR)	Verification with OEM Tech Brochure
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485	Verification with OEM Tech Brochure
Physical Layer of Ethernet	10/100/1000 Base TX	Verification with OEM Tech Brochure
Number of Ethernet Ports	2	Practically Checkup and verification with OEM Tech Brochure
Number of HDMI Ports	2	
Number of VGA Ports	1	
Number of CVBS Ports	As per User Requirement	
Number of USB Ports	4	
Number of Serial Ports	2	
Number of PoE Ports	As per User Requirement	

Supported SIM Slot	As per User Requirement	
Number of SIM Slots	As per User Requirement	
Features		
Video Loop Support	Yes	Verification with OEM Tech Brochure
Video Recorder supports recording on NAS Directly	Yes	
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes	
System Update (Remote System Update Over Network Using Web Client)	Yes	
PC Client (PC Application Client With A Channel Recording Feature Support)	Yes	
Web Client (Viewer through HTTP system configuration)	Yes	
On Screen Display (In English)	Yes	
Drivers / Compatible Software (Wherever Applicable) Part Of Supply	Yes	
Recording schedule support	Yes	
Bandwidth Control	Yes	
Camera Notification	Spot (POP up Window) on Event, SMS, E-mail	
Network transmission Speed	Real time display @ D1 resolution	
Other features, if any	640Mbps B/W, RAID 10	
Playback / View / Management		

Search	Date, Time, Event, Log, Motion, Bookmarks	Verification with OEM Tech Brochure and Software Console
Bookmarks	Forward, Backward, adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat	
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors	
Total Management	Group add, Delete, Group management	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Storage		
Internal Hard Drive Interface	SATA	Verification with OEM Tech Brochure and Software Console
Number of Hard Disks (inclusive in the scope of supply)	1	
Storage Capacity of each Hard Disk (TB)	Min 8	
Total Storage Capacity(TB)	Min 64	
Internal Storage Expandable upto (TB)	256	
Number of Hard Disks supported	8	
Redundancy Option	RAID 10	
Power Supply		
Power Input	230 ± 10%, 50Hz	Verification with OEM Tech Brochure
Power Consumption	Min 16.7 Watt	
Suitable Adapter to be Supplied to Make	Yes	

the Equipment Work on 230 V ± 10 %, 50 Hz		
Redundant Power Supply	As per User Requirement	
Operating Conditions		
Operating Temperature	0°C to 45°C (± 5) (As per User Requirement)	Verification with OEM Tech Brochure
Relative Humidity Non-Condensing at 40 deg C	95% or Better	

Warranty / Services		
Warranty	1 / 3 / 5 years or As per User Requirement	Verification with OEM Tech Brochure
Time for Replacement of Defective Product During Warranty Period	72 hour	
Environmental / Certification		
Availability of facility and infrastructure for verification of all the parameters, features and capability with the Seller	Yes	Verification with OEM Tech Brochure and Certification
Conformity to Dry Heat test at Specified Maximum Operating Temperature for 16 hours as per IS :9000 latest	Yes	
Conformity to Damp heat at 40 degree C - 95% RH (cyclic test): two cycles of 16+8 hours as per IS: 9000 latest	Yes	
Conformity to Cold test at Specified Minimum Operating Temperature for 4 hours as per IS: 9000 latest	Yes	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
Availability of Test Report from Central Govt/NABL/ILAC accredited lab to prove conformity to specification	Yes	
Certification	FCC,CE,UL	
List of Items		
List of Items and Quantity of each item included in the offer	HDD included	Verification with OEM Tech Brochure

QRs/TDs of Layer 2 Access Switch 24 Ports (PoE+)

Specifications:

Specification Type	Value	Trial Directive
Type of Switch	Managed / Web Managed	Verification with OEM Tech Brochure and Console Software
Technology	PoE+	Practically Checkup and verification with OEM Tech Brochure
Number of 1G Copper Ports	24	
Number of 10G Copper Ports	As per User requirement	
No. of 1 G SFP Port (Uplink)	As per User requirement	
No. of 10 G SFP+ Port (Uplink)	2	
Multi-Gigabit Support	As per User requirement	
Redundant Power supply (from day one)	As per User requirement	
Console Port	Available	Verification with OEM Tech Brochure and Console Software
Switching Capacity -Non Blocking (Gbps)	Min 128 or more	
Throughput (MPPS)	Min 95 or more	
Operating System	Available	
Dedicated Stacking Port/Slot (from day one)	As per User requirement	
Stacking Bandwidth (Gbps)	As per User requirement	
Basic Layer-3 Protocol	static, RIPv1/v2, RIPv6, OSPF, Routed Access, VRRP v2/v3, ECMP, IGMP v1/v2/v3, MLD v1/v2	
Security Feature	SSH, SSL, IEEE 802.1X Web-based authentication, STP BPDU Guard and Root	Verification with OEM Tech Brochure

	Guard DHCP Snooping IP Source Guard Dynamic ARP Inspection IP/MAC/port binding, RADIUS/TACACS+ Port security Storm control ACLs.	
Management Protocol	Web user interface- (HTTP/HTTPS) SNMP versions 1, 2c, and 3 with support for traps, and SNMP v3), RMON	Verification with OEM Tech Brochure
QoS	8 hardware queues Strict priority and Weighted Round-Robin (WRR) Port based; 802.1p VLAN priority based IPv4/ v6 IP precedence/ ToS/ DSCP based DiffServ; classification and remark ACLs	Verification with OEM Tech Brochure
Operating Temperature Range (Degree C)	0° to 50°C (± 5) As per User requirement	Verification with OEM Tech Brochure
Operating Humidity (RH)(%)	90% or better	Verification with OEM Tech Brochure
IPv6 Ready from day one and dully certified	Yes	Verification with OEM Tech Brochure
PoE Power Budget (Watt)	Min 195	Verification with OEM Tech Brochure
On Site OEM Warranty	1 / 3 / 5 Year (As per User Requirement)	Verification with OEM Tech Brochure

QRs/TDs of Layer 2 Access Switch 48 Ports

Specifications:

Specification	Value	Trial Directive
Type of Switch	Managed	Verification with OEM Tech Brochure and Console Software
Technology	Non PoE	Practically Checkup and verification with OEM Tech Brochure
Number of 1G Copper Ports	48	
Number of 10G Copper Ports	As per User requirement	
No. of 1 G SFP Port (Uplink)	As per User requirement	
No. of 10 G SFP+ Port (Uplink)	2	
Multi-Gigabit Support	As per User requirement	
Redundant Power supply (from day one)	Yes	
Console Port	Available	Verification with OEM Tech Brochure and Console Software
Switching Capacity -Non-Blocking (Gbps)	Min 176	
Throughput (MPPS)	Min 130	
Operating System	Available	
Dedicated Stacking Port/Slot (from day one)	As per User requirement	
Stacking Bandwidth (Gbps)	As per User requirement	
Basic Layer-3 Protocol	Wire speed routing of IPv4 packet Up to 8K static routes and up to 256 IP interfaces Wire speed routing of IPv6 packets, DHCP Relay	
Security Feature	SSH, SSL, IEEE 802.1X, Web-based authentication, STP BPDU Guard and Root	Verification with OEM Tech Brochure

	Guard, DHCP Snooping, IP Source Guard, Dynamic ARP Inspection, IP/MAC/port binding, RADIUS/TACACS+, Port security, Storm control, ACLs.	
Management Protocol	Web user interface- (HTTP/HTTPS), SNMP versions 1, 2c, and 3 with support for traps, and SNMP v3 User-based Security Model (USM), RMON	Verification with OEM Tech Brochure
QoS	8 hardware queues, Strict priority and Weighted Round-Robin (WRR), Port based; 802.1p VLAN priority based; IPv4/v6 IP precedence/ToS/DSCP based; DiffServ; classification and remarking ACLs	Verification with OEM Tech Brochure
Operating Temperature Range (Degree C)	0°C to 50°C (± 5) (As per User Requirement)	Verification with OEM Tech Brochure
Operating Humidity (RH)(%)	90% or Better	Verification with OEM Tech Brochure
IPv6 Ready from day one and dully certified	Yes	Verification with OEM Tech Brochure
PoE Power Budget (Watt)	As per user requirement	Verification with OEM Tech Brochure
on Site OEM Warranty	1 / 3 / 5 Years (As per User Requirement)	Verification with OEM Tech Brochure

QRs/TDs of Layer 2 Switch 24 Ports Non PoE

Specification

Specifications	Values	Trial Directive
Type of Switch	Managed	Verification with OEM Tech Brochure and Console Software
Technology	Non PoE	Practically Checkup and verification with OEM Tech Brochure
Number of 1G Copper Ports	24	
Number of 10G Copper Ports	As per User requirement	
No. of 1 G SFP Port (Uplink)	As per User requirement	
No. of 10 G SFP+ Port (Uplink)	2	
Multi-Gigabit Support	As per User requirement	
Redundant Power supply (from day one)	Supported	
Console Port	Available	Verification with OEM Tech Brochure and Console Software
Switching Capacity -Non Blocking (Gbps)	Min 128	Verification with OEM Tech Brochure and Console Software
Throughput (MPPS)	Min 95	
Operating System	Available	
Dedicated Stacking Port/Slot (from day one)	As per User requirement	
Stacking Bandwidth (Gbps)	Min 80	
Basic Layer-3 Protocol	static, RIPv1/v2, RIPng, OSPF, Routed Access, VRRP v2/v3, ECMP, IGMP v1/v2/v3, MLD v1/v2	
Security Feature	uRPF, Port Security, 16K MAC, SSL, SSH, broadcast, unicast and multicast storm control, ARP, 802.1x, ARP	Verification with OEM Tech Brochure

	Spoofing Prevention, IPv6 DHCPv6 Guard, ARP Spoofing Prevention	
Management Protocol	CLI, SNMP v1/v2/v3, TFTP, Syslog, SMON, DHCP Server, RMONv1/ v2, WebUI, LLDP/LLDP-MED	Verification with OEM Tech Brochure
QoS	QoS: WRR, 802.1Qbb Priority-based Flow, 802.1p CoS DSCP, SRR scheduling	Verification with OEM Tech Brochure
Operating Temperature Range (Degree C)	0°C to +50°C (± 5) (As per User Requirement)	Verification with OEM Tech Brochure
Operating Humidity (RH)(%)	90% or Better	Verification with OEM Tech Brochure
IPv6 Ready from day one and dully certified	Yes	Verification with OEM Tech Brochure
On Site OEM Warranty	1/ 3 / 5 Years (As per User requirement)	Verification with OEM Tech Brochure

QRs/TDs of Layer 3 Access Switch 24 Ports

Specification	Values	Trial Directive
Maximum Number of Access /Downlink Ports	24	Verification with OEM Tech Brochure and Console Software
Type of Switch	Non PoE	Practically Check-up and verification with OEM Tech Brochure
Number of 10/100/1000 Base-T Ports	24	
Number of Multi-Gigabit Ports	As per User Requirement	
Number of 1 G Base T Ports (Uplink)	As per User Requirement	
Number of 1 G SFP / Base X Port (Uplink)	As per User Requirement	
Number of 10 G Base T Port (Uplink)	As per User Requirement	
Number of 10 G SFP+ Port (Uplink)	2	
Number of 40 G QSFP+ Port (Uplink)	As per User Requirement	
Number of 100 G QSFP Port (Uplink)	As per User Requirement	
Management Port (RJ 45/RS 232/USB)	Yes	
RAM (MB)	Min 4096	Verification with OEM Tech Brochure and Console Software
Flash Memory (MB)	Min 2048	Verification with OEM Tech Brochure and Console Software
9K MTU Supported (Minimum)	Yes	
Console Port	Yes	Verification with OEM Tech Brochure and Console Software
Redundant Power supply	Yes	Verification with OEM Tech

		Brochure and Console Software
Redundant Power Supply Type	Internal	Verification with OEM Tech Brochure and Console Software
Redundant Power Supply (Hot Swappable)	Yes	Verification with OEM Tech Brochure and Console Software
Redundant Fan	Yes	Verification with OEM Tech Brochure and Console Software
Redundant Fan (Hot Swappable)	Yes	Verification with OEM Tech Brochure and Console Software
Number of Open slot for additional Interface Card	1	Verification with OEM Tech Brochure and Console Software
Operating System	Yes	Verification with OEM Tech Brochure and Console Software
Dedicated Stacking	Yes	Verification with OEM Tech Brochure and Console Software
Stacking Bandwidth (Gbps)	Min 320	Verification with OEM Tech Brochure and Console Software
Switching Capacity / Forwarding Bandwidth (Non-Blocking / Line Rate /Wired Speed) 2x (Numbers of access ports + Number of Uplink Ports) (Gbps)	Min 128	Verification with OEM Tech Brochure and Console Software
Throughput / Forwarding Performance (MPPS)	Min 128	Verification with OEM Tech Brochure and Console Software
Layer 2 Protocols	802.1Q VLAN,LAG	Verification with OEM Tech Brochure and Console Software
Number of VLAN Supported	Min 512	Verification with OEM Tech Brochure and Console Software
Number of VLAN IDs Supported	Min 4000	Verification with OEM Tech Brochure and Console Software
Number of IPV4 Routes	Min 20000	Verification with OEM Tech

		Brochure and Console Software
Number of IPV6 Routes	Min 5000	Verification with OEM Tech Brochure and Console Software
Number of Mac Address Supported (k)	Min 32 K	Verification with OEM Tech Brochure and Console Software
Basic Layer-3 Protocol from day 1	Static Routing, RIPv1, RIPv2, BGP, OSPFv2, OSPFv3, RIPvng	Verification with OEM Tech Brochure and Console Software
Advance Layer-3 Protocol from day 1	OSPFv2, OSPFv3, PBR, BGP, BGP4, IS-IS, PIM-SM, PIM-SSM	Verification with OEM Tech Brochure and Console Software
Premium Layer-3 Protocol from day 1	BGP, IS-IS, PIM-SM, PIM-SSM, VRF Lite	Verification with OEM Tech Brochure and Console Software
Security Feature	RA Guard, DHCP Snooping, Dynamic ARP Inspection, ACL, 802.1x, RADIUS/ TACACS, Port Security, BPDU Guard, VRF Lite, IGMP snooping	Verification with OEM Tech Brochure and Console Software
Management Protocol	GUI, CLI, Telnet, TFTP, SNMPv1, SNMPv2/ V2C, SNMPv3, NTP, Openflow 1.3, RMON, SSHv2	Verification with OEM Tech Brochure and Console Software
QoS	802.1p, SP, Queues per port, WRED/ WTD, Shaping, Policing / Rate Limiting	Verification with OEM Tech Brochure and Console Software
PoE Power Budget (Watt)	As per User Requirement	Verification with OEM Tech Brochure and Console Software
Dimension / Form Factor (RU)	1	Verification with OEM Tech Brochure and Console Software
Certification	NDPP /EAL2 or equivalent	Verification with OEM Tech Brochure and Certification
MTBF (Year)	7	Verification with OEM Tech Brochure
Operating Temperature (Degree C)	0°C to 50°C (± 5)	Verification with OEM Tech

	(As per User Requirement)	Brochure and Certification
Minimum Operating Humidity (%RH)	90% or Better	Verification with OEM Tech Brochure and Certification
IPv6 Ready from day 1	Yes	Verification with OEM Tech Brochure and Certification
On Site OEM Warranty (Year)	1 /3 /5 Years (As per User Requirement)	Verification with OEM Tech Brochure and Certification

QRs/TDs of Layer 3 Access Switch 48 Ports

Specification	Values	Trial Directive
Maximum Number of Access /Downlink Ports	48	Practically Checkup and verification with OEM Tech Brochure
Type of Switch	Non PoE	Practically Checkup and verification with OEM Tech Brochure
Number of 10/100/1000 Base-T Ports	48	Practically Checkup and verification with OEM Tech Brochure
Number of Multi-Gigabit Ports	As per User Requirement	Practically Checkup and verification with OEM Tech Brochure
Number of 1 G Base T Ports (Uplink)	As per User Requirement	
Number of 1 G SFP / Base X Port (Uplink)	As per User Requirement	
Number of 10 G Base T Port (Uplink)	As per User Requirement	
Number of 10 G SFP+ Port (Uplink)	Min 4	
Number of 40 G QSFP+ Port (Uplink)	As per User Requirement	
Number of 100 G QSFP Port (Uplink)	As per User Requirement	
Management Port (RJ 45/RS 232/USB)	Yes	
RAM (MB)	Min 4096	Verification with OEM Tech Brochure and Console Software
Flash Memory (MB)	Min 4096	Verification with OEM Tech Brochure and Console Software
9K MTU Supported (Minimum)	Yes	Verification with OEM Tech Brochure and Console Software Verification with

		OEM Tech Brochure and Console Software
Console Port	Yes	Verification with OEM Tech Brochure and Console Software
Redundant Power supply	Yes	Verification with OEM Tech Brochure
Redundant Power Supply Type	Internal	Verification with OEM Tech Brochure
Redundant Power Supply (Hot Swappable)	Yes	Verification with OEM Tech Brochure
Redundant Fan	Yes	Verification with OEM Tech Brochure
Redundant Fan (Hot Swappable)	Yes	Verification with OEM Tech Brochure
Number of Open slot for additional Interface Card	As per User Requirement	Verification with OEM Tech Brochure
Operating System	Yes	Verification with OEM Tech Brochure and Console Software
Dedicated Stacking	Yes	Verification with OEM Tech Brochure
Stacking Bandwidth (Gbps)	Min 320	Verification with OEM Tech Brochure
Switching Capacity / Forwarding Bandwidth (Non-Blocking / Line Rate /Wired Speed) 2x (Numbers of access ports + Number of Uplink Ports) (Gbps)	Min 256	Verification with OEM Tech Brochure
Through put / Forwarding Performance (MPPS)	Min 190	Verification with OEM Tech Brochure
Layer 2 Protocols	802.1Q VLAN	Verification with OEM Tech Brochure

Number of VLAN Supported	Min 1024	Verification with OEM Tech Brochure
Number of VLAN IDs Supported	Min 4000	Verification with OEM Tech Brochure
Number of IPV4 Routes	Min 20000	Verification with OEM Tech Brochure
Number of IPV6 Routes	Min 5000	Verification with OEM Tech Brochure
Number of Mac Address Supported (k)	Min 32K	Verification with OEM Tech Brochure
Basic Layer-3 Protocol from day 1	Static Routing, RIPv1, RIPv2, OSPFv2	Verification with OEM Tech Brochure
Advance Layer-3 Protocol from day 1	OSPFv2, PBR, PIM-SM	Verification with OEM Tech Brochure
Premium Layer-3 Protocol from day 1	MPLS, BGP, BGP4, IS-IS, IS-ISv6, PIM-SM, PIM-SSM, VRF Lite	Verification with OEM Tech Brochure
Security Feature	DHCP Snooping, Dynamic ARP Inspection, 802.1x, RADIUS/ TACACS	Verification with OEM Tech Brochure
Management Protocol	GUI, CLI, Telnet, TFTP, SNMPv1, SNMPv2/ V2C, SNMPv3, NTP, RMON, SSHv2, Single IP Management	Verification with OEM Tech Brochure
QoS	802.1p,SP, Queues per port, Shaping, Policing / Rate Limiting, Strict Priority Queueing or Low Latency Queueing	Verification with OEM Tech Brochure
PoE Power Budget (Watt)	As per User Requirement	Verification with OEM Tech Brochure
Dimension / Form Factor (RU)	1	Verification with OEM Tech Brochure

Certification	NDPP / EAL2 or equivalent	Verification with OEM Tech Brochure and Certification
Mean Time Between Failure MTBF (Year)	7	Verification with OEM Tech Brochure
Operating Temperature (Degree C)	0°c to 45°c (± 5) (As per user requirement)	Verification with OEM Tech Brochure
Operating Humidity (%RH)	90% or Better	Verification with OEM Tech Brochure
IPv6 Ready from day 1	Yes	Verification with OEM Tech Brochure
On Site OEM Warranty (Year)	1 / 3 / 5 Years (As per User Requirement)	Verification with OEM Tech Brochure

QRs/TDs of Layer 3 Core Switch 24 Ports

Specifications

Specification	Value	Trial Directive
Type Of Core Switch	Non Chassis Based	Verification with OEM Tech Brochure and Console Software
No. of Interface Slots	As per User Requirement	Verification with OEM Tech Brochure and Console Software
No. of MPU/SUP/Fabric Slots (with redundancy)	As per User Requirement	Verification with OEM Tech Brochure and Console Software
No. of Power supply (with redundancy)	2	Verification with OEM Tech Brochure and Console Software
No. of FAN Tray	4	Verification with OEM Tech Brochure and Console Software
No. of 1G/10G SFP+ Port	24	Practically Check-up and verification with OEM Tech Brochure
No. of 1000 base-T Ports	As per User Requirement	
Support for 40G QSFP+ Port	Yes	
Number of 40G Q SFP+ Porta	6	
Support for 100G QSFP+ Port	Yes	
Number of 100 G QSFP+ Port	As per User Requirement	
Console Port	Available	Verification with OEM Tech Brochure and Console Software
Modular OS	Available	Verification with OEM Tech Brochure
Support for virtual Chassis	As per User Requirement	Verification with OEM Tech Brochure

Switching Capacity (Gbps)	Min 3600	Verification with OEM Tech Brochure
Throughput (MPPS)	Min 1000	Verification with OEM Tech Brochure
Advance Layer-3 Protocol	MPLS,BGP6,VXLAN,OSPF	Verification with OEM Tech Brochure
Security Feature	DARP, CoPP, DNAT, RAGua	Verification with OEM Tech Brochure
Management Protocol	SSHv2, RADIUS, POAP	Verification with OEM Tech Brochure
QoS	ECN,SCHEDULNG,PIM-SM	Verification with OEM Tech Brochure
Dimension/ Form Factor(RU)	1	Practically Checkup and verification with OEM Tech Brochure
Wattage (Watt)	Min 260	Verification with OEM Tech Brochure and Software Console
Operating Temperature (Degree C)	0 to 40°C	Verification with OEM Tech Brochure and Software Console
Operating Humidity (RH)(%)	90% or Better	Verification with OEM Tech Brochure and Software Console
IPv6 Ready	Yes	Verification with OEM Tech Brochure and Software Console
On Site OEM Warranty(Year)	1 / 3 / 5 Years (As per User Requirement)	Verification with OEM Tech Brochure

QRs/TDs of Network Video Management Software

Basic Information

Specification	Value	Trail Directive
Software domain	Network Video Management System Software	Practically Checkup and verification with OEM Tech Brochure
Type of video management system software	1. VMS software for local monitoring 2. VMS software for centralized monitoring for multi-location installation	Verification with OEM Tech Brochure
Type of licence	1. Perpetual	Verification with OEM Tech Brochure and Certification
Licence Cost	Per Device(Camera) / Per Concurrent User	Verification with OEM Tech Brochure and Certification
Deployment option	1. On site compute device	Verification with OEM Tech Brochure
Name of Software	Enterprise VMS	Practically Checkup and verification with OEM Tech Brochure
Brief Description	NVMS Software With Version and Date of launch	Verification with OEM Tech Brochure
No of days Training Provided at Site	As per User Requirement	Verification with OEM Tech Brochure
Number of Years upto which Support is available from OEM	1 / 3 / 5 Years or As per User Requirement	Verification with OEM Tech Brochure
Generic Features		
Generic feature in the offered	1. Video Management software is highly scalable Enterprise level software & a complete video	Verification with OEM Tech Brochure

product	<p>surveillance solution. It is scalable to required numbers of cameras that can be added on a unit -by-unit basis.</p> <p>2. Video Management software is licensed & operate on open architecture & require no proprietary IT hardware.</p> <p>3. The Video Management software allow video to be streamed on workstation monitor or on a Video wall.</p> <p>4. The User with administrative rights to create clients (users) & give access to the software client application based on predefined user access rights.</p> <p>5. System allow the recording, live monitoring, playback of archived video and data simultaneously.</p> <p>6. The VMS Video management system to be seamlessly integrated with Face recognition software and have the capability to receive the alerts.</p> <p>7. Management screen: Lock, unlock with password support.</p>	
Software provides	<p>1. Several simultaneous live picture connections of camera in network.</p> <p>2. Configuration of monitoring situation (site maps).</p> <p>3. Programming of alarm-triggered automatic events in various alarms configuration.</p> <p>4. System set up with limited operation options for clearly defined surveillance tasks.</p> <p>5. Programming of automatic recording events on a network recorder.</p>	Verification with OEM Tech Brochure
Type of Streaming	<p>1. Single Streaming.</p> <p>2. Dual Streaming.</p> <p>3. Multi-streaming.</p>	Verification with OEM Tech Brochure
Video compression format supported by the software in real time	<p>1. H.264</p> <p>2.MJPEG</p> <p>3.H.265</p> <p>4. MPEG-4</p>	Verification with OEM Tech Brochure
Frame rate range supported by the software (in fps)	Unlimited	Verification with OEM Tech Brochure
Resolution	<p>1. Full HD</p> <p>2. Ultra HD</p>	Verification with OEM Tech Brochure

	3. HD	
Number of monitor for displaying live video with one server /workstation	> 1 (Defined by User Department)	Verification with OEM Tech Brochure
Number of level of users and alarm prioritization supported by the offered product	> 1 (Defined by User Department)	Verification with OEM Tech Brochure
Number of cameras to be replayed simultaneously by the offered product	4 or More (Defined by User Department)	Verification with OEM Tech Brochure
Compliance of standard of the offered product	1. Global standards ONVIF Profile 'S' for the interface of network video product (ONVIF- Open Network Video Interface Forum).	Verification with OEM Tech Brochure
Cyber security Parameters	1. SSL/TLS 2. Complex passwords 3. user lockout 4. Digital Watermarking	Verification with OEM Tech Brochure
CAMERA RELATED FEATURE		
Camera related feature in the offered product	1. Camera's bit rate, frame rate and resolution to be set independently from other Cameras in the system and altering these settings do not affect the recording and display settings of other Cameras. 2. The software capable to provide automatic search & discovery of components of video surveillance system on the network which can be network Cameras. 3. The software capable to provide drag & drop functions on the system & also for set up of connection between Cameras and monitors	Verification with OEM Tech Brochure

	<p>connected to one workstation.</p> <p>4. The Software capable of handling Camera & alarm icons on area map & area map to be configurable to pop up upon the receipt of an alarm received from a camera on the map. This can be on the same or other monitors on the PC.</p> <p>5. The Software enable the client to dynamically create connections between Cameras and clients and view live or recorded video on monitors.</p> <p>6. Software capable to provide the client seamless operation of all cameras & clients available in the system regardless of the actual connection to different network video recording servers.</p> <p>7. Scalable licensing model supporting unlimited cameras per server based on the available hardware configuration.</p> <p>8. Camera License not tied to MAC address of cameras.</p> <p>9. Unrestricted camera replacement in case of camera failure.</p>	
The offered product capable to allow	<ol style="list-style-type: none"> 1. Live Display of Cameras. 2. Live Display of Camera sequences. 3. Control of PTZ Cameras. 4. Playback of archived video. 5. Retrieval of archived video. 6. Instant Replay of live Video. 7. Use of Site maps. 8. Configuration of System Settings. 9. Configuration and programming of P /T /Z Cameras, features like auto tours, presets etc. 10. Digital PTZ Control. 11. Comport Joystick support. 12. Preset position setup. 13. Preset position search. 14. Optical zoom in, Zoom out. 15. Digital zoom enable/disable. 16. Full screen view enable/disable. 17. Camera connect/disconnect. 	Verification with OEM Tech Brochure

VIDEO MANAGEMENT FEATURES		
Software capable	1. Inbuilt hard disks on the server.	Verification with OEM

to record video on	<ul style="list-style-type: none"> 2. Direct attached storage boxes attached to the servers. 3. Network attached storage. 4. Storage area network. 	Tech Brochure
Software capable to select recording based on	<ul style="list-style-type: none"> 1. Time at which recording was activated. 2. Duration of recording. 3. Operator activated recording. 4. Event activated recording. 5. Scheduled recording. 6. Camera. 7. Date. 	
Option available in the offered product for reporting utility for tracking for	<ul style="list-style-type: none"> 1. Video clips and image snapshots to be stored with reports for documenting events. 2. Alarms. 3. Incidents. 4. Operator logs. 	Verification with OEM Tech Brochure
Video management and recording feature in the offered product	<ul style="list-style-type: none"> 1. Software have the facility to export the desired portion of clipping of video from a Desired date/ Time to another desired date/ time on DVD on any client/ Network storage device. Viewing of the recording possible on authorized player or in media player on computer utilizing a Window environment. 2. The video management server not to limit the number of video recording servers can be networked together to form video management and recording system. 3. The video management servers capable to maintain a catalog of settings for all clients, servers and IP Cameras & IP enabled Cameras in the system. In case of single server, if recording cannot be managed then offered product have a provision for addition of server. 4. The Software enable the client to dynamically create connections between Cameras and clients and view live or recorded video on monitors. 5. Software capable to provide the client seamless operation of all cameras & clients available in the system regardless of the actual connection to different network video recording servers. 6. Software capable to commence the video recording from the date & time specified by the end-user & also able to playback more than one camera recording simultaneously. 	Verification with OEM Tech Brochure

	<p>7. Watermarking, Encrypt and Digital Signature option while video exporting.</p> <p>8. Software shall support encryption based recording. Encrypted recording shall play only in Video Management Software.</p> <p>9. Video push feature to send individual cameras or an entire view of cameras to public view or other monitor.</p> <p>10. Manage users through LDAP/Active directory.</p> <p>11. Client bandwidth throttling to Optimize video data rates over limited bandwidth client connections.</p> <p>12. Scheduled Access time for Operation with assign permission.</p>	
Supporting feature in the offered product	<p>1. The Video management software provide a full matrix operation of IP video to display monitors.</p> <p>2. Video management software have the capability of creating camera sequences with following functionalities:-</p> <p>i) Capability to sequence cameras.</p> <p>ii) Each camera in the sequence have its own individual dwell time.</p> <p>iii) Multiple users able to view the same camera sequence simultaneously, not necessarily synchronized one with the other.</p>	Verification with OEM Tech Brochure
NO of cameras VMS Software can sequence upto	60 or more (Defined by Users Department)	Verification with OEM Tech Brochure
Each camera in the sequence have its own individual dwell time in seconds	60 or more (Defined by User Department)	Verification with OEM Tech Brochure
Maximum VMS throughput	800 Mbps,1000 Mbps,1200 Mbps	Verification with OEM Tech Brochure
Client Interface (Thick Client)	1 or more	Verification with OEM Tech Brochure
Suspect Tracking through Multiple link of Cameras	1 or more	Verification with OEM Tech Brochure

Server Connections	1 or more	Verification with OEM Tech Brochure
Operating System Compatibility	Window 64 Bit (Latest)	Verification with OEM Tech Brochure
Architecture	1. Client & Server on Multiple Hardware. 2. Client & Server on Same Hardware	Verification with OEM Tech Brochure

Display Mode		
Number of monitors for displaying live video with one server / workstation	9 or more	Verification with OEM Tech Brochure
Number of Video Streams (Channels)concurrently supported by Local VMS	64 or more	Verification with OEM Tech Brochure
Number of Video Streams (Channels) expandable for local VMS up to	64 or more	Verification with OEM Tech Brochure
Number of Video Streams (Channels)concurrently supported by Central VMS	64 or more	Verification with OEM Tech Brochure
Image rotate(in degree)	360 Degree	Verification with OEM Tech Brochure
No of Auto Tour selectable option	10 or more	Verification with OEM Tech Brochure
Status display	Free disk space, Camera status, CPU usage	Verification with OEM Tech Brochure
Display clock (in real time)	day, date, time, year	Verification with OEM Tech Brochure
Display mode (split screen matrix)	64	Verification with OEM Tech Brochure

Display Characteristics Overlay of the Cameras during -	Live view, Live View & Navigate, Live view & Navigate over camera icons	Verification with OEM Tech Brochure
Audio		
Type of audio	2-way	Verification with OEM Tech Brochure
Type of Codec	PCM, G.711U, G.711A, G.722, G.729A, GSM-AMR, AAC	Verification with OEM Tech Brochure
Event Trigger		
No of Motion detection selectable area	3	Verification with OEM Tech Brochure
Motion detection selectable area	As per User Requirement	Verification with OEM Tech Brochure
System event	shutdown, restart, login, logoff, Camera reboot, external I/O trigger	Verification with OEM Tech Brochure
Hot-Spot Window Feature	As per User Requirement	Verification with OEM Tech Brochure
Hotspot window split Screen from the matrix	1,2,4	Verification with OEM Tech Brochure
Type of Hot spot window, Hot spot split screen	5+1 wide screen, 12+1 wide screen	Verification with OEM Tech Brochure
Recording		
Recording type	schedule, continuous, manual, motion, event	Verification with OEM Tech Brochure
Recording Recycle	Auto, FIFO mode Audio and video simultaneous recording, Motion Detect from camera	Verification with OEM Tech Brochure
Audio Recording	Pre-record, Post -record support	Verification with OEM Tech Brochure

Storage / Backup		
Number of selectable path in Local storage simultaneously	30	Verification with OEM Tech Brochure
Network storage path	iSCSI, network share, NAS	Verification with OEM Tech Brochure
Storage/ Backup features	Multiple local storage support, Network Storage Device Support, USB backup support, back up Tape device	Verification with OEM Tech Brochure
Playback		
Playback Search from Local and Network storage	<ol style="list-style-type: none"> 1. Channels. 2. Date and time. 3. Bookmarking. 4. Alarm. 5. All - Channels; Date & Time; Bookmarking; Alarm. 6.Attribute Search (Object Size, color) 	Verification with OEM Tech Brochure
Event Playback Search from video loss, motion detection and manual recording	<ol style="list-style-type: none"> 1. Channels. 2. Date and time. 	Verification with OEM Tech Brochure
Playback mode	Play, Stop, Pause, Forward, Backward, Next, Previous.	Verification with OEM Tech Brochure
Forward/Backward mode	x1/4,x1/2,x1,x2,x4,x16	Verification with OEM Tech Brochure
Video Search	External alarm input trigger	Verification with OEM Tech Brochure
Image Export	Image Export by JPEG	Verification with OEM Tech Brochure
Network Features		
Protocols	<ol style="list-style-type: none"> 1. TCP 2. UDP 3. RTSP 	Verification with OEM Tech Brochure

	<ul style="list-style-type: none"> 4. Multicast 5. SRTP 	
Remote View	<ul style="list-style-type: none"> 1. Remote Live streaming. 2. Image Snapshot to JPEG. 3. PTZ control. 4. Event notification. 5. Video playback. 6. NA 	Verification with OEM Tech Brochure
E-Map	<ul style="list-style-type: none"> 1. Multi E-map layers support. 2. Indicator camera &I/O. 3. E-Map Type BMP/JPG/GIF/PNG/TIF. 4. Unlimited E-map pictures. 5. Camera Preview. 7. Map support: map, satellite and hybrid view. 8. Online control: left, right, up, down, Zoom in and Zoom out. 	Verification with OEM Tech Brochure
Tools	<ul style="list-style-type: none"> 1. DB Tools. 2. Backup system. 3. File export to AVI, ASF, MP4 	Verification with OEM Tech Brochure
Compatibility	<ul style="list-style-type: none"> 1. Compatible with 3rd party IP cameras. 2. Widescreen Support 	Verification with OEM Tech Brochure
Graphic User Interface		
The GUI software capable to perform the applications simultaneously without interfering with any of the storage server operations (recording, alarms etc)	<ul style="list-style-type: none"> 1. Live display of Cameras. 2. Live display of Camera sequences. 3. Control of PTZ Cameras. 4. Playback of archived video. 5. Retrieval of archived video. 6. Instant replay of live video. 7. Use of graphical controls (maps) and alarm management. 8. Configuration of system settings. 	Verification with OEM Tech Brochure
The GUI software capable to support	<ul style="list-style-type: none"> 1. Any form of IP network connectivity including LAN, WAN and wireless LAN technologies. 2. Multicast video streaming. 3. Unicast video streaming. 	Verification with OEM Tech Brochure
GUI Software Feature	<ul style="list-style-type: none"> 1. Capable to provide an authentication 	Verification with OEM

	<p>mechanism, which verifies the validity of the user.</p> <p>2. Capable to allow live monitoring of video.</p> <p>3. Capable to provide management and control over the system using a standard PC mouse, keyboard and Digital keyboard.</p> <p>4. Capable to display all Cameras attached to the system regardless of their physical location on the network.</p> <p>5. Capable to display all Camera sequences created in the system.</p> <p>6. Capable to display all Cameras, sequences and users in a logical tree.</p> <p>7. Capable to support graphical site representation (map) functionality, where digital maps are used to represent the physical location of Cameras and other devices throughout facility.</p> <p>8. The maps have the ability to contain hyperlinks to create a hierarchy of interlinked maps.</p> <p>9. Capable to support digital zoom on a fixed Camera's live video streams.</p> <p>10. Capable to support digital zoom on a PTZ Camera's live video streams.</p> <p>11. Capable to display video of Cameras on 40 inch Large Format Display Monitors and Workstation Monitors.</p> <p>12. Capable to allow the control of display from the client PC.</p> <p>13. The operator from the GUI software able to decide the screen layout and also the Cameras that shall be displayed on the monitors.</p> <p>14. Capable to support multicasting.</p> <p>15. Capable to switch the screen layout in response to an alarm.</p> <p>16. Adaptive Streaming. Option to switch stream to lower to higher or vice-versa based on full screen.</p>	Tech Brochure
Frame rate per camera in the GUI Software	60	Verification with OEM Tech Brochure
No Of video tiles enable on a single digital monitor	64	Verification with OEM Tech Brochure

Tiles Views provided on each of the digital monitors independently	<ol style="list-style-type: none"> 1. Full screen 2. Quad view 3. 4x4(16-view) 4. Support any other window division based on the site requirement 	Verification with OEM Tech Brochure
GUI Software Operator Feature	<ol style="list-style-type: none"> 1. Allow operators to view an instant replay of any Camera. 2. The operator able to define the amount of time he wishes to go back from timeline bar or through a custom setup period. 3. The operator able to control the playback with play, pause, forward, and speed buttons. 4. Operator capable to drag and drop a Camera from a tree of available Cameras into any video tile for live viewing. 5. Operator capable to view the Camera from a tree of available Cameras into any video tile for live viewing. 7. Operator able to click on an icon in a map to initiate PTZ Camera preset, run PTZ pattern, view Camera in an analog monitor or send an I/O stream. 8. The operator capable to control Pan, Tilt and Zoom patterns of P/T/Z Camera. 	Verification with OEM Tech Brochure
The operator capable to choose and trigger following action from a macro/site map	<ol style="list-style-type: none"> 1. View Camera in a video tile. 2. View map or procedure in a video tile. 3. Starting/stopping PTZ pattern. 4. Go to PTZ preset. 	Verification with OEM Tech Brochure
Video Recording Software		
Video Recording Feature by the offered product	<ol style="list-style-type: none"> 1. Support recording H.264/MJPEG/H.265 or higher video streams and audio for all the channels. 2. Supports triplex applications, recording, replay and backup simultaneously compatible with windows Server OS or Linux for highest performance and reliability. 3. Software operates on open architecture and not requires any proprietary hardware. 4. Software capable to record different video streams or more simultaneously accessible from any client PC connected to the network. 	Verification with OEM Tech Brochure

	<p>5. Software provides network time server function to ensure the synchronization of the video servers and the recordings.</p> <p>6. Software capable to receive alarms of different types from equipment to start a recording These alarms be motion detection, video loss, unified picture and trigger input.</p> <p>7. Software alarm recording supports pre-and post-alarm periods both can be configured in duration.</p> <p>8. Software shall provide a status of the available recording capacity.</p> <p>9. Software shall define limits and alerts for low disk space at warning and recording stopped levels</p>	
Video Recording Software supports redundancy configurations for recording servers Video Recording Servers/ Network Video Recorders	<p>1. N to X redundancy.</p> <p>2. X to N redundancy.</p> <p>3. N to N redundancy.</p>	Verification with OEM Tech Brochure
Failover Time (Maximum Time to which application switches from main server to Failover server)	40	Verification with OEM Tech Brochure
Features of Fault Tolerance Recording	<p>1. Software & Server(s)/ NVRs operation are interrupted, like power disconnection and once the server(s) are restarted, these automatically resume recording of any Cameras these were recording prior to the interruption.</p> <p>2. Software supports network fault-tolerant recording such that if the network connection between a video management server and video recording server becomes unavailable, for example through cable breakage, network congestion or WLAN interruption, the system operation shall automatically recover when the connection is restored.</p>	Verification with OEM Tech Brochure

Feature of Search & Export	<p>1. Search for recordings in the software by Camera, date and time if a data and time is specified, playback shall commence from that date and time possible to playback more than one Camera simultaneously.</p> <p>2. Software be capable to export sections of recordings to a separate Windows folder, which then be written to CD-ROM, DVD-ROM or USB Flash Drives etc. to be played back at a location not connected to the network video management & recording network. The export process make available a player application, which provided with the exported video. Export be possible in Windows media player or any other media player compatible format. Simultaneous export of multiple Cameras be possible.</p> <p>3. Software provides secured recording for evidence purposes and user authentication to protect data integrity.</p> <p>4. Software supports activity controlled video recording. This is required to automatically adjust recording bit rate depending on motion & scene. During periods of negligible motion, the recording bits rate shall drop and when motion occurs, the recording bit rate shall return to normal without any perceptible delay.</p> <p>5. Watermarking, Encrypt and Digital Signature option while video exporting</p>	Verification with OEM Tech Brochure
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Central Monitoring Software		
Central Monitoring Software	<p>1. Centralized monitoring of Unlimited devices spread across multiple station.</p> <p>2. Local recording at branch with High Quality Video and Low bandwidth streaming to Central station.</p> <p>3. The alert send by VMS, Video Analytics software can be view in form of pop up on screen.</p>	Verification with OEM Tech Brochure
No of cameras monitored from the	Upto 100000	Verification with OEM Tech Brochure

central location by the software		
Alert Features		
Alert feature in the offered product	<ol style="list-style-type: none"> 1. The software capable to detect signal loss & have the capability to alert the Systems administrator. 2. Software capable to receive all incoming events (motion detection, triggered digital input & relay output) in the system and take the appropriate actions based on user-defined event/action relationships. 3. The Software shall create an audit trail of all events and user activities. 4. Software capable to provide alarm management module. 5. Alarm management able to set any monitor or groups of monitors to automatically display cameras in response to alarm inputs. 	Verification with OEM Tech Brochure

Installation		
Installation in the scope of supply	Yes	Practically Checkup and verification with OEM Tech Brochure
If Yes, then scope of Installation	As per User Requirement	Practically Checkup and verification with OEM Tech Brochure
Commissioning		
Commissioning in the scope of supply	Yes / No (As per User Requirement)	Practically Checkup and verification with OEM Tech Brochure
If Yes, then scope of Commissioning	As per User Requirement	Practically Checkup and verification with OEM Tech Brochure
Supported Hardware Requirement Parameters		
Minimum Hard Disk Space Required	512 GB	verification with OEM Tech Brochure and software Console

Minimum required	RAM Size	64 GB or more	verification with OEM Tech Brochure and software Console
Server requirements		Customized	verification with OEM Tech Brochure and software Console
CPU required		Intel i7 or better or AMD or equivalent	verification with OEM Tech Brochure and software Console
Other requirements	Hardware	Quad Core	verification with OEM Tech Brochure and software Console
Operating supported	Systems	MS Windows 11 or latest	verification with OEM Tech Brochure and software Console
Supported Web browsers		Google Chrome, Firefox, IE, Safari	verification with OEM Tech Brochure and software Console
Supported Database		MS SQL	verification with OEM Tech Brochure and software Console

General Parameters

Free Upgradation to Higher Version within support period	Yes	Verification with OEM Tech Brochure
Valid Licence copy to be provided	Yes	verification with OEM Tech Brochure
Software supplied through	URL Link	verification with OEM Tech Brochure
Hyper link to OEM Data sheet	URL Link	verification with OEM Tech Brochure
No of Software's sold	As per User Requirement	verification with OEM Tech Brochure
Number of software installed within Government Department	As per User Requirement	verification with OEM Tech Brochure
Details of Government Department email, phone	As per User	verification with OEM Tech Brochure

no Of concerned authority where Software installed	Requirement	
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QRs/TDs of Next Generation Firewall (NGFW) / Universal Threat Management (UTM)

Specifications

Specification	Value	Trail Directives
Type	NGFW	Verification with OEM Tech Brochure
Form Factor (RU)	1	Verification with OEM Tech Brochure
Features	Layer 3 - Layer 4, NAT, VPN, Application Visibility and Control (AVC), User Identity, Next Generation Intrusion Prevention System (IPS), Zero Day Protection / Advance Malware protection, Web Security Essentials / URL Filtering, Gateway Antivirus	Verification with OEM Tech Brochure
Traffic handled	TCP, UDP, HTTP/TCP, TCP/UDP	Verification with OEM Tech Brochure
Packet Size (KB)	Min 1024	Verification with OEM Tech Brochure
Throughput with all features enabled (Under Test Condition) (Mbps)	Minimum 1000	Verification with OEM Tech Brochure
Throughput (Real World/Prod Performance) (Under Test Condition) (Mbps)	Minimum 1000	Verification with OEM Tech Brochure
Concurrent Session/Concurrent Connection	Min 2M	Verification with OEM Tech Brochure
New session/Connection per second	Min 25K	Verification with OEM Tech Brochure
Type of Interface Supported Multiselect	GE Copper / OFC	Verification with OEM Tech Brochure
Number of GE Copper interface	Min 8	Practically Checkup and

		Verification with OEM Tech Brochure
Number of 10G SFP+ interface	Min 2	Practically Checkup and Verification with OEM Tech Brochure
Number of QSFP+ 40 G interface	As per User Requirement	Practically Checkup and Verification with OEM Tech Brochure
Number of GE Small Form-Factor Pluggable (SFP) interface	As per User Requirement	Practically Checkup and Verification with OEM Tech Brochure
Number of QSFP28 100 G interface	As per User Requirement	Practically Checkup and Verification with OEM Tech Brochure
Number of col /WAN Ports	Min 8	Practically Checkup and Verification with OEM Tech Brochure
Number of IPsec VPN Peers supported (Site to Site)	Min 3000	Verification with OEM Tech Brochure and Console Software
Number of IPsec VPN Peers supported (Client to Site)	Min 3000	
Number of SSL VPN Peers supported (Client to Site)	Min 350	
Type of Storage Disk	SSD	Verification with OEM Tech Brochure
Storage Capacity (GB)	Min 240	Verification with OEM Tech Brochure
Power Supplies	Single / Dual (As per User Requirement)	Verification with OEM Tech Brochure
Hot Swappable Power Supply	Yes / No (As per User Requirement)	Verification with OEM Tech Brochure
Redundant Fan	Yes / No (As per User	Verification with OEM Tech

	Requirement)	Brochure
Hot Swappable (Redundant Fan)	As per User Requirement	Verification with OEM Tech Brochure
Type of Processor	x86	Verification with OEM Tech Brochure and Software Console
High Availability Support	Yes	Verification with OEM Tech Brochure
If Yes, High Availability from day 1	Yes	Verification with OEM Tech Brochure
Interface Expansion slots supported	2	Verification with OEM Tech Brochure
Firewall Policies - License	Yes	Verification with OEM Tech Brochure
Details of the Firewall Policies for the Firewall provided with the License	Web Security Essentials / URL Filtering, IPS License, Application Visibility License, APT (Advance Persistent Threat) License (Anti Malware Protection, C& C attacks, Geo IP Protection, Zero Day Threat Protection), Gateway Anti-virus (As per User Requirement)	Verification with OEM Tech Brochure
NGIPS Signature supported	Min 5000	Verification with OEM Tech Brochure
Security Intelligence	IP, URL, Domain	Verification with OEM Tech Brochure
Certification	Common Criteria /NDPP/NSS /EAL4 or Equivalent	Verification with OEM Tech Brochure and Certificate Console
Operating Temperature (Degree C)	0°C to 45°C (± 5) As per User Requirement	Verification with OEM Tech Brochure
Operating Humidity (%RH)	90% or Better	Verification with OEM Tech Brochure

IPv6 Ready from day 1	Yes	Verification with OEM Tech Brochure
On Site OEM Warranty (Year)	1 / 3 / 5 Years or As per User Requirement	Verification with OEM Tech Brochure

QRs/TDs of Rack Server

Chassis

Specification	Value	Trial Directive
Form Factor	Rack	Practically Checkup and verification with OEM Tech Brochure
Size (RU)	2	Practically Checkup and verification with OEM Tech Brochure

Processor

Processor Architecture	CISC(X86)	Verification with OEM Tech Brochure and console software
Processor Make	Intel / AMD (As per User Requirement)	Verification with OEM Tech Brochure and console software
Number of Cores per Processor	4 / 8 / 12 / 16 / 18 / 20 / 22/ 24	Verification with OEM Tech Brochure and console software
Processor Base Frequency (GHz)	Min 3.0 or better	Verification with OEM Tech Brochure and console software
Processor Turbo Frequency (GHz)	Min 3.9 or better	Verification with OEM Tech Brochure and console software
Total Cache (L1+L2+L3)(MB)	25 or better	Verification with OEM Tech Brochure and console software
Processor Description/ Number	Intel Xeon series or better or equivalent AMD	Verification with OEM Tech Brochure and console software

Motherboard

Chipset compatible with CPU	Intel /AMD or better	Verification with OEM Tech Brochure and console software
Expansion Slots Gen 3 (PCIe x1)	As per User Requirement	Verification with OEM Tech Brochure and console software
Expansion Slots Gen 3 (PCIe x4)	As per User Requirement	Verification with OEM Tech Brochure and console software

Expansion Slots Gen 3 (PCIe x8)	As per User Requirement	Verification with OEM Tech Brochure and console software
Expansion Slots Gen 3 (PCIe x16)	As per User Requirement	Verification with OEM Tech Brochure and console software
Maximum number of Sockets available on Server	1 / 2 (As per User Requirement)	Verification with OEM Tech Brochure and console software
Maximum number of Sockets populated with Processors available on Server	1 / 2 (As per User Requirement)	Verification with OEM Tech Brochure and console software

Co-Processor / GPU

Availability of Co-Processor /GPU	As per User Requirement	Verification with OEM Tech Brochure
If Yes, Maximum Number of Slots available for Co-Processor/GPU	As per User Requirement	Verification with OEM Tech Brochure and console software
If Yes, Maximum Number of slots populated with Co-processor/GPU	As per User Requirement	Verification with OEM Tech Brochure and console software
If Yes, Co-Processor /GPU Description	As per User Requirement	Verification with OEM Tech Brochure and console software

Memory

Type of RAM	DDR4 SDRAM with ECC	Verification with OEM Tech Brochure and console software
Total Number of DIMM Slots available	12 or more	
Number of DIMM Slots populated with DDR SDRAM	4 or more (As per User Requirement)	Verification with OEM Tech Brochure and console software
Number of DIMM Slots populated with DDR NVRAM	4 or more (As per User Requirement)	Verification with OEM Tech Brochure and console software
DDR SDRAM Size(GB)	Min 128 or More (Decided by User Department)	Verification with OEM Tech Brochure and console software
DDR NVRAM Size (GB)	As per User Requirement	Verification with OEM Tech Brochure and console software

DDR SDRAM upgradable up to using spare DIMM Slots (GB)	768 or More	Verification with OEM Tech Brochure and console software
DDR NVRAM upgradable up to using spare DIMM Slots (GB)	As per User Requirement	Verification with OEM Tech Brochure and console software

SSD Storage

Type of Interface for SSD	SATA	Verification with OEM Tech Brochure and console software
Type of SATA SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
SATA SSD Hot Swappable	Yes	Verification with OEM Tech Brochure and console software
Endurance for SATA SSD (DWPD - Drive Writes Per Day) (X)	0.8	Verification with OEM Tech Brochure and console software
Total Number of Slots available for SATA SSD	8	Verification with OEM Tech Brochure and console software
Number of Slot Populated with SATA SSD	3 or More (As per User Requirement)	Verification with OEM Tech Brochure and console software
Capacity offered per SATA SSD (GB)	960	Verification with OEM Tech Brochure and console software
Total Capacity Offered with SATA SSD (GB)	2880	Verification with OEM Tech Brochure and console software
Type of SAS SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
SAS SSD Hot Swappable	As per User Requirement	Verification with OEM Tech Brochure and console software
Endurance for SAS SSD (DWPD - Drive Writes Per Day) (X)	As per User Requirement	Verification with OEM Tech Brochure and console software
Total Number of Slots available for SAS SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
Number of Slots populated with	3	Verification with OEM Tech Brochure

SAS SSD		and console software
Capacity Offered per SAS SSD (GB)	Min 960	Verification with OEM Tech Brochure and console software
Total Capacity Offered with SAS SSD (GB)	As per User Requirement	Verification with OEM Tech Brochure and console software
Type of NVMe SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
NVMe SSD Hot Swappable	As per User Requirement	Verification with OEM Tech Brochure and console software
Endurance for NVMe SSD (DWPD - Drive Writes Per Day) (X)	As per User Requirement	Verification with OEM Tech Brochure and console software
Total Number of Slots available for NVMe SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
Number of Slots populated with NVMe SSD	As per User Requirement	Verification with OEM Tech Brochure and console software
Capacity Offered per NVMe SSD (GB)	As per User Requirement	Verification with OEM Tech Brochure and console software
Total Capacity Offered with NVMe SSD (GB)	As per User Requirement	Verification with OEM Tech Brochure and console software

HDD Storage

Type of Interface for Hard Disk Drive	As per User Requirement	Verification with OEM Tech Brochure and console software
Total number of Slots available for SATA Drive	As per User Requirement	
Number of Slots populated with SATA Drive	As per User Requirement	
Capacity offered per SATA Drive (GB)	As per User Requirement	
SATA drive speed (hot plug or better) (RPM)	As per User Requirement	

Total Storage Capacity offered with SATA Drive (GB)	As per User Requirement	
Total number of slots available for SAS drive	As per User Requirement	
Number of Slots populated with SAS Drive	As per User Requirement	
Capacity offered per SAS Drive (GB)	As per User Requirement	
SAS drive Speed (Hot plug or better) (RPM)	As per User Requirement	
Total Storage Capacity offered with SAS Drive (GB)	As per User Requirement	
Total number of slots available for NL SAS drive	As per User Requirement	
Number of Slots populated with NL SAS Drive	As per User Requirement	
Capacity offered per NL SAS Drive	As per User Requirement	
NL SAS drive speed (hot plug or better) (RPM)	As per User Requirement	
Total Storage Capacity offered with NL SAS Drive (GB)	As per User Requirement	

RAID

RAID level	5 / 6 (As per User Requirement)	Verification with OEM Tech Brochure and console software
No of RAID Controller Ports	8 or As per User Requirement	Verification with OEM Tech Brochure and console software
Speed of RAID Controller Ports (Gbps)	Min 12	Verification with OEM Tech Brochure and console software
RAID Controller Cache (GB)	2 GB or As per User	Verification with OEM Tech Brochure

	Requirement	and console software
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Ports & Interfaces

Network Card Supported	1G & 10G	Verification with OEM Tech Brochure and console software
Number of Networking Interface Cards (LAN)	4	
Whether Network Interface Card Embedded	Yes	
Number of Ports Per Network Interface Card	2x1G & 2 x 10G	
Networking Interface Card Features	Asset Feature Tracking	
Server Network Ports should Support SR-IOV Feature	Yes	
Server network ports should support DPDK and it should deliver zero packet loss as per RFC 2544 and deliver 100% line rate for all the packet sizes over 64 Bytes, Vendor to submit latest DPDK test report for the same	Yes	
Number of Single port FC HBA card	As per User Requirement	
Number of Dual port FC HBA card	As per User Requirement	
Number of Quad port FC HBA card	As per User Requirement	
FC HBA Speed (Gbps)	As per User Requirement	
vHBA Card Features Supported	As per User Requirement	
Number of Converged Network Adaptor (CNA)	As per User Requirement	
Number of Ports per CNA card	As per User Requirement	

CNA Port Speed (Gbps)	As per User Requirement	
Length of LC-LC Cable per SFP+ Port (meter)	As per User Requirement	
Length of LC-LC Cable per HBA Port (meter)	As per User Requirement	
Length of LC-LC Cable per CNA Port (meter)	As per User Requirement	
Video Controller (support VGA or above resolution)	Yes	
Keyboard Port	As per User Requirement	Practically Check up and verification with OEM Tech Brochure
Mouse Port	As per User Requirement	Practically Check up and verification with OEM Tech Brochure
DVD ROM (Internal/External)	Yes	Verification with OEM Tech Brochure and software console
USB Ports (version 2point0/3point0)	4	Practically Check up and verification with OEM Tech Brochure
Total number of Spare Bays Available for Future Upgradation (Internal)	Minimum 3 or As per user requirement	Practically Check up and verification with OEM Tech Brochure
Total number of Spare Bays Available for Future Upgradation (Hot Pluggable)	Minimum 3 or As per user requirement	Verification with OEM Tech Brochure and software console

Certifications

Certifications/Compliance (OS)	Windows, Red Hat Linux, Suse Linux, Ubuntu, Cent OS	Verification with OEM Tech Brochure and Certification
Certification/Compliance (Virtualization/Cloud Platform)	VM ware, Red Hat Virtualization	

Features

Management Features-1	Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port,	Verification with OEM Tech Brochure
Management Features-2	Platform inventory and health status	Verification with OEM Tech Brochure
Security Features-1	Secure Boot(Firmware and Bios Level Security)	Verification with OEM Tech Brochure
Security Features-2	Secure /Automatic BIOS recovery	Verification with OEM Tech Brochure
Server scalability to be achieved within the box & without adding nodes	Yes	Verification with OEM Tech Brochure
support for high availability clustering and virtualization	Yes	Verification with OEM Tech Brochure

Generic

Redundant Power Supply	Yes	Verification with OEM Tech Brochure
Hot Swappable (Redundant Power Supply)	Yes	
Power Supply Efficiency	Platinum	
Redundant Fan	Yes	
Hot Swappable (Redundant Fan)	Yes	
Server Main Supply	230 +/- 10%Vac	

Benchmark

SPEC int_rate_base 2017 for the product (must be available on SPEC dot ORG before evaluation)	As per User Requirement	Verification with OEM Tech Brochure
SPEC fp_rate_2017 for the product (must be available on SPEC dot	As per User Requirement	

ORG before evaluation)		
SPEC int_speed_base 2017 for the product (must be available on SPEC dot ORG before evaluation)	As per User Requirement	
SPEC fp_speed_2017 for the product (must be available on SPEC dot ORG before evaluation)	As per User Requirement	

Miscellaneous

Maximum power consumption of the system (Watts)	As per User Requirement	Verification with OEM Tech Brochure
BIS Registration under CRS of MeitY	Yes	Verification with OEM Tech Brochure and certification
BIS Registration Number Under CRS of MeitY and its validity	Yes	Verification with OEM Tech Brochure and certification
Other Certifications Available	UL, CE	Verification with OEM Tech Brochure and certification
RoHS Compliance	Yes	Verification with OEM Tech Brochure and certification
Availability of the type test report from Central Government / NABL / ILAC accredited laboratory covering verification of all features & functional parameters & environmental tests sequence	As per User Requirement	Verification with OEM Tech Brochure and certification
a) Dry heat: test - for 16 hrs at 45 deg C as per IS: 9000/pt-3/sec-5/1977 b) Cold test - for 4 hrs at 0 deg C as per IS: 9000/pt-2/sec-4/1977 c) Damp Heat Cyclic Test - for 2 cycles of 24 hrs at 40 deg C & 95% RH as per IS: 9000/pt-5/sec-1/1981	Yes	Verification with OEM Tech Brochure and certification
The server has been checked for all the parameters before	Yes	Verification with OEM Tech Brochure and certification

conditioning, After completion of the environmental tests sequence, with a recovery period of 1 to 2 hrs, the server found to be functional		
Test Report Number & date	As per User Requirement	Verification with OEM Tech Brochure and certification
Name & Address of Lab	As per User Requirement	Verification with OEM Tech Brochure and certification

Scope of Supply

Installation and Commissioning shall be included in the scope of supply	Yes	Verification with OEM Tech Brochure
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Warranty

On Site OEM Warranty (Year)	1 / 3 / 5 (As per User Requirement)	Verification with OEM Tech Brochure
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QRs/TDs of Storage Server

Specification

Specification	Values	Trial Directive
Form Factor	Rack	Practically Checkup and verification with OEM Tech Brochure
Size (RU)	2	
Processor Make	Intel / AMD	Verification with OEM Tech Brochure and Console Software
Maximum Number of sockets available on chipset	2	
Maximum Number of sockets populated with processor	2	
Number of cores per Processor	16	
Processor Configuration	Intel Xeon Gold 6130 (2.10GHz/16-core/22MB/125W) or better or equivalent AMD	
Chipset compatible with CPU	Intel or equivalent AMD or better	
Expansion Slots Gen 3 (PCIe x1)	As per User Requirement	
Expansion Slots Gen 3 (PCIe x4)	As per User Requirement	
Expansion Slots Gen 3 (PCIe x8)	2	
Expansion Slots Gen 3 (PCIe x16)	2	
Type of RAM	DDR4	
RAM Size (GB)	Min 128	
RAM upgradable upto (GB)	3072	
DIMM Slots (No.)	24	Verification with OEM Tech Brochure and Console Software
Type of Hard Disk Drive	NL SAS	

Total number of slots available for SSD drive	As per User Requirement	
Number of Slots populated with SSD Drive	As per User Requirement	
Capacity offered per SSD Drive (GB)	300 or more (As per User Requirement)	
Total number of slots available for SAS drive	As per User Requirement	
Number of Slots populated with SAS Drive	As per User Requirement	
Capacity offered per SAS Drive	As per User Requirement	
SAS drive Speed (Hot plug or better) (RPM)	10K	
Total number of slots available for NL SAS drive	24	
Number of Slots populated with NL SAS Drive	12	
Capacity offered per NL SAS Drive	2000 or better	
NL SAS drive speed (hot plug or better) (RPM)	10K	
Total number of slots available for SATA drive	As per User Requirement	
Number of Slots populated with SATA Drive	As per User Requirement	Verification with OEM Tech Brochure and Console Software
Capacity offered per SATA Drive	As per User Requirement	
SATA drive speed (hot plug or better) (RPM)	7200 RPM or more (As per User Requirement)	
Total Storage Capacity offered	Min 24 terabyte (As per User Requirement)	
RAID Controller Cache (GB)	2 or more	

RAID Level	5/6 (As per User Requirement)	
RAID Controller Ports @12 Gbps	Min 8	
Video Controller (support VGA or above resolution)	Yes	
Keyboard	As per User Requirement	
Mouse	As per User Requirement	Practically Check-up and verification with OEM Tech Brochure
Bays (minimum 2 internal or more hot plug)	Min 24	
USB Ports (version 2.0/3.0)	Min 4	
Certifications, Compliance support by Windows, Red Hat or Novell	Yes	
Network Card Supported	1G,10G	
No of Network Ports	4X1G, 2X10G or As per User Requirement	
Networking dual LAN (10/100/1000) network card	Yes	
FC HBA Dual port card	As per User Requirement	
FC HBA Dual port card Speed	As per User Requirement	
Power Management	Screen blanking, hard disk & system idle mode in power on, set up password, power supply surge protected	Verification with OEM Tech Brochure
Redundant Power Supply	Yes	
Redundant Fan	Yes	
Server Main Supply	230 V +/-10%, 50 Hz	Verification with OEM Tech

Declare SPEC int_rate_base 2006 & specfp_rate_2006 or latest for 1,2,4,8 processor as applicable	SPEC int_rate_base 2006 = 913 & specfp_rate_2006 =830	Brochure and Certification
Maximum power consumption of the system (Watt)	500	
Server scalability to be achieved within the box & without adding nodes	Yes	
BIS Registration under CRS of Meity	Yes	
BIS Registration number & its Validity	Required	
Other Certifications Available	Yes	
RoHS Compliance	Yes	Verification with OEM Tech Brochure and Certification
Availability of Type test reports from Central Govt / NABL /ILAC accredited lab covering verification of all the features & functional parameters & environmental tests sequences as under: a Dry heat test (For 16 hrs at a temperature of 45 degree C in accordance with IS: 9000/part-3/section-5/1977) b Cold test(For 4 hrs at a temperature of 0 degree C in accordance with IS: 9000/part-2/section-4/1977 c Damp Heat Cyclic Test (For 2 cycles of 24 hrs at a temperature of 40 degree C & 95% RH in accordance with IS: 9000/part-5/section-1/1981) Note:- The server shall be checked for all the parameters before conditioning, After completion of the above environmental tests sequence, with a recovery period of 1 to 2 hrs, the server shall be functional	As per User Requirement	
Name & address of Lab	As per User Requirement	Verification with OEM Tech Brochure and Certification
Test Report No & date	As per User Requirement	
On Site OEM Warranty (years)	1 / 3 / 5 Years (As per User Requirement)	Verification with OEM Certification

QRs/TDs of Unified Storage System and Normal Storage

Specification (Unified Storage System)

Specification	Value	Trial Directive
Storage System Type	NAS Storage	Verification with OEM Tech Brochure and Console Software
Storage Capacity (TB)	48 terabyte or more (As per User Requirement)	
Hardware Form Factor of Storage System (RU)	4	
Disks		
Disk Type	SSD / NL-SAS	Verification with OEM Tech Brochure and Console Software
Speed of dual ported disk drive in Gbps	6	
Total Numbers of Drive Slots	Min 16	
Number of Drive Slots Populated with drives of different type in the Storage System	12	
Total no of drive slot populated with SSD	As per User Requirement	
Total no of drive slot populated with Flash Drive	As per User Requirement	
Total no of drive slot populated with SAS	As per User Requirement	
Total no of drive slot populated with NL-SAS	12 (As per User Requirement)	
Drive Type Wise Storage Capacity of System in GB	4000 GB (As per User Requirement)	Verification with OEM Tech Brochure and

Automated Storage tiring feature across the populated Drives types(in case of multiple drive system)	Yes	Console Software
Automated Storage tiering Software License Included	Yes	
Hot Spares	Yes	
Number of Populated Disks per Hot Spare	As per User Requirement	
Provision for additional Capacity	Yes	
If Yes, Number of Drive Slots available to achieve additional capacity	12 (As per User Requirement)	
Connectivity & Ports		
Type of Front end Ports	USB	Practically Check up and verification with OEM Tech Brochure
Number of Front end Ports	1	
Speed of front end Ports in Gbps	10	
Type of Back end Ports	Min 4 x 1 G, 2 x 10G	
Number of Back end Ports	2	
Speed of Back end ports in Gbps	12	
Number of Remote Replication Ports(FC/Ethernet)	2	
Controllers		
Number of Controllers/VSD/ Node available in the storage System on common back plane without using external switch/device OR without common backplane using switches	2	Verification with OEM Tech Brochure and Console Software
RAID Level Support	0 - 6, 50, 60 (As per User Requirement)	

Active-Active Controllers Configured in HA	As per User Requirement	
Active Stand by Controller Configured in HA	As per User Requirement	
Cache Availability Type	Global	
Total Configurable Cache (GB)	8	
Wide Stripping or equivalent feature	As per User Requirement	
No of Snapshot Copies Per Volume	Min 255	
License for Snapshot included	Yes	
Data Replication		
Remote Replication	Yes	Verification with OEM Tech Brochure and Console Software
Remote Replication license included	Yes	
Synchronized Replication Support	Yes	
Synchronous Replication license included	Yes	
Asynchronous Replication Support	As per User Requirement	Verification with OEM Tech Brochure and Console Software
Asynchronous Replication license included	As per User Requirement	
3-DC Zero Data Loss Support	As per User Requirement	
If Yes, Supported Replication Topology for 3-DC Zero Data Loss	As per User Requirement	
Type of Data Compression	S/W Level	
Type of Data Deduplication	S/W Level	
No Single point of Failure with	As per User Requirement	

Non-Disruptive replacement of Hardware		
The Storage provide Non disruptive Firmware /Microcode upgrade	Yes	
Firmware upgrade without any controller reboot	As per User Requirement	
Encryption Required	Yes	
Type of Data at Rest Encryption	Drive Based	
Storage management software for configuration and multi-pathing(part of the supply).	YES	
Multi-pathing and load balancing and fail over software (part of supply) with license for windows/Linux servers or shall support native multipathing of OS.	YES	Verification with OEM Tech Brochure and Console Software
Protocols Supported by the storage system from day one	SMB, NFS, AFP, iSCSI	
Operating System Platform and Clustering Supported by the Storage from day one	As per User Requirement	
Operating Temp Range	0°C to 45°C (± 5) As per User Requirement	Verification with OEM Tech Brochure and Certification
Storage Temp Range	0°C to 45°C (± 5) As per User Requirement	
Operating Humidity (Rh)	90% or Better	
Storage Humidity (Rh)	90% or Better	
BIS Registration under CRS of MeiTY	Yes /No (As per User Requirement)	
If Yes, BIS Registration No under CRS of MeiTY otherwise indicate	As per User Requirement	

N/A		
BIS Registration Certificate shall be furnished when demanded by the buyer	Yes/No (As per User Requirement)	
Storage System is compliant with IPv6	Yes	
Standby power consumption of System in Watt	1000 or less	
Scope of Supply	It includes installation, commissioning & integration together with all necessary software to make the system fully functional as intended.	
On Site OEM Warranty	1 / 3 / 5 Years (As per User Requirement)	

Specification for Normal Storage

Specification	Value	Trial Directive
Storage System Type	Storage	Practically Check-up and verification with OEM Tech Brochure
Storage Capacity (TB)	10 terabyte or more(Or Defined by User Deptt)	
Hardware Form Factor of Storage System (RU)	Desktop	
Disks		
Disk Type	SATA / SSD / NL-SAS	Verification with OEM Tech Brochure and Console Software
Speed of dual ported disk drive in Gbps		
Total Numbers of Drive Slots	Min 6 (Depends upon capacity)	
Number of Drive Slots Populated with drives of different type in the Storage System	As per User Requirement	
Total no of drive slot populated with SSD	As per User Requirement	
Total no of drive slot populated with Flash Drive	As per User Requirement	
Total no of drive slot populated with SAS	As per User Requirement	
Total no of drive slot populated with NL-SAS/SATA	As per User Requirement	
Drive Type Wise Storage Capacity of System in GB	6000 GB	
Automated Storage tiring feature across the populated Drives types(in case of multiple drive system)	As per User Requirement	
Automated Storage tiering Software	As per User Requirement	Verification with OEM

License Included		Tech Brochure and Console Software
Hot Spares	Yes	
Number of Populated Disks per Hot Spare	As per User Requirement	
Provision for additional Capacity	Yes	
If Yes, Number of Drive Slots available to achieve additional capacity	As per User Requirement	
Connectivity & Ports		
Type of Front end Ports	USB	Practically Check up and verification with OEM Tech Brochure
Number of Front end Ports	1	
Speed of front end Ports in Gbps	10	
Type of Back end Ports	Min 4 x 1 G, 2 x 10G	
Number of Back end Ports	2	
Speed of Back end ports in Gbps	2	
Number of Remote Replication Ports(FC/Ethernet)	As per User Requirement	
Controllers		
Number of Controllers/VSD/ Node available in the storage System on common back plane without using external switch/device OR without common backplane using switches	As per User Requirement	Practically Check up and verification with OEM Tech Brochure
RAID Level Support	0 - 6, 50, 60 (As per User Requirement)	Verification with OEM Tech Brochure and Console Software
Active-Active Controllers Configured in HA	As per User Requirement	

Active Stand by Controller Configured in HA	As per User Requirement	
Cache Availability Type	Global	
Total Configurable Cache (GB)	1	
Wide Stripping or equivalent feature	As per User Requirement	
No of Snapshot Copies Per Volume	As per User Requirement	
License for Snapshot included	As per User Requirement	
Data Replication		
Remote Replication	Yes	Verification with OEM Tech Brochure and Console Software
Remote Replication license included	Yes	
Synchronized Replication Support	Yes	
Synchronous Replication license included	Yes	
Asynchronous Replication Support	As per User Requirement	
Asynchronuos Replication license included	As per User Requirement	
3-DC Zero Data Loss Support	As per User Requirement	Verification with OEM Tech Brochure and Console Software
If Yes, Supported Replication Topology for 3-DC Zero Data Loss	As per User Requirement	
Type of Data Compression	S/W Level	
Type of Data Deduplication	S/W Level	
No Single point of Failure with Non-Disruptive replacement of Hardware	As per User Requirement	

The Storage provide Non disruptive Firmware /Microcode upgrade	Yes	
Firmware upgrade without any controller reboot	As per User Requirement	
Encryption Required	Yes	
Type of Data at Rest Encryption	Drive Based	
Storage management software for configuration and multi-pathing(part of the supply).	YES	
Multi-pathing and load balancing and fail over software (part of supply) with license for windows/Linux servers or shall support native multipathing of OS.	YES	
Protocols Supported by the storage system from day one	SMB, NFS, AFP, iSCSI	
Operating System Platform and Clustering Supported by the Storage from day one	As per User Requirement	
Operating Temp Range	0°C to 45°C (± 5) As per User Requirement	Verification with OEM Tech Brochure and Certification
Storage Temp Range	0°C to 45°C (± 5) As per User Requirement	
Operating Humidity (Rh)	90% or Better	
Storage Humidity (Rh)	90% or Better	
BIS Registration under CRS of MeiTY	Yes /No (As per User Requirement)	
If Yes, BIS Registration No under CRS of MeiTY otherwise indicate N/A	As per User Requirement	
BIS Registration Certificate shall be	Yes/No (As per User	

furnished when demanded by the buyer	Requirement)	
Storage System is compliant with IPv6	Yes	
Standby power consumption of System in Watt	1000 or less	
Scope of Supply	It includes installation, commissioning & integration together with all necessary software to make the system fully functional as intended.	
On Site OEM Warranty	1 / 3 / 5 Years (User Department)	

QRs/TDs of Web Application Firewall (WAF)

Specifications

Specification	Values	Trial Directive
Deployment modes	Reverse Proxy, and full Proxy Mode	Verification with OEM Tech Brochure and Software Console
Web Application Security	Solution must distinguish between browsers & bot's byte has browser capability & CAPTCHA / fingerprint challenge	Verification with OEM Tech Brochure
Concurrent Connection (Maximum) (Numbers)	28000000	Verification with OEM Tech Brochure
HTTP Connections/Sec (Maximum) (Numbers)	250000	Verification with OEM Tech Brochure
System Throughput (Maximum) (Gbps)	Min 2 (As per User Requirement)	Verification with OEM Tech Brochure
Request Latency	Sub-ms	Verification with OEM Tech Brochure
Network Interface Ports	2X10G + 8*1G Copper	Practically Checkup and verification with OEM Tech Brochure
Bypass ports for fail safe	As per User Requirement	Verification with OEM Tech Brochure
Attack Protection	OWSAP TO Q10, SQL&WEB INJECTION. Device ID tracking along with protection of credential setting	Verification with OEM Tech Brochure and Software Console
Detect and prevent attackers from finding hidden directories Features	Available	Verification with OEM Tech Brochure

Processor	Min One 4 Core Intel Xeon Processor or better or AMD or equivalent	Verification with OEM Tech Brochure
Storage (GB)	Min 500 or more	Verification with OEM Tech Brochure and Software Console
Authentication and Authorization	must provide capability to obfuscate sensitive field name to defeat Man-in-The-Browser Attack	Verification with OEM Tech Brochure
Integrated scanner	As per User Requirement	Verification with OEM Tech Brochure
Logging, Reporting and Monitoring	Through Centralized Management or Local Management	Verification with OEM Tech Brochure
Input-Output Port	Management Port- RJ45; Console Port - RS232. Monitoring & policy through single GUI for WAF & ADC	Practically Checkup and verification with OEM Tech Brochure
Power Supply	Dual	Practically Checkup and verification with OEM Tech Brochure
Power Consumption (Watt)	Min 140 Watt	verification with OEM Tech Brochure and software Console
Operating Temperature Range (Degree C)	0°C - 40°C	Verification with OEM Tech Brochure
Storage Temperature Range (Degree C)	0°C - 40°C	Verification with OEM Tech Brochure
Operating Humidity (%RH)	90% or Better	Verification with OEM Tech Brochure

Compliance Certificates	Required	Verification with OEM Tech Brochure and certification
Availability of test reports from Central Govt /NABL / ILAC accredited Lab covering all the parameters	Available	Verification with OEM Tech Brochure and certification
If yes , Name of the Lab	Variable	Verification with OEM Tech Brochure and certification
If yes, Address of the Lab	Variable	Verification with OEM Tech Brochure and certification
If yes, Test Report Number and Date	Variable	Verification with OEM Tech Brochure and certification
If yes, Test Report to be furnished to the buyer on demand	Yes	Verification with OEM Tech Brochure and certification
On Site OEM Warranty (Year)	1 / 3 / 5 years or As per User Requirement	Verification with OEM Tech Brochure