GOVERNMENT OF INDIA
(Ministry of Home Affairs)
DIRECTORATE GENERAL
CENTRAL RESERVE POLICE FORCE
EAST BLOCK-7, SEC-1, R.K. PURAM, NEW DELHI-110066
(Email:- comncell@crpf.gov.in   Tele/Fax:011-26109038)

No. B.V-7/2021-22-C (IT-QRs)   Dated, the ᴖ May'2022

To

1. DIG (Comn), ITBP
   Block No. 2, CGO Complex
   Lodhi Road, New Delhi-03

2. DIG (Comn), NSG
   Meharam Nagar
   Palam, New Delhi-37

3. DIG (Comn), SSB
   East Block-V, R.K Puram
   New- Delhi-66

4. AIG (Comn), CISF
   Block No. 13, CGO, Complex
   Lodhi Road, New Delhi-03

5. DIG (Prov), BSF
   Block No. 10, CGO Complex
   Lodhi Road, New Delhi-03

6. Liaison Office, Assam Rifle
   Room No-171, North Block, MHA
   New Delhi -01

Subject: **Regarding approved QRs/TDs of "IT Infrastructure Equipments".**

Please find enclosed QRs/TDs of "IT Infrastructure Equipments" as Annexure-"A" duly approved by the competent authority is forwarded herewith for further necessary action. In aforesaid QRs/TDs total 15 items and list is given as below:-
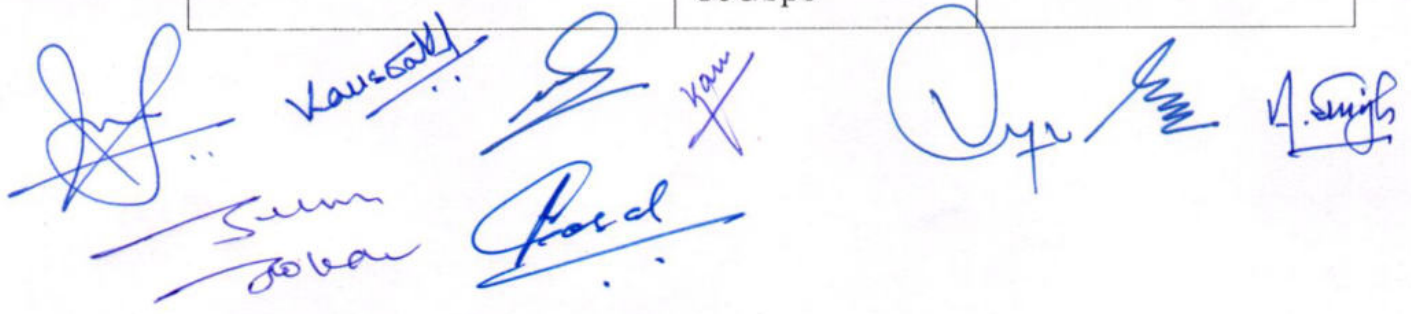
S.N	Name of equipment
1.	QRs/TDs of Layer 2 Switch 24 Ports Non PoE
2.	QRs/TDs of Layer 2 Access Switch 24 Ports PoE
3.	QRs/TDs of Layer 2 Access Switch 48 Ports
4.	QRs/TDs of Layer 3 Access Switch 24 Ports
5.	QRs/TDs of Layer 3 Core Switch 24 Ports
6.	QRs/TDs of Layer 3 Core Switch 48Ports
7.	QRs/TDs of HCI Servers (Hyper convergent Infrastructure)
8.	QRs/TDs of Rack Server
9.	QRs/TDs of Storage Server
10.	QRs/TDs of Unified Storage and Normal Storage
11.	QRs/TDs of Blade Server Chassis and Blade Server
12.	QRs/TDs of IP based CCTV System
13.	QRs/TDs of NGFW (Next Generation Firewall)
14.	QRs/TDs of Network Video Management Software
15.	QRs/TDs of WAF (Web Application Firewall)

Encl: (Approved QRs & TDs of "IT Infrastructure Equipments")

(Sunil Kr Singh, DC (Comn))
For DIG (Equipment)
Directorate General, CRPF

QRs/TDs of Layer 2 Switch 24 Ports Non PoE

Specifications	Values	Trial Directives
Type of Switch	Managed	BOO will check practically with software console and verify with OEM technical brochure.
Technology	Non PoE	
Number of 1G Copper Ports	24	
Number of 10G Copper Ports	2	
No. of 1 G SFP Port (Uplink)	0	
No. of 10 G SFP+ Port (Uplink)	2	
Redundant Power supply (from day one)	Supported	BOO will check practically and verify with OEM technical brochure.
Console Port	Available	BOO will check practically with software console and verify with OEM technical brochure.
Switching Capacity -Non Blocking	Minimum 128 Gbps	
Throughput	Minimum 95Mpps	Firm will submit OEM certificate.
Operating System	Available	
Dedicated Stacking Port/Slot (from day one)	Supported	
Stacking Bandwidth	Minimum 80Gbps	

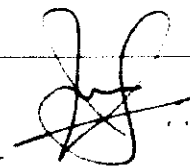| Specifications	Values	Trial Directives
Basic Layer-3 Protocol	Static,RIPv1/v2,RIPng, OSPF, Routed Access, VRRP v2/v3, ECMP, IGMP v1/v2/v3, MLD v1/v2	Firm will submit OEM certificate.
Security Feature	uRPF, Port Security, 16K MAC, SSL, SSH, broadcast, unicast and multicast storm control, ARP, 802.1x, ARP Spoofing Prevention, IPv6 DHCPv6 Guard, ARP Spoofing Prevention	Firm will submit OEM certificate.
Management Protocol	CLI, SNMP v1/v2/v3, TFTP, Syslog, SMON, DHCP Server, RMONv1/ v2, WebUI, LLDP/LLDP-MED,	Firm will submit OEM certificate.
QoS	QoS: WRR, 802.1Qbb Priority-based Flow, 802.1p CoS DSCP, SRR scheduling	
Operating Temperature	-5°C to +45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories
Operating Humidity (RH)(%)	Upto 95%	
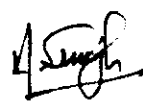
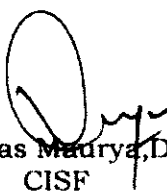| Specifications	Values	Trial Directives
IPv6 Ready from day one and dully certified	Yes	Firm will submit OEM certificate.
On site OEM warranty	As per user requirement	

(WO/RM. Mathew T.George)
Assam Rifles

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CRPF

(Sonare Pratik C, AC)
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(Arjun Singh, AC)
SSB

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DCPW
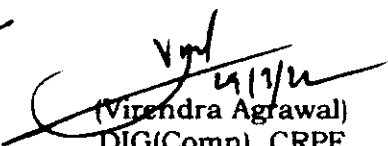
(TC. Kamlesh Kumar)
NSG

(Vikas Maurya,DC)
CISF

(Sunil Kr Singh)
DC(Comn),CRPF

(Dr.M.M.Gosal,SSO)
BPR&D
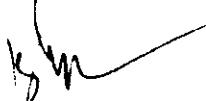
(S.D.Pandey)
DIG(IT), CRPF

(Virendra Agrawal)
DIG(Comn), CRPF

(Syed Mohd Husnain)
IG(Comn&IT),CRPF

(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

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(Kuldiep Singh, IPS)
DG, CRPF

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

Specifications	Value	Trial Directives
Type of Switch	Managed / Web Managed	BOO will check practically with software console and verify with OEM technical brochure.
Technology	PoE+	BOO will check practically and verify with OEM technical brochure.
Number of 1G Copper Ports	24	
Number of 10G Copper Ports	2	
No. of 1 G SFP Port (Uplink)	0	
No. of 10 G SFP+ Port (Uplink)	2	
Multi-Gigabit Support	Yes	
Redundant Power supply (from day one)	Yes	
Console Port	Available	
Switching Capacity - Non Blocking	128 Gbps or more	
Throughput	95 Mpps or more	BOO will check practically with software console and verify with OEM technical brochure.
Operating System	Available	

Specifications	Value	Trial Directives
Basic Layer-3 Protocol	Static. RIPvl /v2,RIPng,OSPF, Routed Access, VRRP v2/v3, ECMP, IGMP vl/v2/v3, MLD vl/v2, 8K static routes and up to 256 IP interfaces	Firm will submit OEM certificate.
Security Feature	SSH,SSL,IEEE 802.1X Web-based authentication, STP BPDU Guard and Root 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	
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	
Operating Temperature Range (Degree C)	-5°C to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity (RH)(%)	95% RH	
IPv6 Ready from day one and dully certified	Yes	BOO will verify OEM technical brochure.

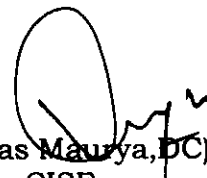| Specifications	Value	Trial Directives
PoE Power Budget (Watt)	as per user requirement	BOO will verify OEM technical brochure.
on Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

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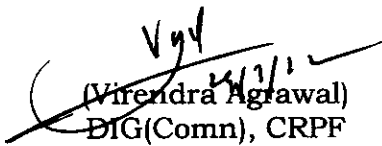BSF

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(Kuldiep Singh, IPS)
DG, CRPF

QRs/TDs of Layer 2 Access Switch 48 Ports

Specification	Value	Trial Directives
Type of Switch	Managed	BOO will check practically with software console and verify with OEM technical brochure.
Technology	Non PoE	
Number of 1G Copper Ports	48	
Number of 10G Copper Ports	2	
No. of 1 G SFP Port(Uplink)	0	
No. of 10 G SFP+ Port (Uplink)	2	
Multi-Gigabit Support	No	
Redundant Power supply (from day one)	Yes	
Console Port	Available	
Switching Capacity -Non Blocking	Minimum 176 Gbps	
Throughput	Minimum 130 Mpps	
Operating System	Available	
Dedicated Stacking Port/Slot (from day one)	Not Applicable	
Stacking Bandwidth (Gbps)	Not Applicable	
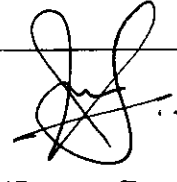
Specification	Value	Trial Directives
Basic Layer-3 Protocol	Static. RIPvl /v2,RIPng,OSPF, Routed Access, VRRP v2/v3, ECMP, IGMP vl/v2/v3, MLD vl/v2, 8K static routes and up to 256 IP interfaces	Firm will submit OEM certificate.
Security Feature	IEEE 802.1X ,Web-based authentication, STP BPDU Guard and Root Guard, DHCP Snooping, SSH, SSL, 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	
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	
Operating Temperature Range	-5°C to +45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity (RH)(%)	Upto 95%	
IPv6 Ready from day one and dully certified	Yes	Firm will submit OEM certificate.
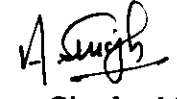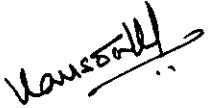
Specification	Value	Trial Directives
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

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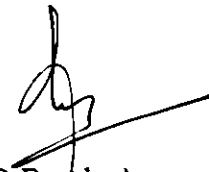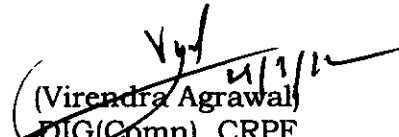
QRs/TDs of Layer 3 Access Switch 24 Ports

Specification	Values	Trial Directives
Maximum Number of Access /Downlink Ports	24	BOO will check practically with software console and verify with OEM technical brochure.
Type of Switch	Non PoE	BOO will check practically and verify with OEM technical 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)	Minimum 2	
Number of 40 G QSFP+ Port (Uplink)	As per user requirement	
Number of 100 G QSFP 28 Port (Uplink)	As per user requirement	
Management Port (RJ 45/RS 232/USB)	Yes	
RAM	Minimum 1024 MB	
Flash Memory	Minimum 1024 MB	

Specification	Values	Trial Directives
9K MTU Supported (Minimum)	Yes	BOO will check practically with software console and verify with OEM technical brochure.
Console Port	Yes	
Redundant Power supply	Yes	
Redundant Power Supply Type	Internal	
Redundant Power Supply (Hot Swappable)	Yes	
Redundant Fan	Yes	
Number of Open slot for additional Interface Card	1	
Operating System	Yes	
Dedicated Stacking	Yes	
Stacking Bandwidth	Minimum 80Gbps	
Switching Capacity / Forwarding Bandwidth (Non Blocking / Line Rate /Wired Speed) 2x (Numbers of access ports + Number of Uplink Ports)	Minimum 128Gbps	
Throughput / Forwarding Performance	Minimum 95 Mpps	
Layer 2 Protocols	802.1Q VLAN,LAG	
Number of VLAN Supported	Minimum 512	
Number of VLAN IDs Supported	Minimum 4000	
Number of IPV4 Routes	Minimum 16000	

Specification	Values	Trial Directives
Number of IPV6 Routes	Minimum 5000	BOO will check practically with software console and verify with OEM technical brochure.
Number of Mac Address Supported	Minimum 32 K	
Basic Layer-3 Protocol from day 1	Static Routing, RIPv1, RIPv2,BGP, OSPFv2,OSPFv3,RIPng	
Advance Layer-3 Protocol from day 1	OSPFv2,OSPFv3,PBR, BGP,BGP4,IS-IS,PIM-SM,PIM-SSM	
Premium Layer-3 Protocol from day 1	BGP,IS-IS,PIM-SM,PIM-SSM,VRF Lite	
Security Feature	RA Guard, DHCP Snooping, Dynamic ARP Inspection,ACL,802.1x ,RADIUS/ TACACS, Port Security, BPDU Guard, VRF Lite, IGMP snooping	
Management Protocol	GUI,CLI,Telnet,TFTP,, SNMPv1,SNMPv2/ V2C,SNMPv3,NTP,Openflow 1.3,RMON,SSHv2	
QoS	802.1p,SP,Queues per port, WRED/ WTD, Shaping, Policing / Rate Limiting	
Dimension / Form Factor (1U)	1	BOO will check practically with software console and verify with OEM technical brochure.
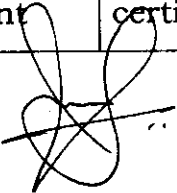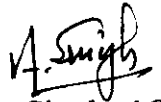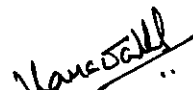
Specification	Values	Trial Directives
Certification	NDPP or EAL2 or ISO or equivalent	BOO will check practically with software console and verify with OEM technical brochure.
MTBF (Year)	7	BOO will verify OEM technical brochure.
Operating Temperature	-5°C to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity	95 (%RH)	
IPv6 Ready from day 1	Yes	Firm will submit OEM certificate.
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

(WO/RM. Mathew T.George)
Assam Rifles

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DG, CRPF

QRs/TDs of Layer 3 Core Switch 24 Ports

Specification	Value	Trial Directives
Type of Core Switch	Non Chassis Based	BOO will check practically with software console and verify with OEM technical brochure.
No. of Interface Slots	0	
No. of MPU/SUP/Fabric Slots (With redundancy)	0	
No. of Power supply (with redundancy)	2	
No. of FAN Tray	4	
No. of 1G/10G SFP+ Port	24	
No. of 1000 base-T Ports	0	
Support for 40G QSFP+ Port	Yes	
Number of 40G QSFP+ Port	As per user requirement	
Support for 100G QSFP+ Port	Yes	
Number of 100 G QSFP+ Port	As per user requirement	
Console Port	Available	
Modular OS	Available	Firm will submit OEM certificate.
Support for virtual Chassis	No	
Switching Capacity	Minimum 2000 Gbps	
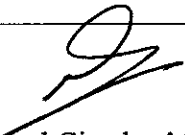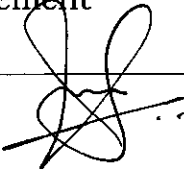
Specification	Value	Trial Directives
Throughput	Minimum 1000 Mpps	Firm will submit OEM certificate.
Advance Layer-3 Protocol	MPLS,BGP6,VXLAN,OSP, PIM	Firm will submit OEM certificate.
Security Feature	ACL,RADIUS/ TACACS, Port Security, BPDU Guard, IGM, CoPP, DNAT, RAGua	Firm will submit OEM certificate.
Management Protocol	SSHv2, RADIUS, GUI,CLI, Telnet, TFTP,SNMP v1, v2/v2c,SNMP v3, NTP,RMON, SSHv2	Firm will submit OEM certificate.
QoS	ECN,SCHEDULING,PIM-SM, 802.1p,Queues per port, Sflow, SNTP,Shapincg, Policing/Rate Limiting	
Dimension/ Form Factor(RU)	1	BOO will check practically and verify with OEM technical brochure.
Wattage	260 Watt	BOO will check practically with software console and verify with OEM technical brochure.
Operating Temperature	0° to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity (RH)	95%	
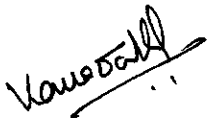
Specification	Value	Trial Directives
IPv6 Ready	Yes	Firm will submit OEM certificate.
On site OEM warranty	As per user requirement	

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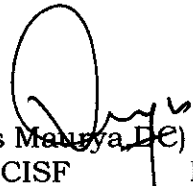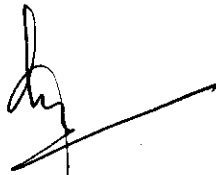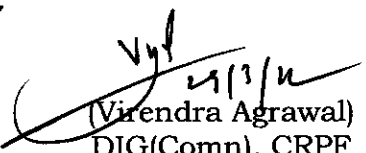
QRs/TDs of Layer 3 Access Switch 48 Ports

Specification	Values	Trial Directives
Maximum Number of Access /Downlink Ports	48	BOO will check practically with software console and verify with OEM technical brochure.
Type of Switch	Non PoE	
Number of 10/100/1000 Base-T Ports	48	
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)	Minimum 4	
Number of 40 G QSFP+ Port (Uplink)	As per user requirement	
Number of 100 G QSFP 28 Port (Uplink)	As per user requirement	
Management Port (RJ 45/RS 232/USB)	Yes	BOO will check practically and verify with OEM technical brochure.
RAM	Minimum 1024 Mb	
Flash Memory	Minimum 1024 Mb	
9K MTU Supported (Minimum)	Yes	
Console Port	Yes	

Specification	Values	Trial Directives
Redundant Power supply	As per user requirement	Firm will submit OEM certificate.
Redundant Power Supply Type	Not applicable	
Redundant Power Supply (Hot Swappable)	As per user requirement	
Redundant Fan	As per user requirement	
Redundant Fan (Hot Swappable)	As per user requirement	
Number of Open slot for additional Interface Card	As per user requirement	
Operating System	Yes	BOO will check practically with software console and verify with OEM technical brochure.
Dedicated Stacking	Yes	Firm will submit OEM certificate.
Stacking Bandwidth	Minimum 80 Gbps	
Switching Capacity / Forwarding Bandwidth (Non Blocking / Line Rate /Wired Speed) 2x (Numbers of access ports + Number of Uplink Ports)	Minimum 176 Gbps	
Throughput / Forwarding Performance	Minimum 130Mpps	
Layer 2 Protocols	802.1Q VLAN	
Number of VLAN Supported	Minimum 1024	
Number of VLAN IDs Supported	Minimum 4000	
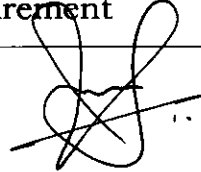
Specification	Values	Trial Directives
Number of IPV4 Routes	Minimum 16000	Firm will submit OEM certificate.
Number of IPV6 Routes	Minimum 5000	
Number of Mac Address Supported	Minimum 32K	
Basic Layer-3 Protocol from day 1	Static Routing,RIPv1,RIPv2,OSPFv2	
Advance Layer-3 Protocol from day 1	OSPFv2,PBR,PIM-SM	
Premium Layer-3 Protocol from day 1	MPLS,BGP,BGP4,IS-IS,IS-ISv6,PIM-SM,PIM-SSM,VRF Lite	
Security Feature	DHCP Snooping, Dynamic ARP Inspection,802.1x,RADIUS/ TACACS	
Management Protocol	GUI,CLI,Telnet,TFTP,,SNMPv1,SNMPv2/ V2C,SNMPv3,NTP,RMON, SSHv2,Single IP Management	
QoS	802.1p,SP,Queues per port, Shaping, Policing / Rate Limiting, Strict Priority Queuing or Low Latency Queueing	
PoE Power Budget (Watt)	As per user requirement	
Dimension / Form Factor (RU)	1	
Certification	NDPP or EAL2 or ISO or equivalent	

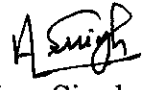| Specification	Values	Trial Directives
Mean Time Between Failure MTBF	7 year	BOO will check OEM technical brochure
Operating Temperature	-5°C to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity (%RH)	Upto95%	
IPv6 Ready from day 1	Yes	BOO will check OEM technical brochure.
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

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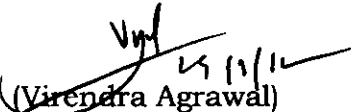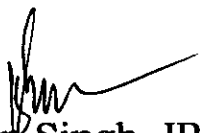
(S.D.Pandey)　　　　(Virendra Agrawal)　　(Syed Mohd Husnain)　　(Zulfiquar Hasan),IPS
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QRs/TDs of HCI Servers

Specification	Values	Trial Directives
Type of HCI offered	Generic node HCI (Consisting both Compute and Storage)	BOO will check practically with console software and verify with OEM technical brochure.
Total usable Cores available (After installation of HCI software resources required for solution) in the offered solution	Minimum 40	
Total usable Storage in TB available without using De-duplication, Compression (after installation of HCI software resources required for solution) in the offered solution	Minimum 8	
Total usable RAM in GB available (after installation of HCI software resources required for solution) in the offered solution	Minimum 512 GB	
Types of data copies across Cluster available in the offered solution	2	
Number of Nodes offered in HCI Cluster	Minimum 2	
Number of Sockets offered per Node	2	
Number of Cores per Sockets	Minimum 20	
Number of populated Processor per Node	2	
Type of Processor offered in the system	Intel Skylake/Xeon or better series or equivalent AMD.(As per user requirement)	
Indicate Processor Model number with Make	Minimum 3.2 GHz, 24.75 M cache or better	
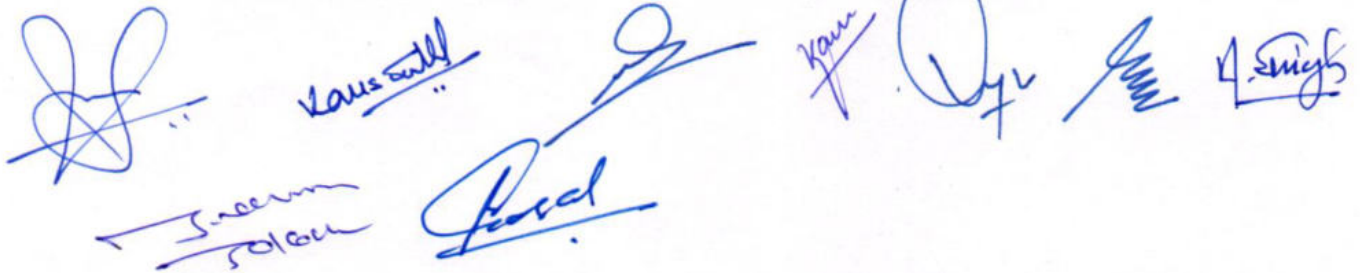
Specification	Values	Trial Directives
Type of storage media offered with the solution	SSD Drives	BOO will check practically with console software and verify with OEM technical brochure.
Total Storage capacity (RAW) offered per node	Minimum 9.6 TB	
Storage capacity offered per node with SSD drives	Minimum 9.6 TB	
Storage Scalability per node with SSD drives	Minimum 9.6 TB	
RAM Capacity (Raw) offered per node	Minimum 512 GB	
RAM scalability per node	Minimum 1536 GB	
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	Minimum 4	

Specification	Values	Trial Directives
Throughput Per Network port	Minimum 10 Gbps	BOO will check practically with console software and verify with OEM technical brochure.
Type of Network port	SFP+	
Uplink Connectivity for HCI Solution	SFP+	

HCI Interconnect Switches

Specification	Values	Trial Directives
Number of L2 Switches to be offered for Interconnection all the Network Ports in the Cluster	2	BOO will check practically with console software and verify with OEM technical brochure.
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	Minimum 16	
Number of Enabled Ports for 10 Gbps throughput per Switch	Minimum 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.	

Specification	Values	Trial Directives
Number of Enabled Ports for 100 Gbps throughput per Switch	As per user requirement.	BOO will check practically with console software and verify with OEM technical brochure.
IOPS delivered at 70:30 Read: Write Ratio on 8K block size with latency of 5ms maximum for each node	Minimum 5000 or better	Firm will submit OEM certificate.
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 1	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.	BOO will check practically with console software and verify with OEM technical brochure.

Specification	Values	Trial Directives
HCI Features 2	1. HCI provides management through a remote/On premise GUI console. Also provides storage, compute & hypervisor metrics on a 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. 4. Capable of creating instant snapshots of virtual machines and maintaining multiple copies of snapshots & clones 5. Capability to support native VM/HCI level replication for installed Hypervisor 6. Storage policy on individual VM will provide enhanced performance and flexibility to end user for better storage management.	BOO will check practically with console software and verify with OEM technical brochure.
HCI Features 3	1. Redundant components with no single point of failure in the system 2. Single management tool supports multiple clusters 3. Management tool is built into the solution, scales with the cluster 4. HCI having built-in-security for data 5. HCI capable to sustain single power supply failure.	BOO will check practically with console software and verify with OEM technical brochure.
HCI Features 4	1. VM/Node-centric policy-based management. 2. Fault tolerance and proactive high availability. 3. Supports DRS, Distributed switch 4. Stretch cluster support 5. Management platform provide out of the box automation and orchestration for appliance based operational tasks. 6. Automated disaster recovery. 7. Support for VM or APP consistent snapshot/backup. 8. Application Lifecycle Management.	BOO will check practically with console software and verify with OEM technical brochure.

Specification	Values	Trial Directives
HCI Features 5	1. Data at Rest Encryption. 2. Management tool is built into the solution, scales with the cluster, and does not require separate hardware infrastructure. 3. Integrated/Software based Remote Data recovery/Replication solution. 4. Data Integrity Checks. 5. Management tool provides visibility of network infrastructure. 6. Integrated management for hyper converged infrastructure and virtual environments with Storage & Compute/Storage/Network/Compute. 7. Intelligent data distribution across all nodes and uniform capacity utilization across all nodes at all time.	BOO will check practically with console software and verify with OEM technical brochure.
Additional features of HCI	Backup functionality to be enabled from day-1. Any additional licenses/ Appliance required to be quoted.	Firm will submit OEM certificate.
Encryption at	VM level	
Supports	Yes	
Supported industry protocols by HCI	Yes	
HCI capability to support File/Block Services and file/block replication across clusters	As per user requirement.	
Inline data Compression & Reduplications function licenses	Unlimited	Firm will submit OEM certificate.

Specification	Values	Trial Directives
HCI Generic Parameters		
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	Minimum 16	BOO will verify with OEM technical brochure.
"Hypervisor to be integrated with SDS"	Outside kernel	Firm will submit OEM certificate.
HCI support	vSphere or Hyper-V	
"Bare-metal / Non Bare metal type of virtualization hypervisor"	Bare Metal	
"Integration with Third Party FC Storage"	As per user requirement	
"The length of cable connecting the Nodes to the Switch (meters)"	Minimum 5	
Advance features of HCI	As per user requirement	
Generic Parameters		
The offered product have support from OEM for	1. Updation for Patches and Bug fixes for software within support period. 2. Up-gradation of version software within support period. 3. Service and support from OEM within support period.	Firm will submit OEM certificate.
Number of years upto which support is available from OEM for Updation (Patches and Bug fixes) within support period	Minimum 3 years	
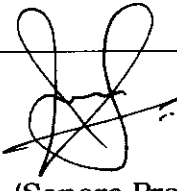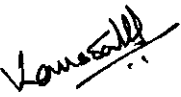
Specification	Value	Trial Directives
Number of Years upto which support is available from OEM for Up gradation of version within support period	Minimum 3 years	Firm will submit OEM certificate.
"Number of years of service and support from OEM"	Minimum 3 years	
Indicate certification available for the offered product	Attached	

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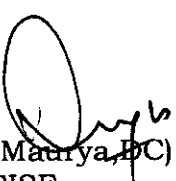
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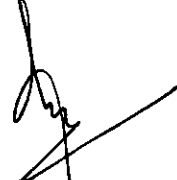
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(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

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QRs/TDs of Rack Server

Chassis

Specification	Value	Trial Directives
Processor		
Form Factor	Rack	BOO will check practically and verify with OEM technical brochure.
Size (RU)	2	
Processor Architecture	CISC(x86)	
Processor Make	Intel or AMD As per user requirement.	
Number of Cores per Processor	4 /8 / 12 / 16 / 18 / 20 / 22/ 24 or better	
Processor Base Frequency	2.6 GHz or better	
Processor Turbo Frequency	3.6 GHz or better	
Total Cache (L1+L2+L3)	Minimum 22 MB or better	BOO will check with console software and verify with OEM technical brochure.
Processor Description/ Number	Intel Xeon series or better or equivalent AMD	
Motherboard		
Chipset compatible with CPU	Intel C600 or better or equivalent AMD	BOO will check with console software and verify with OEM technical brochure.
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)	As per user requirement	
Expansion Slots Gen 3 (PCIe x16)	As per user requirement	

Specification	Value	Trial Directives
Maximum number of Sockets available on Server	1 or 2 (As per user requirement)	BOO will check with console software and verify with OEM technical brochure.
Maximum number of Sockets populated with Processors available on Server	1 or 2 (As per user requirement)	
Co Processor / GPU		
Availability of Co Processor /GPU	As per user requirement	BOO will check with console software and verify with OEM technical brochure.
If Yes, Maximum Number of Slots available for Co-Processor/GPU	As per user requirement	
If Yes, Maximum Number of slots populated with Co processor/GPU	As per user requirement	
If Yes, Co Processor /GPU Description	As per user requirement	
Memory		
Type of RAM	DDR4 SDRAM with ECC or better	BOO will check with console software and verify with OEM technical brochure.
Total Number of DIMM Slots available	12 or more	
Number of DIMM Slots populated with DDR SDRAM	4 or more (As per user requirement)	
Number of DIMM Slots populated with DDR NVRAM	4 or more (As per user requirement)	

Specification	Value	Trial Directives
DDR SDRAM Size	128 GB or More As per user requirement	BOO will check with console software and verify with OEM technical brochure.
DDR NVRAM Size (GB)	As per user requirement	
DDR SDRAM upgradable upto using spare DIMM Slots	1024 GB or more	
DDR NVRAM upgradable upto using spare DIMM Slots (GB)	As per user requirement	
SSD Storage		
Type of Interface for SSD	SATA	BOO will check with console software and verify with OEM technical brochure.
Type of SATA SSD	As per user requirement	
SATA SSD Hot Swappable	Yes	
Endurance for SATA SSD (DWPD - Drive Writes Per Day) (X)	0.8	
Total Number of Slots available for SATA SSD	8	
Number of Slot Populated with SATA SSD	3 or more As per user requirement	
Capacity offered per SATA SSD	960 GB or more	
Total Capacity Offered with SATA SSD	2880 GB or more	

Specification	Value	Trial Directives
Number of Slots populated with SAS SSD	3	BOO will check with console software and verify with OEM technical brochure.
Capacity Offered per SAS SSD	960 GB or more	
RAID		
RAID level	5 or As per user requirement	BOO will check with console software and verify with OEM technical brochure.
No of RAID Controller Ports	8 or As per user requirement	
Speed of RAID Controller Ports	12Gbps or As per user requirement	
RAID Controller Cache	2 GB or As per user requirement	
Ports & Interfaces		
Network Card Supported	1G,10G	BOO will check with console software and verify with OEM technical brochure.
Number of Networking Interface Cards (LAN)	4 or As per user requirement	
Whether Network Interface Card Embedded	Yes	
Number of Ports Per Network Interface Card	1x1G	
Networking Interface Card Features	Asset Feature Tracking	
Server Network Ports should Support SR-IOV Feature	Yes	

Specification	Value	Trial Directives
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	BOO will check with console software and verify with OEM technical brochure.
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	
Length of Twinax Breakout Cables per Port (meter)	As per user requirement	

Specification	Value	Trial Directives
Video Controller (support VGA or above resolution)	Yes	BOO will check with console software and verify with OEM technical brochure.
Keyboard Port	No	
Mouse Port	No	
DVD ROM (Internal/External)	Yes	
USB Ports (version 2 or 3)	4	
Total number of Spare Bays Available for Future Up-gradation (Internal)	Minimum 3 or As per user requirement	
Total number of Spare Bays Available for Future Up-gradation (Hot Pluggable)	Minimum 3 or As per user requirement	
Certifications		
Certifications/Compliance (OS)	Windows, Red Hat Linux,Suse Linux,Ubuntu,Cent OS	Firm will submit OEM certificate.
Certification/Compliance (Virtualization/Cloud Platform)	VMware, Red Hat Virtualization	
Features		
Management Features-1	Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port	Firm will submit OEM certificate.
Management Features-2	Platform inventory and health status	

Specification	Value	Trial Directives
Security Features-1	Secure Boot Firmware and Bios Level Security)	Firm will submit OEM certificate.
Security Features-2	Secure/Automatic BIOS recovery	
Server scalability to be achieved within the box & without adding nodes	Yes	
support for high availability clustering and virtualization	Yes	
Generic		
Redundant Power Supply	Yes	Firm will submit OEM certificate.
Hot Swappable (Redundant Power Supply)	Yes	
Power Supply Efficiency	As per user requirement	
Redundant Fan	As per user requirement	
Hot Swappable (Redundant Fan)	As per user requirement	
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	Firm will submit OEM certificate
SPEC fp_rate_2017 for the product (must be available on SPEC dot ORG before evaluation)	As per user requirement	
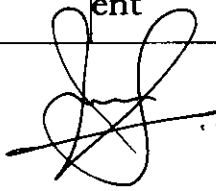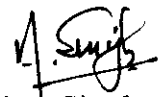
Specification	Value	Trial Directives
SPEC int_speed_base 2017 for the product (must be available on SPEC dot ORG before evaluation)	As per user requirement	Firm will submit OEM certificate
SPEC fp_speed_2017 for the product (must be available on SPEC dot ORG before evaluation)	As per user requirement	
Miscellaneous		
Maximum power consumption of the system (Watts)	As per user requirement	Firm will submit OEM certificate
BIS Registration under CRS of MeitY	Yes	Firm will submit BIS registration certificate
BIS Registration Number Under CRS of MeitY and its validity	Yes	
Other Certifications Available	UL,CE	Firm will submit certificate for UL,CE.
RoHS Compliance	Yes	Firm will submit Central Government/ NABL/ILAC accredited laboratory certificate
a) Dry heat:test - for 16 hrs at 45 deg C as per IS: 9000/pt-3/sec-5/1977 or equivalent		
b) Cold test -for 4 hrs at 0 deg C as per IS: 9000/pt-2/sec-4/1977 or equivalent		
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 or equivalent		
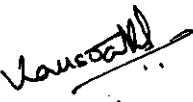
Specification	Value	Trial Directives
The server has been checked for all the parameters before conditioning, After completion of the environmental tests sequence, with a recovery period of 1 to 2 hrs, the server found to be functional	Yes	Firm will submit Central Government/ NABL/ILAC accredited laboratory certificate
Warranty		
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

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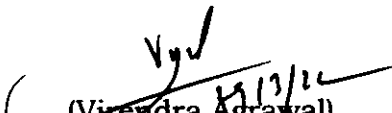
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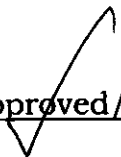
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IG(Comn&IT),CRPF

(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

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QRs/TDs of Storage Server

Specification	Values	Trial Directives
Form Factor	Rack	BOO will check practically with console software and verify with OEM technical brochure.
Size (RU)	2	
Processor Make	Intel / AMD	
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 C621 or better or equivalent AMD	
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	Minimum 128 GB	
RAM upgradable upto	3072 GB	
DIMM Slots	24	
Type of Hard Disk Drive	NL SAS	
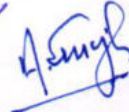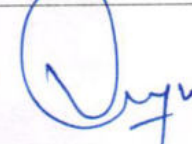
Specification	Values	Trial Directives
Total number of slots available for SSD drive	Not Applicable	BOO will check practically with console software and verify with OEM technical brochure.
Number of Slots populated with SSD Drive	0	
Capacity offered per SSD Drive	300 GB	
Total number of slots available for SAS drive	0	
Number of Slots populated with SAS Drive	0	
Capacity offered per SAS Drive	0	
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 GB	
NL SAS drive speed (hot plug or better) (RPM)	10K	
Total number of slots available for SATA drive	0	
Number of Slots populated with SATA Drive	0	
Capacity offered per SATA Drive	0	
SATA drive speed (hot plug or better)	7200 RPM or more as per user requirement	

Specification	Values	Trial Directives
Total Storage Capacity offered	24 TB or more or As per user requirement	BOO will check practically with console software and verify with OEM technical brochure.
RAID Controller Cache (GB)	2	
RAID Level	5/6	
RAID Controller Ports @12 Gbps	Minimum 8	
Video Controller (support VGA or above resolution)	Yes	
Keyboard	No	
Mouse	No	
Bays (minimum 2 internal or more hot plug)	Minimum 24	
USB Ports (version 2.0/3.0)	4	
Certifications, Compliance support by Windows, Red Hat or Novell	Yes	
DVD ROM (or better)	8X or better	
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	
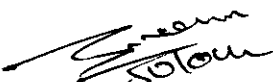
Specification	Values	Trial Directives
Power Management	Screen blanking, hard disk & system idle mode in power on, set up password, power supply surge protected	BOO will check practically with console software and verify with OEM technical brochure.
Redundant Power Supply	Yes	
Redundant Fan	Yes	
Server Main Supply	230 V +/-10%, 50 Hz	BOO will check practically.
Maximum power consumption of the system	500W	Firm will submit OEM certificate.
Server scalability to be achieved within the box & without adding nodes	Yes	Firm will submit OEM certificate.
BIS Registration under CRS of Meity	Yes	Firm will submit BIS registration certificate.
RoHS Compliance	Yes	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
a. Dry heat test (For 16 hrs at a temperature of 45 degree C in accordance with IS: 9000/part-3/section-5/1977)**or equivalent** b. Cold test(For 4 hrs at a temperature of 0 degree C in accordance with IS: 9000/part-2/section-4/1977**or equivalent** 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) **or equivalent**		Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
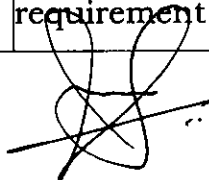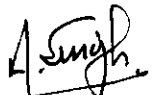
Specification	Values	Trial Directives
Note:- The server shall be checked for all the parameters before conditioning, After completion of the above environmental tests sequence, with a recovery period of 1 to 2 hrs, the server shall be functional		
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

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DCPW

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NSG
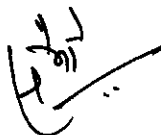
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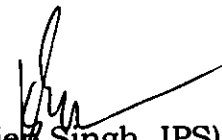
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(Syed Mohd Husnain)
IG(Comn&IT),CRPF

(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

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DG, CRPF

QRs/TDs of Unified Storage System and Normal Storage

Unified Storage System

Specification	Value	Trial Directives
Storage System Type	NAS Storage	BOO will check practically with console software and verify with OEM technical brochure.
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	BOO will check practically with console softwareand verify with OEM technical brochure.
Speed of dual ported disk drive	6Gbps	
Total Numbers of Drive Slots	Minimum 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 SAS	As per user requirement	
Total no of drive slot populated with NL-SAS	12 or more As per user requirement	
Drive Type Wise Storage Capacity of System in GB	4000 GB or more As per user requirement	
Automated Storage tiring feature across the populated Drives types(in case of multiple drive system)	Yes	

Specification	Value	Trial Directives
Automated Storage tiring Software License Included	Yes	BOO will check practically with console software and verify with OEM technical brochure.
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 or more As per user requirement	
Connectivity & Ports		
Type of Front end Ports	USB	BOO will check practically and verify with OEM technical brochure.
Number of Front end Ports	1	
Speed of front end Ports	10Gbps	
Type of Back end Ports	Minimum 4 x 1 G, 2 x 10G	
Number of Back end Ports	2	
Speed of Back end ports	12Gbps	
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	BOO will check practically and verify with OEM technical brochure.
RAID Level Support	0 - 6, 50, 60 as per user requirement	

Specification	Value	Trial Directives
Active-Active Controllers Configured in HA	As per user requirement	BOO will check practically and verify with OEM technical brochure.
Active Stand by Controller Configured in HA	As per user requirement	
Cache Availability Type	Global	
Total Configurable Cache	Minimum 8 GB	
Wide Stripping or equivalent feature	As defined by user department	
No of Snapshot Copies Per Volume	Minimum 255	
License for Snapshot included	Yes	BOO will check practically with console software and verify with OEM technical brochure.
Data Replication		
Remote Replication	Yes	BOO will check practically with console software and verify with OEM technical brochure.
Remote Replication license included	Yes	
Synchronized Replication Support	Yes	
Synchronous Replication license included	Yes	
Asynchronous Replication Support	Yes	
Asynchronous Replication license included	Yes	
3-DC Zero Data Loss Support	No	

Specification	Value	Trial Directives
If Yes, Supported Replication Topology for 3-DC Zero Data Loss	NA	BOO will check practically with console software and verify with OEM technical brochure.
Type of Data Compression	Software Level	
Type of Data Deduplication	Software 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 multi pathing of OS.	Yes	
Protocols supported by the storage system from day one	SMB, NFS, AFP, iSCSI or FC	
Operating Temperature	0°C to 45 °C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratory.
Storage Temperature	0°C to 45 °C	
Operating Humidity (Rh)	80%	
Storage Humidity (Rh)	20 to 80%	

Specification	Value	Trial Directives
BIS Registration under CRS of MeiTY	Yes	Firm will submit BIS registration certificate.
If Yes, BIS Registration No under CRS of MeiTY otherwise indicate N/A	As per user requirement	Firm will submit certificate.
BIS Registration Certificate shall be furnished when demanded by the buyer	As per user requirement	
Storage System is compliant with IPv6	Yes	Firm will submit OEM certificate.
Standby power consumption of System	1000 Watt or less	
On Site OEM Warranty	As per user requirement	
Normal Storage		
Storage System Type	Storage	BOO will check practically and verify with OEM technical brochure.
Storage Capacity (TB)	10 TB or more (As per user requirement)	
Hardware Form Factor of Storage System (RU)	Desktop	
Disks		
Disk Type	SATA / SSD / NL-SAS	BOO will check practically with console software and verify with OEM technical brochure.
Speed of dual ported disk drive in Gbps	As per user requirement	
Total Numbers of Drive Slots	Minimum 6 (Depends upon capacity)	

Specification	Value	Trial Directives
Number of Drive Slots Populated with drives of different type in the Storage System	Minimum 2 As per user requirement	BOO will check practically with console software and verify with OEM technical brochure.
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	Minimum 2 (As per user requirement)	
Drive Type Wise Storage Capacity of System	4000TB/6000TB/8000TB	
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	4 Or As per user requirement	
Connectivity & Ports		
Type of Front end Ports	USB	BOO will check practically and verify with OEM technical brochure.
Number of Front end Ports	1	
Speed of front end Ports in Gbps	10	
Type of Back end Ports	Minimum 4 x 1 G, 2 x 10G	
Number of Back end Ports	2	
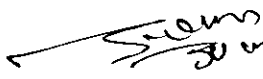
Specification	Value	Trial Directives
Speed of Back end ports in Gbps	2	BOO will check practically and verify with OEM technical brochure.
Number of Remote Replication Ports(FC/Ethernet)	As per User requirement	
Controllers		
Number of Controllers/VSD/ Node available in the storage System on common back plane without using external switch/device OR without common backplane using switches	As per User requirement	BOO will check practically with console software and verify with OEM technical brochure.
RAID Level Support	0 - 6, 50, 60	
Cache Availability Type	Global	
Total Configurable Cache	1 GB	
Type of Data Compression	Software Level	
Type of Data Deduplication	Software Level	
The Storage provide Non disruptive Firmware /Microcode upgrade	Yes	
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 multi pathing of OS.	Yes	
Protocols Supported by the storage system from day one	SMB,NFS ,iSCSI	
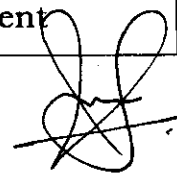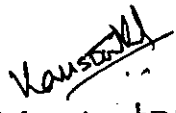
Specification	Value	Trial Directives
Operating temperature	0°C to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Storage temperature	0°C to 45°C	
Operating Humidity (Rh)	80%	
Storage Humidity (Rh)	20 to 80%	
BIS Registration under CRS of MeiTY	Yes	Firm will submit OEM certificate.
Storage System is compliant with IPv6	Yes	Firm will submit OEM certificate.
Standby power consumption of System	1000 W or less	Firm will submit OEM certificate.
On Site OEM Warranty	As per user requirement	Firm will submit OEM certificate.

(WO/RM. Mathew T.George)
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CRPF

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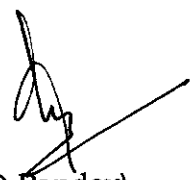
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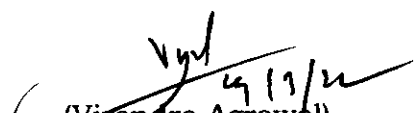
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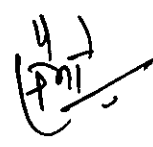
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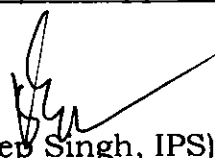
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QRs/TDs of Blade Servers and Chassis for Blade Server

Chassis for Blade Server

Specification	Value	Trial Directives
Form Factor	Rack Mount	BOO will check practically and verify with OEM technical 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	Yes	
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	Yes	
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 (2x Min 1G, 2x Min 10G) on each Blade	
Chassis has Redundant fiber channel switch/ modules to provide at least 2 numbers of 16 GB/s fiber channel connectivity to the external SAN Storage, Server to Server communication should be in 1:1 non blocking	Optional As per user requirement	

Specification	Value	Trial Directives
Chassis offered with redundant converged Switches/modules/Interconnect	As per user requirement	BOO will check practically and verify with OEM technical brochure.
Aggregated LAN Bandwidth	Minimum 40Gbps	
Aggregated SAN Bandwidth	Minimum 32Gbps	
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	
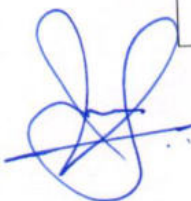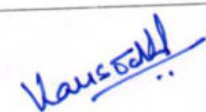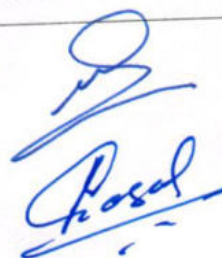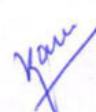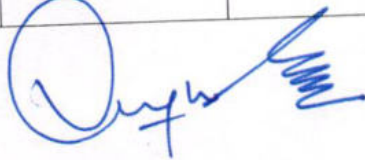
Specification	Value	Trial Directives
Server should support agent less management using remote management port	Yes	BOO will check practically with console software and verify with OEM technical brochure.
The server should support monitoring and recording changes in the server hardware and system configuration	Yes	
Remote console sharing upto 6 users simultaneously during pre-OS and OS runtime operation, Console replay - Console Replay captures and stores for replay the console video during a server's last major fault or boot sequence	Yes	
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	

Specification	Value	Trial Directives
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	BOO will check practically with console software and verify with OEM technical brochure.
The Server Management Software should be of the same brand as of the server supplier	Yes	
BIS Registration under CRS of Meity	Yes	Firm will submit BIS registration certificate.
On Site OEM Warranty	As per user requirement	
Blade Server		
Type of Server	Blade	BOO will check practically with console software and verify with OEM technical brochure.
Maximum Number of sockets available on chipset	2	
Maximum Number of sockets populated with processor	2	
Processor Make	Intel or AMD	
No. of Cores per Processor	Minimum 16	
Processor Configuration	Intel Xeon Gold 6130 (2.10GHz/16core/22MB/125W) or better Or equivalent AMD	
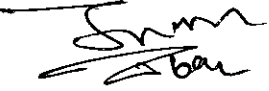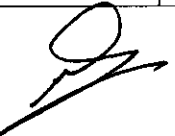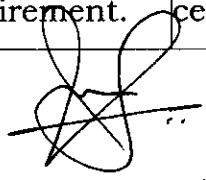
Specification	Value	Trial Directives
Chipset compatible with CPU	INTEL C621 or better Or equivalent AMD	BOO will check practically with console software and verify with OEM technical brochure.
Number of PCI Express Slots (Gen 3.0 or higher)	Minimum 2	
RAM Type	DDR4	
RAM SIZE (GB)	128 or more As per user requirement	
RAM upgradable upto	2000 GB	
DIMM Slots (Minimum)	16	
Type of Hard Disk	SAS	
Hard disk drive Capacity (GB)	Minimum 1200	
Hard disk drive RPM (hot plug or better) (RPM)	10K	
RAID Type	1 / 5 / 6	
RAID Controller Caches (GB)	1	
Connectivity Ports	FC + Ethernet	
Dual Port Network Card Bandwidth (Gbps)	Minimum 10 Gbps	
FC HBA Dual port card	Available	
FC HBA Dual port card Speed	Minimum 16Gbps	
OS Certifications, Compliance; support by Windows, Red Hat or Novell.	Yes	
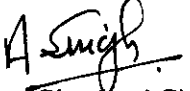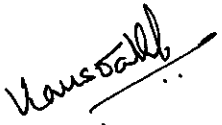
Specification	Value	Trial Directives
BIS Registration under Compulsory Registration Scheme of Meity	Yes	Firm will submit BIS registration certificate.
RoHS Compliance	Yes	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Power Supply	230 +/- 10%, 50 Hz	BOO will check practically.
Operating Temperature Range	10°C-40°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Operating Humidity	85% RH	
On Site OEM Warranty	As per user requirement.	Firm will submit OEM certificate.

(WO/RM. Mathew T.George)
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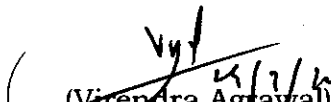
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QRs/TDs for IP Based CCTV System
(Camera and CCTV Storage)

Specification	Value	Trial Directives
Camera Type		
Type of Camera Housing	DOME /PTZ / Box / Bullet Camera (As per user requirement)	BOO will check practically and verify with OEM technical brochure.
IP Camera	Yes	BOO will check practically with console software and verify with OEM technical brochure.
Image Sensor		
Image Sensor Type	CMOS or better	Firm will submit OEM certificate.
Image Sensor Size	Minimum 0.34 inch	Firm will submit OEM certificate.
Camera Image Sensing capacity (Picture Mode)	Minimum 2MP	Firm will submit OEM certificate.
Resolution	Full HD (1920 x 1080 Pixel) @ 50/60 FPS or better	Firm will submit OEM certificate.
Day/Night Capable	Yes	Firm will submit OEM certificate.
IR illumination Range	Minimum 50 meter	Firm will submit OEM certificate.
Thermal Capability	As per user requirement	Firm will submit OEM certificate.
Optics		
Lens Type	Motorized Varifocal	Firm will submit OEM certificate.

Specification	Value	Trial Directives
Focal Length(mm)	Minimum 4.3-129 mm. P-Iris	Firm will submit OEM certificate.
Iris Control	Yes	
Focus Mode	Auto, Zooming, One Push, Manual	
Video		
Frame Rate (fps)	Minimum 25	Firm will submit OEM certificate.
Video Compression	H.264, H.265, H.265, MJPEG, MPEG4	
Video Streaming	Dual compressed stream	
PAN / Tilt / Zoom		
Panning Range	0-360	Firm will submit OEM certificate.
Pan Speed (deg/sec)	Minimum 320	
Tilt Range below horizontal (deg)	Minimum 0-90	
Tilt Range above horizontal (deg)	Minimum 0-5	
Tilt Speed (deg/sec)	Minimum 120	
Optical Zoom	Minimum 30X	
Digital Zoom	Minimum 16X	
Audio		
Audio Support	Yes	BOO will check practically and verify with OEM technical brochure.
Audio Compression	G.726,G.722.1,G.711	

Specification	Value	Trial Directives
Audio Streaming	Two-Way	BOO will check practically and verify with OEM technical brochure.
Number of Audio Input Channel	1	
Number of Audio Output Channel	1	
External Microphone Support	No	
Alarm		
Alarm Support	Yes	Firm will submit OEM certificate.
Number of Alarm Digital Input	2	
Number of Alarm Relay Output	1	
Pre/Post Alarm Buffer	Yes	
Security		
Multi Level User ID/Password	Yes	Firm will submit OEM certificate.
IP Address Filtering	Yes	
Encrypted Data Transmission	HTTPS (SSL/TSL)	
Performance		
Minimum Illumination for Capturing Color Image	0.5 lux or better	Firm will submit OEM certificate.
Electronic Shutter Speed(sec)	1/50 to 1/10000	
WDR (Wide Dynamic Range)	120 dB or better	
SNR (Signal to Noise Ratio)	50-60 dB or better	
Auto Exposure	Electronic Level Control	

Specification	Value	Trial Directives
Features		
White Balance (Indoor/ Outdoor/Manual Selectable)	Yes	Firm will submit OEM certificate.
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	Firm will submit OEM certificate.

Specification	Value	Trial Directives
IP Support	Static, Dynamic	Firm will submit OEM certificate.
Signal Processing	Digital Signal Process	
IPv6 ready	Yes	
Wireless	No	
Simultaneous Connections	20	
Storage		
On Board SD Card Support	Yes	BOO will check practically.
SD Card Memory(GB)	Minimum 128	
Housing		
Installation Type	Outdoor / Indoor	BOO will check practically.
Material of the Housing construction	Plastic / Metal	BOO will check practically and firm will submit OEM certificate.
Protection	IP 66	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Vandal Resistant Housing	Yes	Firm will submit OEM certificate.
If Yes, IK rating	IK 10 or equivalent	Firm will submit OEM certificate.
Mounting bracket	Pole Mounted	BOO will check practically.

Specification	Value	Trial Directives
Power Supply		
Power Input	24 V DC	BOO will check practically.
Suitable Adapter shall be supplied to Make the Equipment Work on 230 V ±10%, 50 Hz	Yes	
Environmental/Certification		
Operating Temperature Range	-10°C to 50 °C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Relative Humidity Non Condensing (%)	95	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Availability of facility & infrastructure for verification of all parameters, features and capability with seller.	Yes	Firm will submit undertaking certificate.
BIS Registration for safety general requirements as per IS 13252 (Part 1): latest	Yes	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Warranty / Services		
Warranty	As per user requirement	Firm will submit OEM certificate.
Supply of compatible drivers and software included	Yes	Firm will submit OEM certificate.

Specification – CCTV Video Recorder

Specification	Value	Trial Directives
Type of Recording Device	NVR	Firm will submit OEM certificate.
IP Camera Support	Yes	BOO will check practically and verify with OEM technical brochure.
PTZ Camera control Support	Yes	BOO will check practically and verify with OEM technical brochure.
Housing construction	Aluminum	Firm will submit OEM certificate.
Mounting	Rack Mounted	BOO will check practically and verify with OEM technical brochure.
Rack Mount configuration	2U / 4U	BOO will check practically and verify with OEM technical brochure.
Capability of Recorder to Work with Other Makes of CCTV Cameras (ONVIF support)	Yes	BOO will verify with OEM technical brochure.
Video		
Number of Video Input Channels	Minimum 32	BOO will check practically and verify with OEM technical brochure.
Number of IP based Video input Channels for HVR	Minimum 64	BOO will verify with OEM Tech brochure.
Number of Video Output Channels	Minimum 2	BOO will check practically and verify with OEM technical brochure.

Specification	Value	Trial Directives
Recording Resolution	HD/Full HD/ 4K (3840 × 2160)	BOO will check practically and verify with OEM technical brochure.
Supported Compression Technique	H.264,H.265,MPEG-4,MJPEG,H.265+,H.264+	Firm will submit OEM certificate.
Maximum Number of cameras to be viewed on a single display	64	BOO will verify with OEM technical brochure.
Total number of simultaneous local views	4	BOO will verify with OEM technical brochure.
Simultaneous Monitoring Connections for All Cameras (Users in Local Network for Client Connection)	4	BOO will verify with OEM technical brochure.
Recording Speed for all channels	25 Fps	BOO will verify with OEM technical brochure.
Minimum Through put	512 Mbps	BOO will verify with OEM technical brochure.
Display Image Rate	Real time per channel	BOO will verify with OEM technical brochure.
Audio		
Audio Support	Yes	BOO will verify with OEM technical brochure.
Audio Input	1	BOO will verify with OEM technical brochure.
Audio Output	1	BOO will verify with OEM technical brochure.

Specification	Value	Trial Directives
Audio Compression	G.726,G.711,G.722.1,A-Law,U-Law,MP2L2,AAC	BOO will verify with OEM technical brochure.
Minimum Number of Simultaneous Channels for Two-way Audio Support	1	BOO will verify with OEM technical brochure.
Security		
Type of Encryption	HTTPS (SSL/TSL),HTTP (SSL/TSL)	BOO will verify with OEM technical brochure.
Multi Level User ID / Password	Yes	BOO will verify with OEM technical brochure.
Alarm		
Alarm Support	Yes	BOO will verify with OEM technical 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	BOO will verify with OEM technical brochure.

Specification	Value	Trial Directives
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)	BOO will check practically and verify with OEM technical brochure.
Supported Interface	Ethernet, HDMI, VGA, USB, RS 232, RS-485	BOO will verify with OEM technical brochure.
Physical Layer of Ethernet	10/100/1000 Base TX	
Number of Ethernet Ports	2	
Number of HDMI Ports	2	
Number of VGA Ports	1	
Number of CVBS Ports	As per user Requirement	BOO will check practically and verify with OEM technical brochure.
Number of USB Ports	4	
Number of Serial Ports	2	
Number of PoE Ports	As per user Requirement	
Features		
Video Loop Support	Yes	BOO will verify with OEM technical brochure.
Video Recorder supports recording on NAS Directly	Yes	
Remote Administration (Remote Configuration And Status Using Web Based Tool)	Yes	

Specification	Value	Trial Directives
System Update (Remote System Update Over Network Using Web Client)	Yes	BOO will verify with OEM technical brochure.
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	BOO will check practically with software console and verify with OEM technical brochure.
Bookmarks	Forward, Backward, adjustable playback speed, Full Screen, Next Camera, Previous Camera, Repeat	

Specification	Value	Trial Directives
Page preview	Multi Monitor Support, Video Window, Electronic Map on two separate monitors	BOO will check practically with software console and verify with OEM technical brochure.
Total Management	Group add, Delete, Group management	
Camera	Add, Edit, Delete, Use Master account, Use Specific account	
Storage		
Internal Hard Drive Interface	SATA	BOO will check practically with software console and verify with OEM technical brochure.
Number of Hard Disks (inclusive in the scope of supply)	1	
Storage Capacity of each Hard Disk	Min 8 TB	
Total Storage Capacity	Minimum 32 TB	
Internal Storage Expandable upto	64 TB	
Number of Hard Disks supported	8	
Redundancy Option	RAID 10	
Power Supply		
Power Input	230 ± 10%, 50Hz	BOO will check practically.
Suitable Adapter to be Supplied to Make the Equipment Work on 230 V ± 10 %, 50 Hz	Yes	
Redundant Power Supply	As per User requirement	
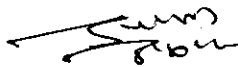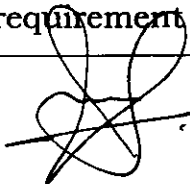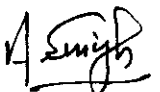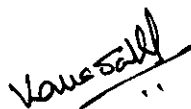
Specification	Value	Trial Directives
Environmental / Certification		
Operating Temperature	-10°C to 55 °C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Relative Humidity Non Condensing at 40 °C	95 %	
BIS Registration for safety general requirements as per IS: 13252 (Part 1): latest	Yes	
Availability of facility and infrastructure for verification of all the parameters, features and capability with the Seller	Yes	Firm will submit undertaking.
Warranty / Services		
Warranty	As per user requirement	Firm will submit OEM certificate.

(WO/RM. Mathew T.George)
Assam Rifles

(Manpal Singh, AC)
CRPF

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BSF

(Arjun Singh, AC)
SSB

(K.Saha, Asst Director)
DCPW

(TC. Kamlesh Kumar)
NSG

(Vikas Maurya, DC)
CISF

(Sunil Kr Singh)
DC(Comn),CRPF

(Dr.M.M.Gosal,SSO)
BPR&D

(S.D.Pandey)
DIG(IT), CRPF

(Virendra Agrawal)
DIG(Comn), CRPF

(Syed Mohd Husnain)
IG(Comn&IT),CRPF

(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

Approved/Not Approved

(Kuldiep Singh, IPS)
DG, CRPF

QRs/TDs of Next Generation Firewall (NGFW) / Universal Threat Management (UTM)

Specification	Value	Trail Directives
Type	NGFW/UTM	BOO will verify with OEM technical brochure.
Form Factor (RU)	Desktop/Table top / Rack mountable	BOO will check practically and also verify with OEM technical 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	BOO will check practically with console software and verify with OEM technical brochure.
Traffic handled	TCP,UDP,HTTP/TCP,TCP/UDP	BOO will check practically with OEM technical brochure.
Packet Size	Minimum 1024 KB	
Throughput with all features enabled(Under Test Condition)	Minimum 1000 Mbps	BOO will verify with OEM technical brochure.
Throughput (Real World/Prod Performance) (As per user requirement)	Minimum 1000 Mbps	
Concurrent Session/Concurrent Connection	Minimum 2M	
New session/Connection per second	Minimum 25K	

Specification	Value	Trail Directives
Type of Interface Supported Multi select	GE Copper	BOO will verify with OEM technical brochure.
Number of GE Copper interface	As per user requirement	BOO will check practically and verify with OEM Tech brochure.
Number of 10G SFP+ interface	As per user requirement	
Number of QSFP+ 40 G interface	As per user requirement	
Number of GE Small Form-Factor Pluggable (SFP) interface	As per user requirement	
Number of QSFP28 100 G interface	As per user requirement	
Number of col /WAN Ports	As per user requirement	
Number of Ipsec VPN Peers supported (Site to Site)	Minimum 3000	
Number of Ipsec VPN Peers supported (Client to Site)	Minimum 1000	
Number of SSL VPN Peers supported (Client to Site)	As per user requirement	BOO will verify with OEM technical brochure.
Type of Storage Disk	SSD	
Storage Capacity	Minimum 100 GB or as per user requirement	
Power Supplies	Single / Dual (As per user requirement)	
Hot swappable power supply	As per user requirement)	
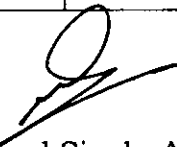
Specification	Value	Trail Directives
Redundant Fan	As per user requirement	BOO will verify with OEM technical brochure.
Hot Swappable (Redundant Fan)	As per user requirement	
Type of Processor	X86	BOO will check practically with software console and verify with OEM technical brochure.
High Availability Support	Yes	BOO will verify with OEM technical brochure.
If Yes, High Availability from day 1	Yes	
Interface Expansion slots supported	Minimum 2	
Firewall Policies - License	Yes	
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 Antivirus(Features can be defined by user department)	
Signature supported	Min 5000	BOO will verify with OEM technical brochure.
Security Intelligence	At least should support IP, URL, Domain	
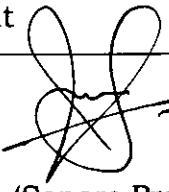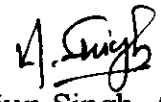
Specification	Value	Trail Directives
Certification	Common Criteria or NDPP or NSS or EAL4 or Compliance to Indian Cyber Security Standards issued by GoI.	Firm will submit concerned lab certificate.
Operating Temperature	0° C to 45° C	Firm will submit lab test certificate of Govt Lab or NABL or ILAC accredited laboratory.
Operating Humidity	90 %RH	
IPv6 Ready from day 1	Yes	Firm will submit OEM certificate.
On Site OEM Warranty	As per user requirement	

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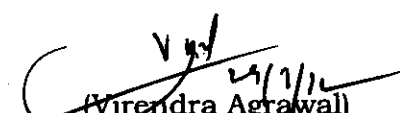
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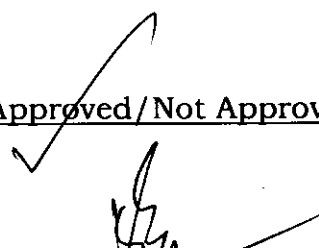
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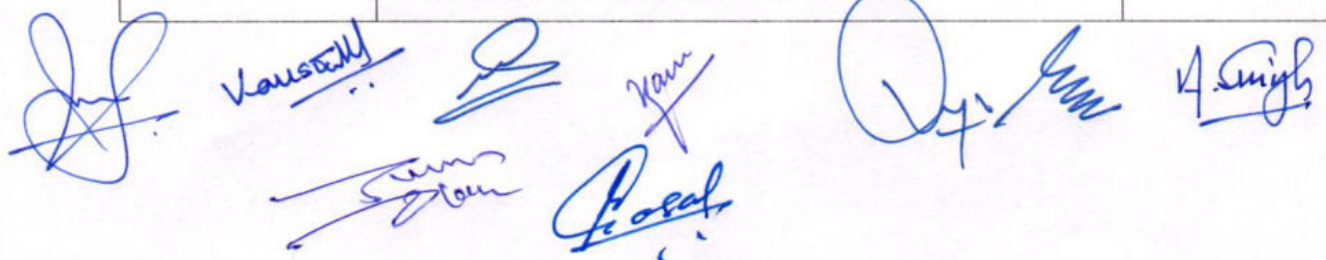
QRs/TDs of Network Video Management Software

Basic Information

Specification	Value	Trail Directives
Software domain	Network Video Management System Software	BOO will check practically and verify with OEM technical brochure.
Type of video management system software	1. VMS software for local monitoring 2. VMS software for centralized monitoring for multi-location installation	BOO will verify with OEM technical brochure.
Type of license	1. Perpetual	Firm will submit OEM certificate.
License Cost	Per Device(Camera) / Per Concurrent User	Firm will submit OEM certificate.
Deployment option	1. On site compute device	BOO will verify with OEM technical brochure.
Brief Description	NVMS Software	BOO will check practically and verify with OEM technical brochure.
Number of Years upto which Support is available from OEM	1	BOO will verify with OEM technical brochure.

Specification	Value	Trail Directives
Generic Features		
Generic feature in the offered product	1. Video Management software is highly scalable Enterprise level software & a complete video surveillance solution. It is scalable to required numbers of cameras that can be added on a unit -by-unit basis. 2. Video Management software is licensed &operate on open architecture & require no proprietary IT hardware. 3. The Video Management software allow video to be streamed on workstation monitor or on a Video wall. 4. The User with administrative rights to create clients (users) & give access to the software client application based on predefined user access rights. 5. System allow the recording, live monitoring, playback of archived video and data simultaneously. 6. The VMS Video management system to be seamlessly integrated with Face recognition software and have the capability to receive the alerts. 7. Management screen: Lock, unlock with password support.	BOO will verify with OEM technical brochure.
Software provides	1. Several simultaneous live picture connections of camera in network. 2. Configuration of monitoring situation (site maps). 3. Programming of alarm-triggered automatic events in various alarms configuration. 4. System set up with limited operation options for clearly defined surveillance tasks. 5. Programming of automatic recording events on a network recorder.	

Specification	Value	Trail Directives
Type of Streaming	1. Single Streaming. 2. Dual Streaming. 3. Multi-streaming.	BOO will verify with OEM technical brochure.
Video compression format supported by the software in real time	1. H.264 2. MJPEG 3. H.265 4. MPEG-4	
Frame rate range supported by the software (in fps)	Unlimited	
Resolution	1. Full HD 2. Ultra HD 3. HD	
Number of monitor for displaying live video with one server /workstation	> 1 (Defined by User Department)	
Number of level of users and alarm prioritization supported by the offered product	> 1 (Defined by User Department)	
Number of cameras to be replayed simultaneously by the offered product	4 or More (As per user requirement)	
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).	
Cyber security Parameters	1. SSL/TLS 2. Complex passwords 3. user lockout 4. Digital Watermarking	

Specification	Value	Trail Directives
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 connected to one workstation. 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. 5. The Software enables the client to dynamically create connections between Cameras and clients and view live or recorded video on monitors. 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. 7. Scalable licensing model supporting unlimited cameras per server based on the available hardware configuration. 8. Camera License not tied to MAC address of cameras. 9. Unrestricted camera replacement in case of camera failure.	BOO will verify with OEM technical brochure.

Specification	Value	Trail Directives
The offered product capable to allow	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.	BOO will verify with OEM technical brochure.
	VIDEO MANAGEMENT FEATURES	
Software capable to record video on	1. Inbuilt hard disks on the server. 2. Direct attached storage boxes attached to the servers. 3. Network attached storage. 4. Storage area network.	BOO will verify with OEM technical brochure.
Software capable to select recording based on	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	1. Video clips and image snapshots to be stored with reports for documenting events. 2. Alarms. 3. Incidents. 4. Operator logs.	
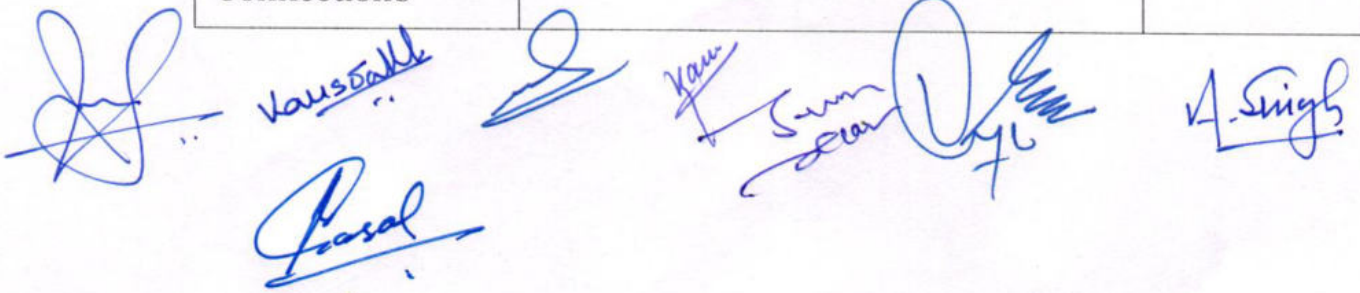
Specification	Value	Trail Directives
Video management and recording feature in the offered product	1.Software have the facility to export the desired portion of clipping of video from a Desired date/ Time to another desired date/ time on DVD on any client/ Network storage device. Viewing of the recording 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 has a provision for addition of server. 4. The Software enables 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. 7. Watermarking, Encrypt and Digital Signature option while video exporting. 8. Software shall support encryption based recording. Encrypted recording shall play only in Video Management Software. 9. Video push feature to send individual cameras or an entire view of cameras to public view or other monitor. 10. Manage users through LDAP/Active directory. 11. Client bandwidth throttling to Optimize video data rates over limited bandwidth client connections. 12. Scheduled Access time for Operation with assign permission.	BOO will verify with OEM technical brochure.

Specification	Value	Trail Directives

Supporting feature in the offered product	1. The Video management software provides a full matrix operation of IP video to display monitors.
	2. Video management software have the capability of creating camera sequences with following functionalities:-
	  i) Capability to sequence cameras.
	  ii) Each camera in the sequence has its own individual dwell time.
	  iii) Multiple users able to view the same camera sequence simultaneously, not necessarily synchronized one with the other.
		BOO will verify with OEM technical brochure.

NO of cameras VMS Software can sequence upto	60 or more (As per user requirement)	
Each camera in the sequence have its own individual dwell time in seconds	60 or more (As per user requirement)	
Maximum VMS throughput	800 Mbps,1000 Mbps,1200 Mbps	
Client Interface (Thick Client)	1 or more	
Suspect Tracking through Multiple link of Cameras	1 or more	
Server Connections	1 or more	

Specification	Value	Trail Directives
Operating System Compatibility	Window 64 Bit (Latest)	BOO verify with OEM technical brochure.
Architecture	1. Client & Server on Multiple Hardware. 2. Client & Server on Same Hardware	
Display Mode		
Number of monitor for displaying live video with one server / workstation	9 or more	BOO verify with OEM technical brochure.
Number of Video Streams (Channels)concurrently supported by Local VMS	64 or more	
Number of Video Streams (Channels) expandable for local VMS up to	64 or more	
Number of Video Streams (Channels)concurrently supported by Central VMS	64 or more	
Image rotate(in degree)	360 Degree	
No of Auto Tour selectable option	10 or more	
Status display	Free disk space, Camera status, CPU usage	
Display clock (in real time)	day, date, time, year	
Display mode (split screen matrix)	64	
Display Characteristics Overlay of the Cameras during -	Live view, Live View & Navigate, Live view & Navigate over camera icons	
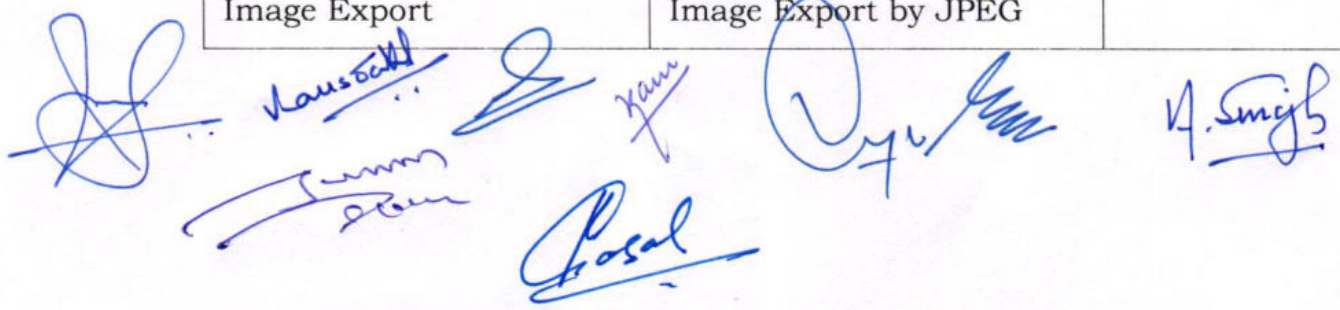
Specification	Value	Trail Directives
Audio		
Type of audio	2-way	BOO verify with OEM technical brochure.
Type of Codec	PCM, G.711U, G.711A, G.722, G.729A, GSM-AMR, AAC	
Event Trigger		
No of Motion detection selectable area	3	BOO verify with OEM technical brochure.
Motion detection selectable area	NA	
System event	shutdown, restart, login, logoff, Camera reboot, external I/O trigger	
Hot-Spot Window Feature	NA	
Hotspot window split Screen from the matrix	1,2,4	
Type of Hot spot window, Hot spot split screen	5+1 wide screen,12+1 wide screen	
Recording		
Recording type	Schedule, continuous, manual, motion, event	BOO verify with OEM technical brochure.
Recording Recycle	Auto, FIFO mode Audio and video simultaneous recording, Motion Detect from camera	
Audio Recording	Pre-record, Post -record support	

Specification	Value	Trail Directives
Storage / Backup		
Number of selectable path in Local storage simultaneously	30	BOO verify with OEM technical brochure.
Network storage path	iSCSI, network share, NAS	
Storage/ Backup features	Multiple local storage support, Network Storage Device Support, USB backup support, back up Tape device	
Playback		
Playback Search from Local and Network storage	1. Channels. 2. Date and time. 3. Bookmarking. 4. Alarm. 5. All - Channels; Date & Time; Bookmarking; Alarm. 6.Attribute Search(Object Size, color)	BOO verify with OEM technical brochure.
Event Playback Search from video loss, motion detection and manual recording	1. Channels. 2. Date and time.	
Playback mode	Play, Stop, Pause, Forward, Backward, Next, Previous.	
Forward/Backward mode	x1/4,x1/2,x1,x2,x4,x16	
Video Search	External alarm input trigger	
Image Export	Image Export by JPEG	

Specification	Value	Trail Directives
Network Features		
Protocols	1. TCP 2. UDP 3. RTSP 4. Multicast 5. SRTP	BOO verify with OEM technical brochure.
Remote View	1. Remote Live streaming. 2. Image Snapshot to JPEG. 3. PTZ control. 4. Event notification. 5. Video playback. 6. NA	
E-Map	1. Multi E-map layers support. 2. Indicator camera &I/O. 3.E-MapType 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.	
Tools	1. DB Tools. 2. Backup system. 3. File export to AVI, ASF, MP4	
Compatibility	1. Compatible with 3rd party IP cameras. 2. Widescreen Support	
Graphic User Interface		
The GUI software capable to perform the applications simultaneously without interfering with any of the storage server operations (recording, alarms etc)	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.	BOO verify with OEM technical brochure.

Specification	Value	Trail Directives
The GUI software capable to support	1. Any form of IP network connectivity including LAN, WAN and wireless LAN technologies. 2. Multicast video streaming. 3. Unicast video streaming.	BOO verify with OEM technical brochure.
GUI Software Feature	1. Capable to provide an authentication mechanism, which verifies the validity of the user. 2. Capable to allow live monitoring of video. 3. Capable to provide management and control over the system using a standard PC mouse, keyboard and Digital keyboard. 4. Capable to display all Cameras attached to the system regardless of their physical location on the network. 5. Capable to display all Camera sequences created in the system. 6. Capable to display all Cameras, sequences and users in a logical tree. 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. 8. The maps have the ability to contain hyperlinks to create a hierarchy of interlinked maps. 9. Capable to support digital zoom on a fixed Camera's live video streams. 10. Capable to support digital zoom on a PTZ Camera's live video streams. 11. Capable to display video of Cameras on 40 inch Large Format Display Monitors and Workstation Monitors. 12. Capable to allow the control of display from the client PC. 13. The operator from the GUI software able to decide the screen layout and also the Cameras that shall be displayed on the monitors. 14. Capable to support multicasting. 15. Capable to switch the screen layout in response to an alarm. 16. Adaptive Streaming. Option to switch stream to lower to higher or vice-versa based on full screen.	BOO verify with OEM technical brochure.

Specification	Value	Trail Directives
Frame rate per camera in the GUI Software	60	BOO verify with OEM technical brochure.
No Of video tiles enable on a single digital monitor	64	
Tiles Views provided on each of the digital monitors independently	1. Full screen 2. Quad view 3. 4x4(16-view) 4. Support any other window division based on the site requirement	
GUI Software Operator Feature	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.	
The operator capable to choose and trigger following action from a macro/site map	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.	

Specification	Value	Trail Directives
Video Recording Software		
Video Recording Feature by the offered product	1. Support recording H.264/MJPEG/H.265 or higher video streams and audio for all the channels. 2. Supports triplex applications, recording, re-play 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. 5. Software provides network time server function to ensure the synchronization of the video servers and the recordings. 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. 7. Software alarm recording supports pre- and post-alarm periods both can be configured in duration. 8. Software shall provide a status of the available recording capacity. 9. Software shall define limits and alerts for low disk space at warning and recording stopped levels	BOO verify with OEM technical brochure.
Video Recording Software supports redundancy configurations for recording severs Video Recording Servers/ Network Video Recorders	1. N to X redundancy. 2. X to N redundancy. 3. N to N redundancy.	

Specification	Value	Trail Directives
Failover Time (Maximum Time to which application switches from main server to Failover server)	40	BOO verify with OEM technical brochure.
Features of Fault Tolerance Recording	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. 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.	
Feature of Search & Export	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. 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,	

Specification	Value	Trail Directives
	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. 3. Software provides secured recording for evidence purposes and user authentication to protect data integrity. 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. 5. Watermarking, Encrypt and Digital Signature option while video exporting	
Central Monitoring Software		
Central Monitoring Software	1. Centralized monitoring of Unlimited devices spread across multiple stations. 2. Local recording at branch with High Quality Video and Low bandwidth streaming to Central station. 3. The alert send by VMS, Video Analytics software can be view in form of pop up on screen.	BOO verify with OEM technical brochure.

Specification	Value	Trail Directives
No of cameras monitored from the central location by the software	100000	BOO verify with OEM technical brochure.
Alert Features		
Alert feature in the offered product	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.	BOO verify with OEM technical brochure.
Installation		
Installation in the scope of supply	Yes	BOO will check practically and verify with OEM technical brochure.
If Yes, then scope of Installation	As per user requirement	

Specification	Value	Trail Directives
Commissioning		
Commissioning in the scope of supply	Yes / No	BOO will check practically and verify with OEM technical brochure.
If Yes, then scope of Commissioning	As per user requirement	
Supported Hardware Requirement Parameters		
Minimum Hard Disk Space Required	512 GB	BOO will check practically with software console and verify with OEM technical brochure.
Minimum RAM Size required	64 GB or more	
Server requirements	Customized	
CPU required	Intel i5 or better	
Other Hardware requirements	Quad Core	
Operating Systems supported	MS Windows 10	
Supported Web browsers	Google Chrome, Firefox, IE, Safari	
Supported Database	MS SQL	
General Parameters		
Free Upgradation to Higher Version within support period	Yes	BOO will verify with OEM technical brochure.
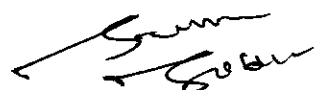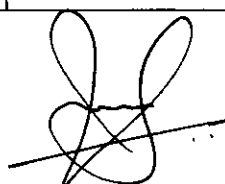
Specification	Value	Trail Directives
Valid License copy to be provided	Yes	BOO will verify with OEM technical brochure.
Software supplied through	URL Link	
Hyper link to OEM Data sheet	URL Link	

(WO/RM. Mathew T.George)
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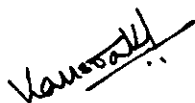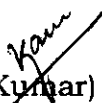
(Manpal Singh, AC)
CRPF

(Sonare Pratik C, AC)
BSF

(Arjun Singh, AC)
SSB

K.Saha, Asst Director)
DCPW

(TC. Kamlesh Kumar)
NSG

(Vikas Maurya,DC)
CISF

(Sunil Kr Singh)
DC(Comn),CRPF

(Dr.M.M.Gosal,SSO)
BPR&D
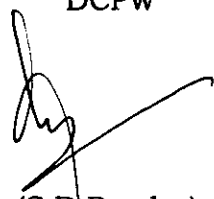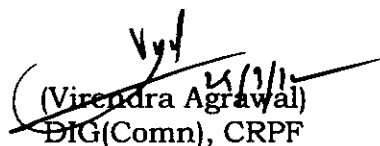
(S.D.Pandey)
DIG(IT), CRPF

(Virendra Agrawal)
DIG(Comn), CRPF
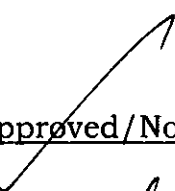
(Syed Mohd Husnain)
IG(Comn&IT),CRPF

(Zulfiquar Hasan),IPS
SDG(OPS),CRPF

Approved/Not Approved

(Kuldiep Singh, IPS)
DG, CRPF

QRs/TDs of Web Application Firewall (WAF)

Specification	Values	Trial Directives
Deployment modes	Reverse Proxy, and full Proxy Mode	BOO will check practically with software console and verify with OEM technical.
Web Application Security	Solution must distinguish between browsers & bot's bytec has browser capability &CAPTCHA/fingerprint challenge	BOO verify with OEM technical brochure.
Concurrent Connection (Maximum) (Numbers)	28000000	
HTTP Connections/Sec (Maximum) (Numbers)	250000	
System Throughput (Maximum) (Gbps)	Minimum 2 Gbps	
Request Latency	Sub-ms	
Network Interface Ports	Min 2X10G + 8*1G Copper	BOO will check practically and verify with OEM technical brochure.
Bypass ports for fail safe	As per user Requirement	BOO will verify with OEM technical brochure.
Attack Protection	OWSAP TO Q10, SQL&WEB INJECTION. Device ID tracking along with protection of credential setting	BOO will check practically with software console and verify with OEM technical brochure.

Specification	Values	Trial Directives
Detect and prevent attackers from finding hidden directories Features	Available	BOO will verify with OEM technical brochure.
Processor	Minimum One 4 Core Intel Xeon Processor or equivalent or better	
Storage	Minimum 500 GB	BOO will check practically with software console and verify with OEM technical brochure.
Authentication and Authorization	Must provide capability to obfuscate sensitive field name to defeat Man-in-The-Browser Attack	BOO will verify with OEM technical brochure.
Integrated scanner	As per user Requirement	
Logging, Reporting and Monitoring	Through Centralized Mgmt OR Local management (As per user Requirement)	
Input-Output Port	Management Port- RJ45; Console Port - RS232. Monitoring & policy through single GUI for WAF & ADC	BOO will check practically and verify with OEM technical brochure.
Power Supply	Dual	
Operating Temperature	0°C to 45°C	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Storage Temperature	0°C to 55°C	
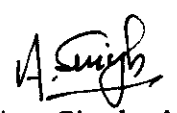
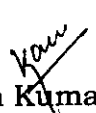| Specification	Values	Trial Directives
Operating Humidity (%RH)	95	Firm will submit lab test certificate of Govt. lab or NABL or ILAC accredited laboratories.
Compliance Certificates	Gartner Report, ETSIEN 300 386V1.6.1(2012) or equivalent EN 55032:2012 Class A or equivalent EN 61000-3-2:2014 or equivalent FCC Class A(Part 15) OR equivalent Indian standard	
On Site OEM Warranty	As per user requirement.	Firm will submit OEM certificate.

(WO/RM. Mathew T.George) (Manpal Singh, AC) (Sonare Pratik C, AC) (Arjun Singh, AC)
Assam Rifles   CRPF   BSF   SSB

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DIG(IT), CRPF   DIG(Comn), CRPF   IG(Comn&IT),CRPF   SDG(OPS),CRPF

Approved/Not Approved

(Kuldiep Singh, IPS)
DG, CRPF