

WEBEL TECHNOLOGY LIMITED

CORRIGENDUM – II

TENDER NO. WTL/IB/LAN/21-22/015 DATED 27.07.2021

1. The following clauses in the Tender Document may be read as follows:

SECTION – I: in TECHNICAL SPECIFICATION COMPLIANCE STATEMENT of Minimum Specification for Core Switch with 3 years warranty (Page No. 37)

Layer-3 Features	Switch should support min. 32000 IPv4 routes
	The Switch should support routing protocols such OSPF, BGPv4, IS-ISv4, EIGRP or equivalent, LISP, VXLAN, VRF, MPLS, mVPN, SGT or equivalent
	The Switch should support IPv6 Routing capable protocols such as OSPFv3 in hardware.
	The Switch should support IP Multicast and PIM, PIM Sparse Mode, & Source-Specific Multicast for Wired and Wireless Clients.
	The Switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2).
	The Switch should support IPv6 & IPv4 Policy Based Routing (PBR)
	The Switch should support Inter-VLAN routing.
	The Switch should support VRRP.
	The Switch should support uRPF for IPv4 and IPv6.

SECTION – I: in TECHNICAL SPECIFICATION COMPLIANCE STATEMENT of Minimum Specification for L2 Distribution Switch with 3 years warranty (Page No. 39)

Layer-3 Features	Switch should support min. 11000 IPv4 routes
	The Switch should support routing protocols such OSPF, BGPv4, IS-ISv4, EIGRP or equivalent, LISP, VXLAN, VRF, MPLS, mVPN, SGT or equivalent, VRRP, Policy Based Routing (PBR).

2. The revised **TECHNICAL SPECIFICATION COMPLIANCE STATEMENT (SECTION -I)** is enclosed.

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SECTION – I

TECHNICAL SPECIFICATION COMPLIANCE STATEMENT

(Tender No. WTL/IB/LAN/21-22/015)

Eligibility Criteria for Passive OEM:

Sl No	Eligibility Criteria	Compliance with Document
1	Passive OEM offered must be in steady profitable business in India for more than at-least 10 years.	
2	All offered components must be ROHS compliant.	
3	All Passive items (coper and fiber) should have single OEM.	
4	OEM Should be ISO9001, ISO14001 & ISO 45001:2018 certified for design, Development for LAN & WAN product.	
5	OEM authorization specific to this tender	

Minimum Specification of 6 Core Multi Mode Outdoor Armoured Fiber Cable

Qty.	
Make	
Model	
Part No.	

6 Core MM OM2 Outdoor Armoured FO Cable

Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Corrugated Steel Tape Armoured		
2	Central loose tube with jelly compound		
3	Sequential meter marking		
4	Glass Yarn in between steel tape & loose tube		
5	Outer Diameter: 9±0.3mm		
6	Thickness of HDPE Jacket: 1.8±0.2mm		
7	Pulling Tension: Short Term (2000N)		
8	Crush Load: 3000N/100mm		
9	Bend Radius: Short Term (20D)		
10	The fiber type is a Multimode (OM2) Graded Index optical fiber according to IEC 60793		
11	Fiber dual coated with acrylate coating.		
12	The fiber is optimized for operation at 850 nm and at 1300 nm.		
13	Nominal Mode Field Diameter: 50 ± 2.5 µm		
14	Cladding Diameter: 125 ± 1 µm		
	Attenuation (of cable with fibers):		
15	At 850 nm: <= 3.5 dB/km		
16	At 1300 nm : <= 1.5 dB/km		

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<u>Minimum Specification of 12 Port LIU Loaded with SC Coupler</u>	
Qty.	
Make	
Model	
Part No.	

12 Port LIU Loaded with SC Coupler			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	12-Port Rack Mount LIU Fully Loaded with Multimode SC Adapters/couplers		
2	Aluminium/Cold Rolled Steel based material with powder coating for light mounting.		
3	Snap-in locker design, easy to change the adapter panels		
4	Should manage both splices and terminations		
5	Should have plastic Splice Tray capable of 12 fibers		
6	should have 6 fiber magic sticker provision inside for 900um tight buffered fiber storing		
7	Removable Top & Front cover for better access to interior of LIU		
8	Rubber grommet allow for pre-terminated fiber trunk installation, protects cable and minimizes dust build-up		
9	Adapter panel - Cold steel		
10	Adapters should have compact design & high precision.		
11	which perform well under various circumstances & maintain good plug retention strength.		

<u>Minimum Specification of 24 Port LIU Loaded with SC Coupler</u>	
Qty.	
Make	
Model	
Part No.	

24 Port LIU Loaded with SC Coupler			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	24-Port Rack Mount LIU Fully Loaded with Multimode SC Adapters/couplers		
2	Aluminium/Cold Rolled Steel based material with powder coating for light mounting.		
3	Snap-in locker design, easy to change the adapter panels		
4	Should manage both splices and terminations		
5	Should have plastic Splice Tray capable of 12 fibers		

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6	should have 6 fiber magic sticker provision inside for 900um tight buffered fiber storing		
7	Removable Top & Front cover for better access to interior of LIU		
8	Rubber grommet allow for pre-terminated fiber trunk installation, protects cable and minimizes dust build-up		
9	Adapter panel - Cold steel		
10	Adapters should have compact design & high precision.		
11	which perform well under various circumstances & maintain good plug retention strength.		

Minimum Specification of SC MM OM2 Pigtail 1 Mtr.	
Qty.	
Make	
Model	
Part No.	

SC MM OM2 Pigtail 1 Mtr.			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Multimode (OM2) SC Pigtail - 1Mtr		
2	Meet TIA/EIA 568.C.3 standards for repeatability.		
3	Insertion Loss (Max): ≤0.3 db Max.		
4	Minimum Bend Radius: 30mm		
5	Return Loss : >= 25 db for UPC		
6	retention strenght: 20N		
7	Operating Temp.: (- 10 deg. C to + 70 deg. C)		
8	Buffer diameter: 900um Tight buffer		
9	Types : SC Type Simplex		

Minimum Specification of SC - LC MM OM2 FO Patch Cord Duplex	
Qty.	
Make	
Model	
Part No.	

SC - LC MM OM2 FO Patch Cord Duplex			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Multimode (OM2) SC-LC Duplex Patch Cord - 1Mtr		
2	Optical fiber patch leads shall comprise of Multimode 50/125µm OM2 fiber with SC-LC fiber connectors terminated at each end. The optical fiber patch leads shall comply with the following specifications:		
3	Optical Fiber – Multimode - OM2		

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4	Connector: ceramic ferrule		
5	Pre-radiuses and pre-polished ferrule		
6	Duplex Type		
7	Insertion Loss : ≤0.3 db		
8	Cable: 50/125, MM OM2		
9	Return Loss: >/= 25dB for UPC		
10	Working Temp: (- 10 deg. C to + 70 deg. C)		
11	Length: 1 Meter		

Minimum Specification of UTP Cat6 Cable	
Qty.	
Make	
Model	
Part No.	

UTP Cat6 Cable			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Category 6 Unshielded Twisted Pair 4 pair cable shall be compliant with ANSI/TIA/EIA-568-C.2 channel performance		
2	The 4 pair Unshielded Twisted Pair cable shall be UL Listed, ETL Verified		
3	All Category 6 cables shall meet or exceed the following characteristics:		
	Mechanical Characteristics		
4	Construction: 4 twisted pairs separated by internal X shaped, 4 channel, full separator. Half shall not be accepted.		
5	Conductor dia: 23 AWG		
6	Insulation: High density polyethylene		
7	Pairing: Two insulated conductor twisted together		
8	No.of Pair: 4 pair		
9	Color of sheath: FR-PVC GREY- Single sheath		
10	Rip Cord should be available		
11	Sequential meter marking should be available		
12	Temperature Rating: (- 10 to +70 C)		
13	Packing : 305 Mtrs.		
14	Low Frequency Electrical Parameter		
15	CONDUCTOR RESISTANCE (DC): 9.38 OHMS/100 MTR		
16	RESISTANCE UNBALANCE: 5% Max		
17	MUTUAL CAPACITANCE: 5.6 nF/100 mtrs Max.		
18	CAPACITANCE UNBALANCE PAIR/GROUND: 330PF/100M MAX		
19	Nominal Velocity of Propagation: 69%		
20	IMPEDANCE: 100±15%OHMS		
21	Generally confirming to EIA/TIA 568-C.2 and IEC/ISO 11801		

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<u>Minimum Specification of 24 Port Jack Panel</u>	
Qty.	
Make	
Model	
Part No.	

24 Port Jack Panel			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	24-Port Cat6 UTP Patch Panel		
2	Patch Panel made of powder coated steel, in 24 port configurations.		
3	Allow for a minimum of 200 re-terminations without signal degradation below standards compliance limit.		
4	Have port identification numbers on the front of the panel. PC ID plate of transparent colour with paper		
5	IDC: Suitable for 22-26 AWG stranded and solid wire compatible with both 110 & Krone punch down tools		
6	The Cat-6 transmission performance is in compliance with the ANSI/TIA/EIA 568C.2 & ISO 11801 standard		
7	Mates with modular plug conforming to FCC Part 68		
	Mechanical Characteristics:		
8	RJ45 Jack Housing: PBT+Glass Fiber, UL94V-0 rated		
	Jack Connector		
9	Operating Life: Minimum 750 insertion cycles		
10	Material: Phosher bronze with nickel plated		
11	Contact Plating: 50µ" Gold plated on plug contact area		
	IDC Connector		
12	Housing: Polycarbonate UL94V-0		
13	IDC Contact Plating: Phosphor bronze with tin plated		
14	Wire Accommodation: 22-26 AWG solid		
15	Contact resistance: 20Milliohms		
16	Insulation resistance: 100 MegaOhms @ 500V DC		

<u>Minimum Specification of Cat6 I/O Connector, Face Plate with Shutter & Back Box</u>	
Qty.	
Make	
Model	
Part No.	

Cat6 I/O Connector, Face Plate with Shutter & Back Box			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)

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1	Single Port		
2	Write on labels in transparent plastic window – supplied with plate		
3	Face Plate with shutter		
4	Should be able to support variety of jacks – UTP, STP etc.		
5	Category 6, TIA568 C.2		
6	All information outlets for 22-26 AWG copper cable shall:		
7	Use insulation displacement connectors (IDC)		
8	Allow for a minimum of 200 re-terminations without signal degradation below standards compliance limits.		
	Jack Specification:		
9	Housing: Polycarbonate, UL94V-2 rated or equivalent		
10	Operating Life: Minimum 750 insertion cycles		
11	Contact Material: Phosphor Bronze with nickel plated		
12	Contact Plating: 50 microns gold on plug contact area		
13	IDC : Housing PC , UL 94 V-2, 568A/B configuration		
14	Operating Life: Minimum 200 Re-terminations		
15	IDC Contact Plating: Phosphor bronze with tin plated		
16	Operation Temp: -10 C to 60 C		
17	Keystone of I/O should be UL Listed. Back box should be of same make as keystone jack & face plate.		

Minimum Specification of Cat6 Patch Cord 1 Mtr.

Qty.	
Make	
Model	
Part No.	

Cat6 Patch Cord 1 Mtr.

Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Category 6 UTP Patch Cord – 1Mtr		
2	The work area equipment cords shall, at a minimum comply with proposed ANSI/TIA/EIA-568-C.2 Commercial Building Cabling Standards Transmission Performance Specifications for 4 pair Category 6 Cabling.		
3	Equipped with modular 8-position modular plugs on both ends, wired straight through with standards compliant wiring.		
	Mechanical Feature of Cable:		
4	Conductor size: 24 AWG stranded bare copper		
5	Jacket: FR-PVC		
	Mechanical Feature of Plug:		
6	Operating life: Minimum 750 insertion cycles		
7	Contact blade: Copper Alloy		
8	Operating temperature: -10oC to 60oC		
9	RJ45 Plug & Boot Material: Clear Polycarbonate for RJ-45 And PVC		

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	for Boot		
10	Factory Crimped Patch Cord with Factory Moulded Boot		

Minimum Specification of Cat6 Patch Cord 2 Mtr.	
Qty.	
Make	
Model	
Part No.	

Cat6 Patch Cord 2 Mtr.			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Category 6 UTP Patch Cord – 2Mtr		
2	The work area equipment cords shall, at a minimum comply with proposed ANSI/TIA/EIA-568-C.2 Commercial Building Cabling Standards Transmission Performance Specifications for 4 pair Category 6 Cabling.		
3	Equipped with modular 8-position modular plugs on both ends, wired straight through with standards compliant wiring.		
	Mechanical Feature of Cable:		
4	Conductor size: 24 AWG stranded bare copper		
5	Jacket: FR-PVC		
	Mechanical Feature of Plug:		
6	Operating life: Minimum 750 insertion cycles		
7	Contact blade: Copper Alloy		
8	Operating temperature: -10oC to 60oC		
9	RJ45 Plug & Boot Material: Clear Polycarbonate for RJ-45 And PVC for Boot		
10	Factory Crimped Patch Cord with Factory Moulded Boot		

Sl No	Eligibility Criteria (Networking Rack)	Compliance with Document
1	Rack OEM must have Annual Financial Turnover not less than 200Cr for their business in India for the last five financial years and must be in steady profitable business for last five financial years (FY 2015-16 to 2019-20). Bidder shall have to submit audited accounts in support to their claim.	
2	OEM authorization specific to this tender	

Minimum Specification of 42U Floor Standing Rack with Accessories	
Qty.	
Make	
Model	
Part No.	

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42U Floor Standing Rack with Accessories			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	42U x 800mm width x 1000mm depth Floor Standing Networking Rack		
2	It should confirm to DIN 41494 or equivalent ISO standard		
3	It should be welded construction with steel frame		
4	Single Lockable toughend glass front door		
5	Vented metal door at the back, Vented side panels		
6	19" Reduced Channel- loop type		
7	Powdered coated standard finish		
8	Top & Bottom welded cover with vented & cable entry exit cut outs		
9	4 sets of casters wheel		
10	4 sets of adjustable levelers		
11	Vertical Power Distribution Unit with 12nos. Of 5/15Amp round pin indian style sockets		
12	Vertical & Horizontal Cable Manager		
13	Mounting Hardware set		
14	Atleast 4nos. Of FANs (360CFM) for cooling purpose		

Minimum Specification of 22U Floor Standing Rack with Accessories	
Qty.	
Make	
Model	
Part No.	

22U Floor Standing Rack with Accessories			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	22U x 600mm width x 800mm depth Floor Standing Networking Rack		
2	It should confirm to DIN 41494 or equivalent ISO standard		
3	It should be welded construction with steel frame		
4	Single Lockable toughend glass front door		
5	Vented metal door at the back, Vented side panels		
6	19" Reduced Channel- loop type		
7	Powdered coated standard finish		
8	Top & Bottom welded cover with vented & cable entry exit cut outs		
9	4 sets of casters wheel		
10	4 sets of adjustable levelers		
11	Power Distribution Unit with 6nos. Of 5/15Amp round pin indian style sockets		
12	Horizontal Cable Manager		
13	Mounting Hardware set		

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14	Atleast 2nos. Of FANs (180CFM) for cooling purpose		
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Minimum Specification of Network Rack 12U with Accessories	
Qty.	
Make	
Model	
Part No.	

Network Rack 12U with Accessories			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	12U, 550mm Width, 600mm Depth, Wall Mount Indoor Networking Rack		
2	It should confirm to DIN 41494 or equivalent standard		
3	It should be welded construction with steel frame		
4	Lockable tough ended glass front door		
5	19" mounting angle made of formed steel		
6	Powdered coated standard finish		
7	Top & Bottom welded cover with vented & cable entry exit cut outs		
8	2 pair of 19" mounting rails		
9	1U Cable Manager		
10	Roof Mounted Fan Unit		
11	230V AC, 6 way, 5 Amp Power Distribution Unit		
12	Mounting Hardware		

Minimum Specification of Network Rack 9U with Accessories	
Qty.	
Make	
Model	
Part No.	

Network Rack 9U with Accessories			
Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	9U, 550mm Width, 600mm Depth, Wall Mount Indoor Networking Rack		
2	It should confirm to DIN 41494 or equivalent standard		
3	It should be welded construction with steel frame		
4	Lockable tough ended glass front door		
5	19" mounting angle made of formed steel		
6	Powdered coated standard finish		
7	Top & Bottom welded cover with vented & cable entry exit cut outs		
8	2 pair of 19" mounting rails		

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9	1U Cable Manager		
10	Roof Mounted Fan Unit		
11	230V AC, 6 way, 5 Amp Power Distribution Unit		
12	Mounting Hardware		

Minimum Specification for Core Switch with 3 years warranty

Qty.	
Make	
Model	
Part No.	

	Specification
General Features	Proposed switch should be enterprise grade switch with x86 based CPU architecture
	The switch should have minimum of 24 nos. 10/100/1000 Ethernet Ports
	Switch should have 4x1GE fixed Uplink
Performance and Scalability	The switch should support switching bandwidth up to 56 Gbps (without considering stacking bandwidth)
	The switch should support 64-Byte Packet Forwarding Rate up to 41 Mpps
	The switch should have 16GB of Flash memory to store image and logs
	The switch should have 8 GB of DRAM
	The switch should support 1000 SVI
	The switch should support 4094 VLAN IDs
	The switch should support Jumbo frames of 9198 bytes
	The switch should support Maximum transmission unit (MTU) of 9198 bytes
	The switch should support 32000 Unicast MAC addresses
Stacking	
	Switch should support atleast 320 Gbps stacking bandwidth.
	Switch should support 8 members in stack
	The proposed switch family should support multi gigabit ethernet switches to support higher bandwidth and it should be possible to stack multigigabit switches with proposed switches
	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.
	The Switch stack architecture should have centralized control and Management plane with Active Switch and all the information should be Synchronized with Standby Switch.
	The Switch should support Stateful Switchover (SSO) when switching over from Active to Standby switch in a Stack.
	The Switch stack architecture should be Plug & Play for attaching or removing any switch from the stack without any downtime.
	The Switch stack architecture should allow the end user to stack 24 Port Switch with 48 Port of the same model.

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	The Switch should support stack power.
Standards	The switch should support IEEE 802.1D Spanning Tree Protocol
	The switch should support IEEE 802.1p Cos prioritization
	The switch should support IEEE 802.1Q Vlan
	The switch should support IEEE 802.1s Multiple Spanning Tree (MSTP)
	The switch should support IEEE 802.1w Rapid Spanning Tree (RSTP)
	The switch should support IEEE 802.1x
	The switch should support IEEE 802.1ab (LLDP)
	The switch should support IEEE 802.3ad Link Aggregation Control Protocol (LACP) across stack members and should able to do load balance traffic across links
Layer-2 Features	The switch should support Automatic Negotiation of Trunking Protocol, to help minimize the configuration & errors
	The switch should support IEEE 802.1Q VLAN encapsulation
	The switch should support Spanning-tree PortFast and PortFast guard for fast convergence
	The switch should support UplinkFast & BackboneFast technologies to help ensure quick failover recovery, enhancing overall network stability and reliability
	The switch should support Spanning-tree root guard to prevent other edge swiches becoming the root bridge.
	The switch should support Voice VLAN to simplify IP telephony installations by keeping voice traffic on a separate VLAN
	The switch should support Auto-negotiation on all ports to automatically selects half- or full-duplex transmission mode to optimize bandwidth
	The switch should support Automatic media-dependent interface crossover (MDIX) to automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.
	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
	The switch should support IGMP v1, v2 Snooping
	Switch should support MACsec-128
	Switch should support IPv4 and IPv6The Switch should be able to discover (on both IPv4 & IPv6 Network) the neighboring device giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
Layer-3 Features	Switch should support min. 32000 IPv4 routes
	The Switch should support routing protocols such OSPF, BGPv4, IS-ISv4, EIGRP or equivalent, LISP, VXLAN, VRF, MPLS, mVPN, SGT or equivalent
	The Switch should support IPv6 Routing capable protocols such as OSPFv3 in hardware.
	The Switch should support IP Multicast and PIM, PIM Sparse Mode, & Source-Specific Multicast for Wired and Wireless Clients.
	The Switch should support basic IP Unicast routing protocols (static, RIPv1 & RIPv2).

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	The Switch should support IPv6 & IPv4 Policy Based Routing (PBR)
	The Switch should support Inter-VLAN routing.
	The Switch should support VRRP.
	The Switch should support uRPF for IPv4 and IPv6.
Network security features	The switch should support IEEE 802.1x providing user authentication, authorization and CoA.
	The switch should support SSHv2 and SNMPv3 to provide network security by encrypting administrator traffic during Telnet and SNMP sessions.
	The switch should support TACACS+ and RADIUS authentication enable centralized control of the switch and restrict unauthorized users from altering the configuration.
	The switch should support MAC address notification to allow administrators to be notified of users added to or removed from the network.
	The switch should support Encrypted traffic analytics
Quality of Service (QoS) & Control	The switch should support 8 egress queues per port to enable differentiated management
	The switch should support scheduling techniques for Qos
	The switch should support Standard 802.1p CoS field classification
	The switch should support Differentiated services code point (DSCP) field classification
	The switch should support IPSLA feature set to verify services guarantee based on business critical IP Applications.
	The switch should support QoS based on application
	The Switch should be capable of Downloading Downloadable Access List .
Operation and Management	The switch should support configuration of the Software image and switch configuration without user intervention
	Switch should have dedicated management port and USB2.0 ports to upload configuration files and image
	The switch should have built in RFID tag for asset tracking and inventory management
	The switch should support diagnostic commands to debug issues
	The switch should support system health checks within the switch
	The switch should support Online Diagnostics
	The switch should support Command Line Interface (CLI) support for configuration & troubleshooting purposes.
	The switch should support Layer 2 trace route to ease troubleshooting by identifying the physical path that a packet takes from source to destination.
	The switch should support Telnet and ssh interface support for comprehensive in-band management.
	The switch should support blue beacon LED, and USB Port to transfer configuration and files
	The switch should support SNMPv1, SNMPv2c, and SNMPv3 and flexible netflow - upto up to 64,000 flow entries
Dimension	The Switch should be 1RU
	The switch should able to support built-in redundant power supplies at day 1

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	Switch should be provided with AC power supply and india power cords
	Switch OEM should be in Gartner's leader quadrant for wired and wireless LAN infrastructure for five consecutive years
	Switch should come with 3 years 8*5 NBD OEM Warranty
	All Switches & SFP Transceiver Module should be from same OEM

Minimum Specification for L2 Distribution Switch with 3 years warranty	
Qty.	
Make	
Model	
Part No.	

	Specification
General Features	Proposed switch should be enterprise grade switch with UADP 2.0 Mini with integrated CPU architecture
	The switch should have minimum of 24 nos. 10/100/1000 Ethernet Ports
	Switch should have 4x1GE fixed Uplink
Performance and Scalability	The switch should support switching bandwidth up to 56 Gbps (without considering stacking bandwidth)
	The switch should support 64-Byte Packet Forwarding Rate up to 40 Mpps
	The switch should have 4GB of Flash memory to store image and logs
	The switch should have 2 GB of DRAM
	The switch should support 1000 SVI
	The switch should support 4094 VLAN IDs
	The switch should support Jumbo frames of 9198 bytes
	The switch should support Maximum transmission unit (MTU) of 9198 bytes
	The switch should support 32000 Unicast MAC addresses
	Switch should support redundant power supply
Stacking	Switching capacity with stacking - 136 Gbps
	Switch should support 8 members in stack. Stack kit to be included from day 1
	The Switch stack should be based on Distributed forwarding Architecture, where in each stack member forwards its own information on network.
	The Switch should support Stateful Switchover (SSO) when switching over from Active to Standby switch in a Stack.
	The Switch stack architecture should be Plug & Play for attaching or removing any switch from the stack without any downtime.
	The Switch stack architecture should allow the end user to stack 24 Port Switch with 48 Port of the same model.
Standards	The switch should support IEEE 802.1D,IEEE 802.1p,IEEE 802.1Q,IEEE 802.1s,IEEE 802.1w,IEEE 802.1x,IEEE 802.1ab,IEEE 802.3ad and should able to do load balance traffic across links

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Layer-2 Features	The switch should support Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD to allow for unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
	The switch should support IGMP v1, v2 Snooping
	Switch should support MACsec-128
	Switch should support IPv4 and IPv6The Switch should be able to discover (on both IPv4 & IPv6 Network) the neighboring device giving the details about the platform, IP Address, Link connected through etc, thus helping in troubleshooting connectivity problems.
Layer-3 Features	Switch should support min. 11000 IPv4 routes
	The Switch should support routing protocols such OSPF, BGPv4, IS-ISv4, EIGRP or equivalent, LISP, VXLAN, VRF, MPLS, mVPN, SGT or equivalent, VRRP, Policy Based Routing (PBR).
Network security features	The switch should support IEEE 802.1x,TACACS+ and RADIUS authentication providing user authentication, authorization and CoA.
	The switch should support Encrypted traffic analytics
	Switch OEM should be in Gartner's leader quadrant for wired and wireless LAN infrastructure for five consecutive years
	Switch should come with 3 yrs of 8*5 NBD OEM Warranty
	All Switches & SFP Transceiver Module should be from same OEM

Minimum Specification for Edge Switch (24 Port Giga, 4 x 10G SFP+ L2 Switch) with 3 years warranty

Qty.	
Make	
Model	
Part No.	

Edge Switch (24 Port Giga, 4 x 10G SFP+ L2 Switch) with 3 years warranty

Sl. No.	Minimum Specification	Specification (Quoted / Applicable – by the bidder)	Complied (Yes / No)
1	Layer-2 Fully Managed Switch having 24x 10/100/1000BaseT ports, 2x 10GBASE-T ports & 4x 10G SFP+ slots		
2	Switching Capacity should be atleast 168Gbps		
3	Packet Forwarding Rate should be atleast 125Mpps for 64-byte packet size		
4	The switch should have non-blocking architecture & wire-speed performance under fully loaded condition from day one		
5	The switch should have smart fans with sensor IC that provides different fan speed based on different temperature.		
6	The switch should have support for physical stacking with atleast 8 units per stack.		
7	The switch should have support for virtual stacking with atleast 30 units per stack.		
8	The Switch should have support for redundant power supply. Redundant power supply to be included from day one.		
	The Switch should have following L2 features from day one		

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9.1	1. MAC Address Table size: Atleast 16000		
9.2	2. Flow Control: IEEE 802.3x in full duplex, back pressure in half duplex & HoL blocking prevention		
9.3	3. Jumbo Frame Support (Atleast 9K bytes)		
9.4	4. IGMP v1 v2 v3 snooping with atleast 1024 IGMP snooping groups, Per VLAN IGMP Snooping, host based IGMP snooping fast leave		
9.5	5. MLD v1 v2 snooping with atleast 1024 MLD snooping groups, Per VLAN MLD Snooping, host based MLD fast leave		
9.6	6. IEEE802.1D STP, 802.1w RSTP,802.1s MSTP with atleast 16 MSTP instances, Root guard or equivalent feature. G.8032 ERPS features.		
9.7	7. The switch should be able to avoid the loop occurring in a single port connected to an unmanaged switch/hub by shutting down the corresponding port or corresponding VLAN		
9.8	8. IEEE 802.3ad & IEEE 802.1AX Link Aggregation with atleast 8 ports per groups & 32 groups per switch.		
9.9	9. Port mirroring & VLAN mirroring for Tx/Rx/Both. One-to-One mode, Many-to-one mode, Flow based mirroring.		
9.10	10. IEEE 802.1Q VLAN, atleast 4000 Static VLANs, 4000 Dynamic VLANs Groups, GVRP, Voice-VLAN, asymmetric VLAN, 802.1v protocol VLAN, MAC based VLAN, Private VLAN.		
10	The switch should have 802.1p support with 8 queues per port. Support strict, WRR queue handling technique. trTCM, srTCM.		
11	The switch should support CoS based on VLAN, IP address, MAC address, DSCP, TCP/UDP port number, 802.1p priority queues, user defined packet content, IPv6 address		
12	The switch should have Port-based ingress & egress bandwidth control with minimum granularity of atleast 8Kbps. Flow-based ingress & egress bandwidth control with minimum granularity of atleast 8Kbps		
13	The switch should have support for standard & extended Access control lists based on VLAN ID, 802.1p priority, MAC address, IP Address, DSCP, TCP/UDP port number, user defined packet content, IPv6 address. Time based ACL.		
14	The switch should have the following security features from day one: SSHv2 for IPv4 & v6, SSLv1 v2 v3, Broadcast/Multicast & Unicast storm control, port security feature with atleast 64 MAC per port, traffic segmentation, ARP spoofing prevention, IEEE 802.1x port based authentication, authentication database failover, DHCP server screening, DAI (Dynamic ARP Inspection), BPDU attack protection, DoS attack prevention, Binding of IP address & MAC address with physical port. Web based Access Control, MAC based Access Control, Dynamic VLAN assignment, Guest VLAN, RADIUS & TACACS+. Atleast four level of user account control.		
15	The switch should have feature to protect the CPU from protocol control packet attack.		
16	The switch should have feature of atleast 512 static routes, default root, RIPv1v2, RIPng, OSPF, Policy Based Routing, at least 16nos. Of IP interfaces, IPv6 Neighbor Discovery, VRRP, policy based route from first day		

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17	The Switch should have following Management features from day one: Web-based GUI, CLI, Telnet Server, TFTP Client, SFTP server, SNMPv1v2cv3, SNMP trap, BOOTP/DHCP Client, SNTP, NTP, debug command, RMONv1, RMONv2, Syslog, ICMPv6, DHCP server (atleast 10 address pool support), DHCP Relay Option 18, 37, 82, LLDP, LLDP-MED, Multiple Image support, sflow, trusted host, Physical console port for Out of band management.		
18	The switch should have energy saving green technology based on link status, cable length & IEEE 802.3az		
19	The switch should be 1U height		
20	All type of switches & transceivers should be from same make.		

Sl No	Eligibility Criteria for NGFW	Compliance with Document
1	NGFW OEM offered must be in steady profitable business in India for more than at-least 5 years.	
2	OEM must have ISO 9001:2015 certified and functioning for min. 5 years.	
3	OEM shall attended NSS latest test & 93% and above exploit block capability	
4	OEM should be present Leader/Challenger's/visionary quadrant of Gartner magic quadrant for last 2 years.	
5	OEM authorization specific to this tender	

Minimum Specification for NGFW Technical Specifications with 3 years Subscription and warranty

Qty.	
Make	
Model	
Part No.	

NGFW Technical Specifications	Compliance (Y/N)
Hardware Architecture & Performance	
The appliance based security platform should be capable of providing firewall, application visibility, Web Protection and IPS functionality in a single appliance	
The appliance hardware should be a multicore CPU architecture with a hardened 64 bit operating system to support minimum 12GB memory. Should have dedicated Marvell NPU preprocessor with 4 GB RAM for hardware acceleration .	
Should support minimum 120 GB SSD for logs & reports	
The appliance should support atleast 8 * 1G ports 2 * 1G SFP ports from day 1 . The appliance should have option to support additional 4 * 10G ports in future.	
Should support atleast 28 Gbps Firewall throughput & 5 Gbps of IPS throughput	
Proposed appliance should support atleast 6 million concurrent sessions or more	
Firewall should support atleast 130k connections per second or more	
Firewall Should support 5 Gbps of NGFW & 1.2 Gbps of Threat Protection Through (Measured with Firewall, IPS, Application Control, and Malware prevention enabled)	
Solution should have 1.1 Gbps SSL/TLS inspection throughput	

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Industry Certification	
Solution should have FIPS or EAL4+ certified	
General Management	
Purpose-built, streamlined user interface and firewall rule management for large rule sets with grouping with at-a-glance rule feature and enforcement indicators	
Two-factor authentication (One-time-password) support for administrator access, user portal, IPSec and SSL VPN	
Firewall should support TLS 1.3 inspection of encrypted traffic	
Firewall should support Xstream FastPath technology for application acceleration	
Firewall should be ready for Xtender Detection & Response and Synchronized SDWAN	
High Availability (HA) support clustering two devices in active-active or active-passive mode.	
Full command-line-interface (CLI) accessible from GUI	
Automated firmware update notification with easy automated update process and roll-back features	
Reusable system object definitions for networks, services, hosts, time periods, users and groups, clients and servers	
Jumbo Frame Support , Self-service user portal	
SNMPv3 and Netflow support , API for 3rd party integration	
Backup and restore configurations: locally, via FTP or email; on-demand, daily, weekly or monthly	
Firewall, Networking & Routing	
Stateful deep packet inspection firewall	
Network Flow FastPath acceleration for trusted traffic	
User, group, time, or network based policies	
Access time polices per user/group	
Enforce policy across zones, networks, or by service type	
Zone isolation and zone-based policy support	
Default zones for LAN, WAN, DMZ, LOCAL, VPN and WiFi	
Custom zones on LAN or DMZ	
Customizable NAT policies with IP masquerading and full object support to redirect or forward multiple services in a single rule	
Flood protection: DoS, DDoS and portscan blocking Country blocking by geo-IP	
Routing: static, multicast (PIM-SM), and dynamic (RIP, BGP, OSPF)	
Protocol independent multicast routing with IGMP snooping	
Bridging with STP support and ARP broadcast forwarding	
VLAN DHCP support and tagging, VLAN bridge support	
WAN link balancing: multiple Internet connections, auto-link health check, automatic failover, automatic and weighted balancing, and granular multipath rules	
Full configuration of DNS, DHCP and NTP, 802.3ad interface link aggregation	
IPv6 tunnelling support including 6in4, 6to4, 4in6, and IPv6 rapid deployment through IPSec	
Flexible network or user based traffic shaping (QoS) (enhanced Web and App traffic shaping options included with the Web Protection subscription)	
Set user-based traffic quotas on upload/download or total traffic and cyclical or non-cyclical	
Authentication	
Synchronized User ID utilizes Synchronized Security to share currently logged in Active Directory user ID between Sophos endpoints and the firewall without an agent on the AD server or client	
Authentication via: Active Directory, eDirectory, RADIUS, LDAP and TACACS+	

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Server authentication agents for Active Directory SSO, STAS, SATC	
Single sign-on: Active directory, eDirectory, RADIUS Accounting	
Client authentication agents for Windows, Mac OS X, Linux 32/64	
Browser SSO authentication: Transparent, proxy authentication (NTLM) and Kerberos	
Browser Captive Portal	
Authentication certificates for iOS and Android	
Authentication services for IPSec, SSL, L2TP, PPTP	
Google Chromebook authentication support for environments with Active Directory and Google G Suite	
Next Gen VPN Support	
Site-to-site VPN: SSL, IPSec, 256-bit AES/3DES, PFS, RSA, X.509 certificates, pre-shared key	
L2TP and PPTP, Route-based VPN	
Remote access: SSL, IPsec, iPhone/iPad/ Cisco/Android VPN client support, IKEv2 Support	
SSL client for Windows and configuration download via user portal	
Encrypted HTML5 self-service portal with support for RDP, HTTP, HTTPS, SSH, Telnet, and VNC	
Authentication: Pre-Shared Key (PSK), PKI (X.509), Token and XAUTH	
Enables Synchronized Security and Security Heartbeat for remote connected users	
Intelligent split-tunneling for optimum traffic routing	
Single client support for IPSec & SSL remote VPN	
Mac and Windows Support	
Sandbox Protection	
Inspects executables and documents containing executable content (including .exe, .com, and .dll, .doc, .docx, docm, and .rtf and PDF) and archives containing any of the file types listed above (including ZIP, BZIP, GZIP, RAR, TAR, LHA/LZH, 7Z, Microsoft Cabinet)	
Aggressive behavioral, network, and memory analysis	
Suspicious files subjected to threat intelligence analysis in parallel with full sandbox analysis	
Machine Learning technology with Deep Learning scans all dropped executable files	
Includes exploit prevention and Cryptoguard Protection technology from endpoint security	
In-depth malicious file reports and dashboard file release capability	
Optional data center selection and flexible user and group policy options on file type, exclusions, and actions on analysis	
Intrusion Prevention (IPS)	
High-performance, next-gen IPS deep packet inspection engine with selective IPS patterns that can be applied on a firewall rule basis for maximum performance and protection	
Minimum 25000 of signatures, Support for custom IPS signatures	
Advanced Threat Protection (detect and block network traffic attempting to contact command and control servers using multi-layered DNS, AFC, and firewall)	
Security Heartbeat instantly identifies compromised endpoints including the host, user, process, incident count, and time of compromise	
Security Heartbeat policies can limit access to network resources or completely isolate compromised systems until they are cleaned	
Lateral Movement Protection further isolates compromised systems by having healthy -managed endpoints reject all traffic from unhealthy endpoints preventing the movement of threats even on the same broadcast domain	
Web Protection and Control	
Fully transparent proxy for anti-malware and web-filtering	
Enhanced Advanced Threat Protection	
URL Filter database with millions of sites across 92 categories backed by OEM Labs	

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Surfing quota time policies per user/group ,Access time polices per user/group	
Malware scanning: block all forms of viruses, web malware, trojans and spyware on HTTP/S, FTP and web-based email	
Advanced web malware protection with JavaScript emulation	
Live Protection real-time in-the-cloud lookups for the latest threat intelligence	
Second independent malware detection engine for dual-scanning	
HTTP and HTTPS scanning on a per user or network policy basis with customizable rules and exceptions	
File type filtering by mime-type, extension and active content types (e.g. ActiveX, applets, cookies, etc.)	
YouTube for Schools enforcement per policy (user/group)	
SafeSearch enforcement (DNS-based) for major search engines per policy (user/group)	
Web keyword monitoring and enforcement to log, report or block web content matching keyword lists with the option to upload customs lists	
Block Potentially Unwanted Applications (PUAs)	
Web policy override option for teachers or staff to temporarily allow access to blocked sites or categories that are fully customizable and manageable by select users	
User/Group policy enforcement on Google Chromebooks	
Control Center widget displays amount of data uploaded and downloaded to cloud applications categorized as new, sanctioned, unsanctioned or tolerated	
Application Protection and Control	
Synchronized App Control to automatically, identify, classify, and control all unknown Windows and Mac applications on the network by sharing information between Sophos-managed endpoints and the firewall	
Signature-based application control with patterns for thousands of applications	
Cloud Application Visibility and Control to discover Shadow IT	
App Control Smart Filters that enable dynamic policies which automatically update as new patterns are added	
Micro app discovery and control	
Application control based on category, characteristics (e.g., bandwidth and productivity consuming), technology (e.g. P2P), and risk level	
Per-user or network rule application control policy enforcement	
36 months License Includes :	
Network Protection Subscriptions (IPS,HTML5, ATP, Anti-malware),	
Web Protection Subscriptions (URL, AppCtrl, Web/App Traffic Shaping),	
Cloud Sndboxing protection against Zero Day APT	
24 X 7 hardware & warranty support from OEM	

Minimum Specification for 1.1 KVA UPS	
Qty.	
Make	
Model	
Part No.	

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Specification			Compliance (Yes/No)	
Capacity	VA/W	1100 VA/600 Watt.		
Input	Voltage	220/230/240 VAC		
	Voltage Range	140-300 VAC		
	Frequency Range	50 Hz (Auto Sensing)		
Output	AC Voltage Regulation (Batt. Mode)	±10%		
	Frequency Range (Batt. Mode)	50 Hz ±1 Hz		
	Transfer Time	Typical 10 ms		
Battery	Battery Type & Number	12 V/7.2 Ah x 2		
	Typical Recharge Time	4-6 hours up to 90% capacity		
	Battery Back up	120 Watt SPS load	30 Min.	
		180 Watt SPS load	20 Min.	
		240 Watt SPS load	10 Min.	
300 Watt SPS load		5 Min.		
Environment	Operating Environment	0-40 Deg C.		
	Storage Temp	-15° C to 50° C		
	Humidity	0-90 % RH @ 0- 40°C (non-condensing)		
	Noise Level	Less than 40dB		

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Stamp of the Company: _____