PR : 1000026601

Rfx : 6100001131

Technical Specification

Network Switches 48 Port - 1G, 4 x 1/10G		Bidder Compliance (Yes/No)
Features	**Description of Specs**	
1. **Interface requirements**	**A.** Minimum of 48 x 1G RJ45 ports, and 2x 10G SFP+ ports, 2 x 10G SFP+/RJ-45 combo ports equipped with necessary transceiver module from day one. For POE+ model the switch should support minimum 1440W of POE+ Budget from day 1, Vendor can achieve POE+ budget through RPS. Should be supplied with 2 x 10G SR SFP+ per switch, & additionally 2 x 10G LR SFP+ for 1 switch, should be included in BOQ. All transceivers & necessary accessories should be from same OEM.	

	B. 1 x Out of Band IP based management Port, 1 Console Port, USB Port / External Flash	
	C. Support stacking for up to 8 switches with minimum 40Gbps stacking, should support stacking with existing access switches, for POE+ switches Should Have Redundant Power Supply support and RPS should be supplied with POE+ switches from day 1 and variable speed fan to adjust to varying weather conditions in campus.	
2. Design & Performance	**A.** Each switch should have minimum 176 Gbps or more with non-blocking architecture and Forwarding rate of 130 Mpps	
	B. Should be equipped with minimum 1GB RAM and 1 GB flash	
	C. Should have LED indicator for per port status, FAN, PSU and Management Status	
	D. 0°C to 50°C operating temperature and 10% to 95% relative humidity	
	E. Hardware and software configuration have for IPv6 from day one	
3. Switching / Routing	**A.** Should have 16 K MAC Address	
	B. Should support 4K active user configurable vlans	
	C. Should support 802.1d spanning Tree and PVST+ or equivalent, 802.1w, 802.1s & 802.1 ba. Should have BPDU Guard or equivalent feature on edge port to auto disable port for a configurable time period to if an accidental loop occurs in the network. Should also support IEEE standard - 802.1ab, 802.1x, 802.1ax, 802.1ag, 802.3ah, 802.1v, 802.1ak, 802.1Qaz, 802.3az, 802.3ab, 802.3z, 802.3ae, 802.1Qaz , 802.1Qbb	

	D. Should support aggregating and load balancing of traffic to two or more peer switches within same VLAN	
	E. Should support ITU G.8032 standard based protocol for ring backbone	
	F. Should have Port based VLAN, MAC based VLAN, private vlan and 802.1 AK for dynamic VLAN propagation	
	G. Should have Local, Remote and multisession port mirroring (minimum 4 session)	
	H. Support Standard based protocols for lossless transport of real time data with dynamic QOS reservation.	
	I. Should have 8 Hardware QOS Queues per port	
	J. Should have traffic rate limiting with Configurable bandwidth granularity of 64 KBps	
	K. Should have Link Layer Discovery Protocol (802.1ab) to allow recognition of third-party network devices and LLDP MED for auto configuration	
	L. Should have MAC address tracking and notification for mac address addition, delete or movement in the Network	
	M. Should support policy-based traffic redirection and IP route compression	
	N. Should have basic dynamic routing protocols like RIP from day 1 and be upgradable to OSPF, PIM, VRRP in same hardware	
	O. Should have Configurable multicast session limit per port	

4. Security	**A.** Local authentication database for RADIUS Authentication for 802.1x login	
	B. Should have MAC security – Lockdown & Limit and MAC address tracking with syslog &snmp notification	
	C. Should have SSH-2, SCP, SFTP for secure management	
	D. Should have dynamic arp inspection, DHCP snooping, Private VLAN, SYN attack protection, GARP protection	
	E. Should have ASIC based traffic flow analysis based on Netflow/ sFlow/ Ipfix	
	F. Should support Denial of Service (DOS) attack protection	
	G. Should have minimum 1 K ACL entry support and Time-Based ACL	
5. Management	**A.** Should have scheduled archiving / uploading of configuration and system log to a central server	
	B. Should support inbuilt DHCP server and Client for quick configuration of endpoints and switch	
	C. Telnet server, ssh server, Ping and traceroute over Ipv6	
	D. Should have L2 Traceroute, L2 Ping and Multicast Traceroute	
	E. Web, Console and CLI management	
	F. Dual firmware and configuration rollback	
	G. Should be SDN capable with OpenFlow/Openstack/RestConf API support. Should support IEEE P802.1Qaz	
	H. Inbuilt browser/GUI based bandwidth monitoring	
	I. Should support Energy Efficient Ethernet 802.3az	

	J. Switch should support Netconf using YANG data model or Rest API/RestConf **K.** API . It should support python or TCL language for scripting. should support Puppet/Ansible for simple automation to network admin	
	L. Switch should be SDN based Fabric capable from day 1. So, if network automation is required in future same hardware can be used	
	M. Switch should have facility to support onprem and cloud management from day 1. So If required the same switch can be managed and monitor using cloud NMS	
6. Warranty and Certification	**A.** Model should have safety and standards certifications as below: UL 60950, CSA 22.2 No. 60950-1 2nd edition 2014, FCC CFR 47-part 15 Class A, EN 60950, EN/IEC 60825-1:2007, ICES-003, EN 55032:2015 Class A Class A, EN 55024:2010, EN 61000-3-2: 2014, EN 61000-3-3: 2013, CISPR 32:2015, IEC 61000-4-2:2008/EN 61000-4-2:2009, IEC 61000-4-3:2010/EN 61000-4-3:2006, IEC 61000-4-4:2012. / EN 61000-4-4:2012, IEC 61000-4-5:2014 /EN 61000-4-5:2014, IEC 61000-4-6:2013/EN 61000-4-6:2014, CE 2.0 Compliant	
	B. OEM should be in the Gartner's leader's quadrant for consecutive 3 years at least.	
	C. OEM should have India Dedicated Telephone Number, Technical Assistance Collaborative number, India RnD Center and at least 2x Support depot in India. All equipment should be covered under Next Business Day Support contract with 24/7 Technical Assistance	

	Collaborative access. OEM should share Next Business Day Support back-to-back contract copy with customer.	
	D. OEM should have in-country Technical Assistance Collaborative center	
	E. For better integration switching, transceivers, NMS, other required accessories should be from same OEM	
	F. Offered Switches should be under **5 years of Comprehensive Warranty** with onsite support and Next Business Day Support Hardware Replacement	
7. Quantity	**A.** 3 POE+ Switches should be equipped with RPS, and 1 Non-POE switch should be with default Power supply from day 1	

Other Terms and Conditions:

1. OEM Must have 24*7*365 days onsite/telephonic support system facility, response time against any complain/query should not be beyond 4 hours, resolution time for any nature of problem related to switch should not be beyond 24 hours, Any faulty Hardware replacement should be NBD (Next Business Day) in nature.
2. Dedicated Telephone Number for above kind of support must be submitted.

3. Each and every component of the Network Switch, security keys, accessories, and licenses should have an on-site comprehensive 24x7x365 days warranty for the period of 60 months. No parts, accessories, licenses of the systems should be excluded from such warranty.
4. Bidder must submit proper technical data sheet of the proposed product.
5. Along with the technical bid, the OEM/Bidder should submit a letter of commitment for 60 months from the installation/commissioning date, with respect to Hardware, Software, and Firmware support, and uptime commitment for offered Network switches. The bid will be rejected if not accompanied by the letter from the OEM/Bidder.
6. The quoted switch must be most recent and currently supported models, and that they incorporate all recent improvements in design and materials. On failing to do the same, IITB may invalidate the bid and disqualify the bidder.
7. At the time of installation, if it is found that some additional hardware or software items are required to meet the operational requirement of the configuration but not included in the OEM's original list of deliverables, the OEM/bidder shall supply such items to ensure the completeness of the configuration at no extra cost.
8. Bidders should submit only the necessary documentation related to this tender with a proper index highlighting the required technical specs in the product documentation that matches the tender specs or asked by the purchaser with page numbers.
9. Bidder cannot outsource any work mentioned in the scope of work for this tender to a third party.
10. The bidder has to give an undertaking for acceptance of all terms & conditions of tender along with the technical bid on the company's letterhead. Failure to do the same will invalidate the bid and result in disqualification.

11. The bidder has to give an undertaking of authenticity along with the technical bid on the company's letterhead as per the format mentioned in annexure-I. Failure to do the same will invalidate the bid and result in disqualification.
12. The Bidder should have a back-to-back arrangement with the OEM so that the purchaser will be able to log a call with the OEM directly for the warranty period of 60 months.
13. The bidder will be fully responsible for getting support from OEM in respect of each and every Hardware part, Software, Licenses, and technical support for the equipment mentioned in this tender. In case the bidder fails to provide the support, OEM has to provide technical support for the warranty period mentioned in the contract. Bidder has to attach a confirmation letter from the OEM.
14. The said warranty should not be considered violated if IIT Bombay buys or install any other compatible supplemental hardware/Software from a third party and installs it in the machines with intimation to the Bidder. However, the warranty will not apply to such additional hardware items installed.
15. For any delay in delivery or replacement of faulty parts during the inspection, commissioning of the systems, or for acceptance tests/checks, IIT Bombay have right to charge a penalty as mentioned in the tender document.
16. The OEM/Bidder shall depute an experienced engineer as and when required to visit the site and assist the staff during the failure and ensure the system's proper functioning.
17. The Root Cause Analysis (RCA) faced for any issues related to the system should be provided by the OEM/Bidder within 3 Business Days.
18. If any component supplied by the Vendor/OEM is inoperative, which renders the entire system useless, then it will be treated as system downtime.

19. The OEM/Bidder should be well equipped and located to honor 4 hours of response time in case of failures.
20. Offered Switches should be complied with following Industry Standards and bidder should submit relevant documents against that:
    a) ROHS (Restriction of Hazardous Substances Directive)
    b) WEEE (Waste Electrical and Electronic Equipment recycling)
    c) UL/EN/IEC 60950 (Safety Standard)
    d) FCC (Safety Standard)
    e) CE 2.0 Compliant (Carrier Ethernet)

21. The Bidder has to ensure that the proposed equipment/components of Network Switch must not be declared "End of Life" or "End of Support" in the next 7 years from the date of purchase. If the supplied equipment is declared End of Support/End of Life during the warranty period of 5 years, the bidder/OEM has to replace the equipment having equivalent or higher configurations without any additional cost to IIT Bombay.
22. The OEM must have more than 10 years of experience in supply and installation of the required equipment in Indian/International market/Government organizations. Necessary relevant documents should be submitted.
23. Bidder have to ensure successful installation and commissioning of entire Network Switches setup supplied by them.
24. Bidder must have service center in Maharashtra region, address of the service center must be submitted.

25. Any problem related to Network Switches should not be pending more than 24 hours after locking a complain, contact details of such complain system must be provided, bidder must have to provide escalation matrix details for this.
26. Bidder must submit Manufacturer's Authorization Form (MAF) on OEM letterhead along with technical bid.
27. Bidder must have to submit proper technical data sheet (Must be available in OEM website) of offered Network Switches with compliance sheet in details in respect of mentioned technical specifications of bid, failing of which bidder will be liable for disqualification.
28. Bidder should also submit filled Annexure (I to V) formats along with bid documents on their company and OEM letterhead, whichever is applicable for individual Annexure format, failing of which bidder will be liable for disqualification.
29. IIT Bombay reserves the right to accept or reject, in full or in part, any or all the offers, If **a)** seller fails to comply with any material term of the contract; **b)** seller fails to deliver the material(s) or any part thereof within the stipulated delivery period and/or fails to replace/rectify any rejected or defective material(s) promptly; **c)** seller becomes bankrupt or goes into liquidation or the seller makes a general assignment for the benefit of the creditors or a receiver is appointed for any substantial property owned by the seller; **d)** seller has misrepresented to buyer.
30. IIT Bombay also reserves the right to re-issue the tender without any explanation. The bidders will not have any right to object to such re-issue of tender.
31. IIT Bombay reserves the right to terminate the order/tender/PO if the bidder/OEM violates any of the terms and conditions of the tender.
32. Bidder must submit detailed list of BOM (Bill of Material) as per technical specifications of the Bid.

33. The OEM should be in the Gartner leader's magic quadrant for Network Switches, at least for three consecutive years, URLs of OEM and Gartner website should be provided or relevant document should be submitted in OEM Letterhead.