SL-3. Switch (Qty-3 nos)				
S/N	**Specification / Requirement**	**Compliance (Yes/No)**	**Deviation (If Any)**	**Justification**
1	L2 Managed Switch having 24x10/100/1000BaseT ports and 4xSFP slots (populated with 1no. Single Mode 1G SFP Module)		As per the upcoming application requirement it is alaways appreciable to have an option to be upgraded with SFP+ option for in future to have future anticipated requirement with out changimg the base hardware . So please modify it as "L2 Managed Switch having 24x10/100/1000BaseT ports and 4xSFP slots (populated with 1no. Single Mode 1G SFP Module) . Should have option to be scalable to minimum 4x SFP+ port with out changing the base hardware"	Since these switches will be installed at hostel end and lab end, 1GBPS link will be more than sufficient. SFP+ slots along with 1G SFP module will give 1GBPS link only. However switch with higher configuration will be acceptable.
2	Switching Capacity should be atleast 56Gbps		Plesae modify it as "Switching Capacity should be atleast 128Gbps " for teh future expansion ready hardware with out changing the base hardware .	Since we do not require 10GBPS link, Switch with 1GBPS port is sufficient. Hence 56GBPS Switching Capacity is logical. However switch with higher switching capacity will be acceptable
3	Packet Forwarding Rate should be atleast 41.7Mpps for 64-byte packet size		Plesae modify it as "SPacket Forwarding Rate should be atleast 95Mpps for 64-byte packet size " for the future expansion ready hardware with out changing the base hardware .	As per required port density, 41.7Mpps of 64-bytes packet forwarding rate is sufficient. However switch with higher packet forwarding rate will be acceptable
4	The switch should have non-blocking architecture & wire-speed performance under fully loaded condition from day-1			
5	It should have hardware reset button & fanless design.		For the cooling purpose different vendor use different mechanism . So high processing switches generally have cooling fan for extensive cooling purpose. So please dilute this Fanless option to maitain vendor neutrality.	Switches with fanless design are more advanced & it is available with multiple vendors. Being a moving component, fans are more prone to failure increasing switch temperature & subsequent failure of the switch. Also creates noise pollution
6	The Switch should have following L2 features from Day-1			
7	MAC Address Table size: Atleast 16000, support atleast 256 static MAC			

8	Flow Control: IEEE 802.3x in full duplex, back pressure in half duplex & HoL blocking prevention			
9	Jumbo Frame Support (Atleast 10K bytes)			
10	IGMP v1 v2 with atleast 256 IGMP snooping groups, Per VLAN IGMP Snooping, port based IGMP snooping fast leave.			
11	LLDP, LLDP-MED, IPv6 Neighbor Discovery, L2 multicast filtering,			
12	IEEE802.1D STP, 802.1w RSTP, Root guard or equivalent feature.			
13	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			
14	IEEE 802.3ad Link Aggregation with at least 8 ports per groups & 14 groups per switch.			
15	Port mirroring for Tx/Rx/Both. One-to-One mode, Many-to-one mode			
16	IEEE 802.1Q VLAN, atleast 256 Static VLANs, Voice-VLAN, asymmetric VLAN, auto surveillance VLAN		Please clarify " auto surveillance VLAN ". It is always appreciable to ask for an industry stanadanrd technology rather a propreitery technology to maintain vendor neutrality.	Auto Surveillance VLAN or equivalent feature, which allows user to automatically place the video traffic to an assigned VLAN, will be acceptable.
17	The switch should have 802.1p support with 4 queues per port. Support strict & WRR queue handling technique.			
18	The switch should have Port-based ingress & egress bandwidth control with minimum granularity of atleast 64kbps			
19	The switch should have standard & extended Access control list			

20	The switch should have the following security features from Day-1: SSLv3, Broadcast/Multicast & Unicast storm control, port security feature with atleast 64 MAC per port, traffic segmentation, ARP spoofing prevention, IEEE 802.1x, DHCP server screening, RADIUS server, Binding of IP address with MAC address & interface.		Plesae delete "DHCP sever Screening " to manitain vendor neutrality . So would request to please modify as DHCP serveroption which would provide the same functionality based on the Industry Standard.	DHCP Server Screening or equivalent feature, which is used to restrict the illegal DHCP server by discarding the DHCP services from distrusted ports of the switch, will be acceptable.
21	The switch should have feature to protect the CPU from protocol control packet attack.			
22	The switch should have cable diagnostic feature to check the status of connected RJ45 cables.			
23	The Switch should have following Management features from day-1: Web-based GUI, CLI, Telnet Server, TFTP Client, SNMPv1v2cv3, SNMP trap, BootP/DHCP Client, SNTP, trusted host, RMONv1, Syslog, ICMPv6, IPv4 & v6 dual stack			
24	The switch should have Energy saving green technology based on cable length & link status. IEEE 802.3az			
25	The switch should be 1U height			
26	The switch should be RoHS compliant & should have following certifications: FCC Class A, CE Class A, VCCI Class A, C-Tick			

	SL-1. Wireless Outdoor Access Point (Qty-4 nos)	**AP7562**		Conclusion
S/N	**Specification / Requirement**	**Compliance (Yes/No)**	**Deviation (If Any)**	
1	The Access Point should have minimum 1 Port 10/100/1000Mb POE in Ethernet port.	yes		

2	802.11n Access Point should be able to power up using standards 802.3af POE input, and at the same time operate in full MIMO mode. It must have option to power through 12 VDC power Adaptor.	partial	AP can be powered through POE	its required as in case of Mesh AP need
3	AP should have Dual Radios to support 2.4 GHz & 5Ghz concurrent users with 802.11 a/b/g/n/ac capability. AP Must support 2x2 or better MIMO with 2 Radio Chain	yes		
4	AP should be able to handle upto 200 Concurrent users.	yes		not mentioned in Datasheet.
5	AP should provide minimum 25 dBm transmit power for 2.4Ghz and 5 Ghz. (EIRP should be limited as per govt. regulation for outdoor AP's).	yes		wrong statement. With all 3 Antennas max tx power for 5Ghz is 24dB.
6	Wireless Interface: Dual radio; 802.11a/b/g/n/ac ; 2.4Ghz and 5Ghz concurrent support.	yes		
7	SSID support : 16 BSSID (8 BSSID per Radio)	yes		
8	AP should support upto 300Mbps datarates in 2.4Ghz 802.11b/g/n and upto 867 Mbps in 5Ghz 802.11/a/n/ac.	yes		
9	The access point should support 802.1q VLAN tagging	yes		
10	Antenna: Integrated/External for Sectorial 120 degree (as specified in BOQ) coverage, with min 4 dB Gain for 2.4Ghz and 5Ghz both.	yes	antenna will be third party non Zebra	
11	Should support the operating temp -10° to 55° C and Humidity: 15 to 95% non-condensing.	yes		
12	AP Must be IP67 certified for outdoor deployment. AP must be outdoor rated and no AP will be accepted which is indoor and installed in outdoor casing.	yes		

13	The access point should support following security mechanism: WEP, WPA-PSK, WPA-TKIP, WPA2 AES, 802.11i.	yes		
14	System should support Authentication via 802.1X, Local (controller based) authentication database, support for RADIUS and Active Directory.	yes		
15	Web User Interface (HTTP/S) • CLI (Telnet/SSH), SNMP v1, 2, 3	yes		
	SL-2. Wireless Indoor Access Point (Qty-5 nos)	**AP7522**		
S/N	**Specification / Requirement**	**Compliance (Yes/No)**	**Deviation (If Any)**	
1	The APs should support the 802.11a, 802.11b, 802.11g and 11n and ac standards. It should also support 802.11ac standard in the 5 GHz band.	yes		
2	Simultaneous client support on dual band radio is essential.	yes		
3	Shall provide Min 22 dBm Radio output power for both Radio's.	yes		this is wrong compliance. 23dBm is EIRP with 2 Antenna's. AP radio tx power is less.
4	Should support minimum 2x2 or higher MIMO on both radio bands for an aggregate capacity of 1.150Gbps	yes		
5	The access points should be centrally managed.	yes		
6	In some small isolated environments the AP should be able to function as a full-fledged stand-alone access point without the requirement of a controller.	yes		
7	Security mechanisms should be in place to protect the communication between the Access Point controller and the Access Points.	yes		

8	Since most radio interference come from the WLAN network itself the vendor should specify what mechanisms such as beam steering/ adaptive antenna technology/ beamforming are available in combination to focus the energy on the destination STA and minimize radio interference with the surrounding of the AP. The vendor should specify if the activation of such feature is still compatible with 802.11n spatial multiplexing.	yes	SMART RF	pls ask to describe on how it works. Smart RF is very generic and don't explain how it works.
9	Since the WLAN network will be using an unlicensed band the solution should have mechanisms that reduce the impact of interference generated by other radio equipment operating in the same band. Describe techniques supported.	yes	SMART RF	
10	The access point should be able to detect clients that have dual band capability and automatically steer those client to use the 5GHz band instead of the 2.4GHz band.	yes		
11	The antennas to be dual polarised and should be integrated inside the access point enclosure to minimize damage and create a low profile unit that does not stand out visually.	yes		
12	The access point should have minimum 1 Gigabit Ethernet port.	yes		
13	The access point should support 802.1q VLAN tagging	yes		
14	The access point should support WPA2 enterprise authentication and AES/CCMP encryption. AP should support Authentication via 802.1X and Active Directory.	yes		

15	Implement Wi-Fi alliance standards WMM, 802.11d, 802.11h and 802.11e	yes		
16	The Access Point should provide for concurrent support for high definition IP Video, Voice and Data application without needing any configuration. This feature should be demonstrable.	yes		
17	Support RF auto-channel selection by the following three methods: a) measuring energy levels on the channel; b) monitoring for 802.11 signal structures and; (c) detecting radar pulses. Other similar forms of smart selection shall also be accepted.	yes		
18	Channel selection based on measuring throughput capacity in real time and switching to another channel should the capacity fall below the statistical average of all channels without using background scanning as a method.	yes		
20	Device antenna gain (integrated) must be at least 3dBi and should provide automatic interference rejection of about 10dB.	yes		
21	Should support up to 200 clients per AP	yes		not mentioned in Datasheet.
22	Should support DHCP Option 82 in standalone mode (without Controller) as well as in Managed mode (with Controller)		Proprietary	wrong statement. most vendor supports that. http://www.cisco.com/c/en/us/support/docs/wireless/4400-series-wireless-lan-controllers/113302-dhcp-option82-00.html

23	For troubleshooting purposes, the administrator should have the ability to remotely capture 802.11 and / or 802.3 frames from an access point without disrupting client access.	yes		
24	Operating Temperature: 0°C -40°C	yes		
25	Operating Humidity: 10 % -95% non-condensing.	yes		
26	Should be plenum rated and comply to RoHS	yes		
27	Should be WiFi certified; WiFi certificate to be enclosed	yes		
28	Should be WPC approved; ETA certificate to be enclosed	yes		
29	Device should be UL 2043 Plenum Rated.	yes		
30	Mechanism for physical device locking using padlock /Kensington lock / equivalent	yes		wrong compliance. Pls ask which mechanism is supported !!