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| 1.    | **Architecture** | a) The switch shall have 8 RJ-45 auto-negotiating 10/100/1000 PoE Ports  
b) The Switch shall have two 1000BASE-X-SFP port in addition to above ports.  
c) The Switch shall support IEEE 802.3 afPoE and IEEE 802. 3at PoE+.  
d) The switch shall have minimum 65 Watts for PoE Power.  
e) Shall support 1000 Base-SX, LX, and LX Bi-directional SFP transceivers  
f) Switching capacity of 20 Gbps.  
g) Switching throughput of up to 14 million pps 1 RJ-45 console port. |
| 2.    | **Resiliency** | |
| 3.    | **Layer 2 Features** | Configurable up to 8000 MAC addresses  
Shall support IEEE 802.3ad Link Aggregation Control Protocol (LACP)  
Shall support IEEE 802.1D Spanning Tree Protocol.  
Shall support IEEE 802. 1w Rapid Spanning Tree Protocol for faster convergence.  
Shall support IEEE.802.1s Multiple Spanning Tree Protocol.  
Shall support IGMP snooping for multicast filtering instead of flooding traffic to all ports, improving network performance.  
Shall support MLD snooping to forward IPv6 multicast traffic to the appropriate interface, preventing traffic flooding.  
Shall support IEEE 802.1AB Link Layer Discovery Protocol (LLDP).  
Shall support LLDP-MED (Media Endpoint Discovery) to automatically configure network devices such as IP phones. |
| 4.    | **Layer 2 & 3 features** | Shall support IEEE 802.1Q with 512 Port based VLAN and 4K VLAN-IDs.  
Shall support Voice VLANs.  
Shall support gratuitous ARP to allow detection of duplicate IP addresses.  
Shall supports up to 9 kilobyte frame size to improve the performance of large data transfers.  
Shall support DHCP relay to simplify management of DHCP addresses in networks. |
| 5. **QoS and Security Features** | with multiple subnets. Shall support port security and port isolation. Shall support MAC and Port based ACLs enable network traffic filtering and enhance network control. Shall support ACLs and QoS for IPv6 network traffic. Shall support time-based ACLs to allow for greater flexibility with managing network access. Shall support IEEE 802.1X and RADIUS network logins to control port-based access for authentication and accountability. Shall support MAC-Based authentication. Shall support strict priority queuing (SP), weighted round robin (WRP) queuing and SP+WRR+, DSCP. Shall support ARP attack protection feature to block ARP packets from unauthorized clients. Shall support DHCP snooping to block unauthorized DHCP Servers. Shall support STP BPDU protection preventing forged BPDU attacks. Shall support STP Root Guard to protect the root bridge from malicious attacks r configuration mistakes. |

| 6. **Management Features** | SNMP V2/V3, SSHv2, full CLI/Telnet, web based interface and Dual flash images. IPv6 host support to be manages using IPv6. Shall support port mirroring. Shall support intuitive Web GUI (http/https) for easy management. Shall support limited command-line interface to deploy and troubleshoot. Shall support management security through multiple privilege levels. Shall support single IP address management for up to 16 switches. Shall support Network Time Protocol (NTP). Shall have an operating temperature of 0° to 40° C. |

| 7. **Safely and Emission** | UL 60950/IEC 60950-1/EN 60950-1 and FCC Class A; EN 55022/CISPR-22 Class A; VCCI Class A |