Alcatel-Lucent Enterprise OmniSwitch 6360 GOLDEN RFP

Based on version AOS 8.9R3

Alcatel·Lucent Enterprise

Contents

1. Introduction

The Alcatel-Lucent OmniSwitch® 6360 Stackable Gigabit Ethernet LAN Switch Family is an industry leading, branch, campus workgroup, and enterprise, value access solution. These are simple, flexible, and secure switches ideal for out-of-the-wiring-closet workstation, access-point, IP telephony and critical Internet of Things (IoT) deployment.
OmniSwitch 6360 operates using the field proven Alcatel-Lucent Operating System (AOS) software supporting simple device management and network management with a Command-Line Interface (CLI) in addition to an in-box web browser graphical user interface (GUI). These switches deliver enhanced network security, reliability, and operational efficiency for Small- and Medium-sized Businesses (SMB) or Enterprise edge networks.

The Alcatel-Lucent OmniSwitch 6360 family is embedded with the latest technology innovations and offers maximum investment protection.

Deployments that benefit from the OmniSwitch 6360 family include:

- Classroom and campus workgroups
- Small enterprise or branch office enterprise
- Small-to-mid-sized and enterprise edge networks

Features

- 10, 24, and 48 Gigabit Ethernet data or PoE+ ports with line-rate performance
- Gigabit Ethernet SFP or SFP/RJ-45 combination uplink ports, or fixed 10 Gigabit Ethernet SFP+/RJ45 combination uplink ports (X models)
- 10 GigE virtual chassis bandwidth up to 4 units (stacking) or 208 ports (8 units for OS6360-24/48 ports models)
- Perpetual and fast PoE+ support across all PoE models
- Compact fan-less models for co-location work environments.

Management

- AOS field-proven software with management through web interface (WebView 2.0), command-line interface (CLI), and Simple Network Management Protocol (SNMP)
- Ethernet operations, administration, and management (OA&M) support for service configuration and monitoring
- Cloud-enabled with Alcatel-Lucent OmniVista® Cirrus for secure, resilient, and scalable cloud-based network management
- Support by Alcatel-Lucent OmniVista 2500 Network Management System (NMS).

Security

- Comprehensive 802.1X features to control access to the network
- Flexible device and user authentication with Alcatel-Lucent Access Guardian (IEEE 802.1x/MAC/captive portal)
- Enables deployment of comprehensive and secure Bring Your Own Device (BYOD) services in enterprise networks such as guest management, device on-boarding, device posturing, application management, and dynamic change of authentication (CoA)
- Advanced Quality of Service (QoS) and Access Control Lists (ACLs) for IPv4 and IPv6 traffic control, including an embedded denial-of-service (DoS) engine to filter out unwanted traffic attacks
- Extensive support of user-oriented features such as learned port security (LPS), port mapping, Dynamic Host Configuration Protocol (DHCP) binding tables, and User Network Profile (UNP).

Performance and redundancy

- Advanced layer 2+ features with static routing for both IPv4 and IPv6
- Triple speed (10/100/1G) user interfaces and fiber interfaces (SFPs) supporting 1000Base-X
- Two Multi-Gigabit (10/100/1G/2.5) RJ-45 HPoE (95W IEEE802.3bt) user interfaces (-P48X)
- 10G uplinks ports supporting SFP+ or 10GBase-T (X models)
- Wire-rate switching and routing performance
- High availability with virtual chassis concept, remote/redundant stacking links, primary/secondary unit failover, in-service software upgrade, and configuration rollback.

Convergence

- Enhanced Voice over IP (VoIP) and video performance with policy-based QoS
- Future-ready support for multimedia applications with wire-rate multicast
- AirGroup™ Network Services for Bonjour® speaking devices provides consistent experience over wireless and wired networks
- IEEE 802.3af, IEEE 802.3at, and IEEE802.3bt (-P48X) PoE support for IP phones, wireless LAN (WLAN) access points, PTZ video cameras, and IoT devices.

Benefits

- Meets any customer configuration need and offers excellent investment protection and flexibility, as well as ease of deployment, operation, and maintenance
- Provides outstanding performance when supporting real-time voice, data, and video applications for converged scalable networks
- Ensures efficient power management reduces operating expenses (OPEX) and lowers total cost of ownership (TCO) through low power consumption and dynamic PoE allocation, which delivers only the power needed by the attached device
- A field-upgradeable solution that provides network high availability and reduces OPEX
- Fully secures the network at the edge at no additional cost
- Enterprise-wide cost reduction through hardware consolidation to achieve network segmentation and security without additional hardware installation
- Supports cost-effective installation and deployment with automated switch setup and configuration and end-to-end virtual LAN (VLAN) provisioning
- OmniVista Cirrus powers a secure, resilient, and scalable cloud-based network management. It offers hassle free network deployment and easy service rollout with advanced analytics for smarter decision making. IT-friendly unified access with secure authentication and policy enforcement for users and devices.

OmniSwitch 6360 link

https://www.al-enterprise.com/en/products/switches/omniswitch-6360

2. OmniSwitch 6360 models and chassis components

2.1. OS6360-10 - The switch must support the following characteristics

2.1.1.	Non-blocking architecture	C/PC/NC
2.1.2.	Total RU: 1 RU maximum	C/PC/NC
2.1.3.	Total Width: 21.7cm (Half 19” Rack)	C/PC/NC
2.1.4.	Power Supply must be internal and integrated into the switch	C/PC/NC
2.1.5.	SFP`s Hot Swap	C/PC/NC
2.1.6.	Minimum of 8 ports 10/100/1000 Base T RJ45	C/PC/NC
2.1.7.	Minimum of 2 SFP ports (1Gbps) for uplink	C/PC/NC
2.1.8.	The above minimum ports quantity cannot be combo ports. All ports must be available in the switch, and at the same time	C/PC/NC
2.1.9.	The switch MUST be fan-less	C/PC/NC
2.1.10.	Minimum switching ASIC capacity of 40Gbps	C/PC/NC
2.1.11.	Minimum switching capacity with all ports (full-duplex + VFL) of 24Gbps	C/PC/NC
2.1.12.	Minimum Processing Capacity (Mpps): 17.9 Mpps	C/PC/NC
2.1.13.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.1.14.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.1.15.	Minimum power supply efficiency (max load) of 89%	C/PC/NC
2.1.16.	Minimum MTBF (hours) @ 25ºC: 1.179.000	C/PC/NC
2.1.17.	Maximum system power consumption idle of 13W	C/PC/NC
2.1.18.	Maximum system power consumption 100% traffic all ports of 15W	C/PC/:NC

2.2. OS6360-P10 - The switch must support the following characteristics

2.2.1.	Non-blocking architecture	C/PC/NC
2.2.2.	Total RU: 1 RU maximum	C/PC/NC
2.2.3.	Total Width: 21.7cm (Half 19” Rack)	C/PC/NC
2.2.4.	Power Supply must be internal and integrated into the switch	C/PC/NC
2.2.5.	SFP`s Hot Swap	C/PC/NC
2.2.6.	Minimum of 8 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.2.7.	Minimum of 2 SFP ports (1Gbps) for Uplink or VFL	C/PC/NC
2.2.8.	The above minimum ports quantity cannot be combo ports. All ports must be available in the switch, and at the same time	C/PC/NC
2.2.9.	Equipment MUST be Fan-less	C/PC/NC
2.2.10.	Minimum switching capacity of 40Gbps	C/PC/NC
2.2.11.	Minimum switch capacity with all ports (full-duplex + VFL) of 24Gbps	C/PC/NC
2.2.12.	Minimum Processing Capacity (Mpps): 17.9 Mpps	C/PC/NC
2.2.13.	Operating Temperature: 0˚C to 45˚C	C/PC/NC
2.2.14.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.2.15.	Minimum power supply efficiency (max load) of 93.5%	C/PC/NC
2.2.16.	Minimum MTBF (hours) @ 25ºC: 1.094.000	C/PC/NC
2.2.17.	Maximum system power consumption idle of 13W	C/PC/NC
2.2.18.	Maximum system power consumption 100% traffic all ports of 18W	C/PC/NC
2.2.19.	Minimum PoE Budget of 120W	C/PC/NC

2.3. OS6360-24 -The switch must support the following characteristics:

2.3.1.	Non-blocking architecture	C/PC/NC
2.3.2.	Total RU: 1 RU maximum	C/PC/NC
2.3.3.	Power Supply must be internal and integrated into the switch.	C/PC/NC
2.3.4.	SFP`s Hot Swap	C/PC/NC
2.3.5.	Minimum of 24 ports 10/100/1000 Base T RJ45	C/PC/NC
2.3.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.3.7.	Minimum of 2 1000BaseT/SFP combo ports	C/PC/NC
2.3.8.	The switch MUST be Fanless	C/PC/NC
2.3.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.3.10.	Minimum switching capacity of 92Gbps	C/PC/NC
2.3.11.	Switch capacity with all ports (full-duplex + VFL) of 92Gbps	C/PC/NC
2.3.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.3.13.	Minimum Processing Capacity (Mpps): 68.5Mpps	C/PC/NC
2.3.14.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.3.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.3.16.	Minimum power supply efficiency (max load) of 87.3%	C/PC/NC
2.3.17.	Minimum MTBF (hours) @ 25ºC: 2.595.000	C/PC/NC
2.3.18.	Maximum system power consumption idle of 21W	C/PC/NC

2.3.19.	Maximum system power consumption 100% traffic all ports of 24W	C/PC/NC

2.4. OS6360-P24 - The switch must support the following characteristics

2.4.1.	Non-blocking architecture	C/PC/NC
2.4.2.	Total RU: 1 RU maximum	C/PC/NC
2.4.3.	Power Supply must be internal and integrated into the switch.	C/PC/NC
2.4.4.	SFP`s Hot Swap	C/PC/NC
2.4.5.	Minimum of 24 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.4.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.4.7.	Minimum of 2 1000BaseT/SFP combo ports	C/PC/NC
2.4.8.	The switch MUST be Fanless	C/PC/NC
2.4.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.4.10.	Minimum switching capacity of 92Gbps	C/PC/NC
2.4.11.	Minimum switch capacity with all ports (full-duplex + VFL) of 92Gbps	C/PC/NC
2.4.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.4.13.	Minimum Processing Capacity (Mpps): 68.5 Mpps	C/PC/NC
2.4.14.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.4.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.4.16.	Minimum power supply efficiency (max load) of 93.5%	C/PC/NC
2.4.17.	Minimum MTBF (hours) @ 25ºC: 1.447.000	C/PC/NC

2.4.18.	Maximum system power consumption idle of 21W	C/PC/NC
2.4.19.	Maximum system power consumption 100% traffic all ports of 28W	C/PC/NC
2.4.20.	Minimum PoE Budget of 180W	C/PC/NC

2.5. OS6360-48 - The switch must support the following characteristics

2.5.1.	Non-blocking architecture	C/PC/NC
2.5.2.	Total RU: 1 RU maximum	C/PC/NC
2.5.3.	Power Supply must be internal and integrated into the switch.	C/PC/NC
2.5.4.	SFP`s Hot Swap	C/PC/NC
2.5.5.	Minimum of 48 ports 10/100/1000 Base T RJ45	C/PC/NC
2.5.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.5.7.	Minimum of 2 1000BaseT/SFP combo ports	C/PC/NC
2.5.8.	MUST support Variable Speed Fans	C/PC/NC
2.5.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.5.10.	Minimum switching capacity of 140Gbps	C/PC/NC
2.5.11.	Switch capacity with all ports (full-duplex + VFL) of 140Gbps	C/PC/NC
2.5.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.5.13.	Minimum Processing Capacity (Mpps): 104 Mpps	C/PC/NC
2.5.14.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.5.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC

2.5.16.	Minimum power supply efficiency (max load) of 89.4%	C/PC/NC
2.5.17.	Minimum MTBF (hours) @ 25ºC: 832.000	C/PC/NC
2.5.18.	Maximum system power consumption idle of 46W	C/PC/NC
2.5.19.	Maximum ystem power consumption 100% traffic all ports of 49W	C/PC/NC

2.6. OS6360-P48 - The switch must support the following characteristics

2.6.1.	Non-blocking architecture	C/PC/NC
2.6.2.	Total RU: 1 RU maximum	C/PC/NC
2.6.3.	Power Supply must be internal and integrated into the switch	C/PC/NC
2.6.4.	SFP`s Hot Swap	C/PC/NC
2.6.5.	Minimum of 48 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.6.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.6.7.	Minimum of 2 1000BaseT/SFP combo ports	C/PC/NC
2.6.8.	MUST support Variable Speed Fans	C/PC/NC
2.6.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.6.10.	Minimum switching capacity of 140Gbps	C/PC/NC
2.6.11.	Switch capacity with all ports (full-duplex + VFL) of 140Gbps	C/PC/NC
2.6.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.6.13.	Minimum Processing Capacity (Mpps): 104 Mpps	C/PC/NC
2.6.14.	Operating Temperature: 0˚C to 45˚C	C/PC/NC

2.6.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.6.16.	Power Supply efficiency (max load) of 93.3%	C/PC/NC
2.6.17.	MTBF (hours) @ 25ºC: 789.000	C/PC/NC
2.6.18.	System power consumption idle of 47W	C/PC/NC
2.6.19.	System power consumption 100% traffic all ports of 54W	C/PC/NC
2.6.20.	PoE Budget of 350W	C/PC/NC

2.7. OS6360-PH24 - The switch must support the following characteristics

2.7.1.	Non-blocking architecture	C/PC/NC
2.7.2.	Total RU: 1 RU maximum	C/PC/NC
2.7.3.	Power Supply must be internal and integrated into the switch	C/PC/NC
2.7.4.	SFP`s Hot Swap	C/PC/NC
2.7.5.	Minimum of 24 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.7.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.7.7.	Minimum of 2 1000BaseT/SFP combo ports upgradable to 10GbaseT/SFP+	C/PC/NC
2.7.8.	MUST support Variable Speed Fans	C/PC/NC
2.7.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.7.10.	Minimum switching capacity of 68.5Gbps	C/PC/NC
2.7.11.	Minimum switch capacity with all ports (full-duplex + VFL) of 92Gbps	C/PC/NC
2.7.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.7.13.	Minimum Processing Capacity (Mpps): 137 Mpps	C/PC/NC

2.7.14.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.7.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.7.16.	Minimum power supply efficiency (max load) of 95.7%	C/PC/NC
2.7.17.	Minimum MTBF (hours) @ 25ºC: 1.447.000	C/PC/NC
2.7.18.	Maximum system power consumption idle of 32W	C/PC/NC
2.7.19.	Maximum system power consumption 100% traffic all ports of 46W	C/PC/NC
2.7.20.	Minimum PoE Budget of 380W	C/PC/NC

2.8. OS6360-PH48 - The switch must support the following characteristics

2.8.1.	Non-blocking architecture	C/PC/NC
2.8.2.	Total RU: 1 RU maximum	C/PC/NC
2.8.3.	Power Supply must be internal and integrated into the switch	C/PC/NC
2.8.4.	SFP`s Hot Swap	C/PC/NC
2.8.5.	Minimum of 48 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.8.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.8.7.	Minimum of 2 1000BaseT/SFP combo ports upgradable to 10GbaseT/SFP+	C/PC/NC
2.8.8.	MUST support Variable Speed Fans	C/PC/NC
2.8.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.8.10.	Minimum switching capacity of 182Gbps	C/PC/NC
2.8.11.	Switch capacity with all ports (full-duplex + VFL) of 92Gbps	C/PC/NC
2.8.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.8.13.	Minimum Processing Capacity (Mpps): 217 Mpps	C/PC/NC

2.8.14.	Operating Temperature: 0°C to 45°C	C/PC/NC
2.8.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.8.16.	Minimum power supply efficiency (max load) of 95.6%	C/PC/NC
2.8.17.	Minimum MTBF (hours) @ 25ºC: 789.000	C/PC/NC
2.8.18.	Maximum system power consumption idle of 60W	C/PC/NC
2.8.19.	Maximum system power consumption 100% traffic all ports of 76W	C/PC/NC
2.8.20.	Minimum PoE Budget of 760W	C/PC/NC

2.9. OS6360-P24X - The switch must support the following characteristics

2.9.1.	Non-blocking architecture	C/PC/NC
2.9.2.	Total RU: 1 RU maximum	C/PC/NC
2.9.3.	Power supply must be internal and integrated into the switch	C/PC/NC
2.9.4.	SFP`s Hot Swap	C/PC/NC
2.9.5.	Minimum of 24 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.9.6.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.9.7.	Minimum of 2 10GbaseT/SFP+ combo ports	C/PC/NC
2.9.8.	MUST support Variable Speed Fans	C/PC/NC
2.9.9.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.9.10.	Minimum switching capacity of 95.3Gbps	C/PC/NC
2.9.11.	Minimum switch capacity with all ports (full-duplex + VFL) of 128Gbps	C/PC/NC

2.9.12.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.9.13.	Minimum Processing Capacity (Mpps): 190 Mpps	C/PC/NC
2.9.14.	Operating Temperature: 0˚C to 45˚C	C/PC/NC
2.9.15.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.9.16.	Minimum power supply efficiency (max load) of 95.7%	C/PC/NC
2.9.17.	Minimum MTBF (hours) @ 25ºC: 1.447.000	C/PC/NC
2.9.18.	Maximum system power consumption idle of 32W	C/PC/NC
2.9.19.	Maximum ystem power consumption 100% traffic all ports of 46W	C/PC/NC
2.9.20.	Minimum PoE Budget of 380W	C/PC/NC

2.10. OS6360–P48X - The switch must support the following characteristics

2.10.1.	Non-blocking architecture	C/PC/NC
2.10.2.	Total RU: 1 RU maximum	C/PC/NC
2.10.3.	Power Supply must be internal and integrated into the switch.	C/PC/NC
2.10.4.	SFP`s Hot Swap	C/PC/NC
2.10.5.	Minimum of 46 ports 10/100/1000 Base T RJ45 with PoE+	C/PC/NC
2.10.6.	Minimum of 2 ports Multi-Gigabit (1G/2.5G) with HPoE+ (60W)	C/PC/NC
2.10.7.	Minimum of 2 SFP+ ports (1/10Gbps) for Uplink or VFL	C/PC/NC
2.10.8.	Minimum of 2 10GbaseT/SFP+ combo ports	C/PC/NC
2.10.9.	MUST support Variable Speed Fans	C/PC/NC

2.10.10.	Stack up to 4 elements (Single Management IP)	C/PC/NC
2.10.11.	Minimum switching capacity of 182Gbps	C/PC/NC
2.10.12.	Switch capacity with all ports (full-duplex + VFL) of 182Gbps	C/PC/NC
2.10.13.	Minimum VFL (aggregated) of 40Gbps	C/PC/NC
2.10.14.	Minimum Processing Capacity (Mpps): 135.4 Mpps	C/PC/NC
2.10.15.	Operating Temperature: 0˚C to 45˚C	C/PC/NC
2.10.16.	Humidity (operation): 5% to 95% non-condensing	C/PC/NC
2.10.17.	Minimum power supply efficiency (max load) of 95.6%	C/PC/NC
2.10.18.	Minimum MTBF (hours) @ 25ºC: 789.000	C/PC/NC
2.10.19.	Maximum system power consumption idle of 32W	C/PC/NC
2.10.20.	Maximum system power consumption 100% traffic all ports of 46W	C/PC/NC
2.10.21.	Minimum PoE Budget of 760W	C/PC/NC

3. Resiliency and high availability functionalities

The switch must support the following:

3.1.	Unified management, control and virtual chassis technology	C/PC/NC
3.2.	Virtual Chassis 1+N redundant supervisor manager	C/PC/NC
3.3.	Virtual Chassis In-Service Software Upgrade (ISSU)	C/PC/NC
3.4.	Split Virtual Chassis protection	C/PC/NC
3.5.	IEEE 802.1s Multiple Spanning Tree Protocol (MSTP) encompasses IEEE 802.1D Spanning Tree Protocol (STP) and IEEE 802.1w Rapid Spanning Tree Protocol (RSTP)	C/PC/NC
3.6.	Per-VLAN spanning tree (PVST+) and 1x1 STP mode	C/PC/NC
3.7.	IEEE 802.3ad/802.1AX Link Aggregation Control Protocol (LACP) and static LAG groups across modules	C/PC/NC
3.8.	Virtual Router Redundancy Protocol (VRRP) with tracking capabilities	C/PC/NC
3.9.	IEEE protocol auto-discovery	C/PC/NC
3.10.	Bidirectional Forwarding Detection (BFD) for fast failure detection and reduced re-convergence times in a routed environment.	C/PC/NC
3.11.	Redundant and hot-swappable power supplies	C/PC/NC
3.12.	Built-in CPU protection against malicious attacks	C/PC/NC

4. L3 protocols and features.

The switch must support the following:

4.1.	Static routing for IPv4 and IPv6	C/PC/NC
4.2.	Up to 256 IPv4 and 32 IPv6 static routes	C/PC/NC
4.3.	Up to 32 IPv4 and 4 IPv6 interfaces	C/PC/NC

5. L2 capabilities

The switch must support the following:

5.1.	Up to 16k MAC Addresses	C/PC/NC
5.2.	Up to 4000 VLANs	C/PC/NC
5.3.	Up to 1.5k total system policies	C/PC/NC
5.4.	The switch latency: < 4 µs	C/PC/NC
5.5.	Max Frame: 9216 bytes (jumbo)	C/PC/NC
5.6.	ERPv2	C/PC/NC

6. Multicast protocols and features

The switch must support the following:

6.1.	IGMPv1/v2/v3 snooping to optimize multicast traffic.	C/PC/NC
6.2.	Multicast Listener Discovery (MLD) v1/v2 snooping+	C/PC/NC
6.3.	Up to 1000 multicast groups	C/PC/NC

7. Security features.

The switch must support the following:

7.1.	Autosensing IEEE 802.1X multiclient, multi-VLAN support	C/PC/NC
7.2.	MAC-based authentication for non-IEEE 802.1X hosts	C/PC/NC
7.3.	Web based authentication (captive portal): a customizable web portal residing on the switch.	C/PC/NC

7.4.	Dynamically provide pre-defined policy configuration to authenticated clients — VLAN, ACL, BW	C/PC/NC
7.5.	User Network Profile (UNP) simplifies NAC by dynamically providing pre-defined policy configuration to authenticated clients — VLAN, ACL, BW	C/PC/NC
7.6.	Secure Shell (SSH) with public key infrastructure (PKI) support	C/PC/NC
7.7.	Terminal Access Controller Access- Control System Plus (TACACS+) client	C/PC/NC
7.8.	Centralized Remote Access Dial- In User Service (RADIUS) and Lightweight Directory Access Protocol (LDAP) administrator authentication	C/PC/NC
7.9.	Centralized RADIUS for device authentication and network access control authorization	C/PC/NC
7.10.	Learned Port Security (LPS) or MAC address lockdown.	C/PC/NC
7.11.	Access Control Lists (ACLs); flow-based filtering in hardware (Layer 1 to Layer 4)	C/PC/NC
7.12.	DHCP Snooping, DHCP IP and Address Resolution Protocol (ARP) spoof protection.	C/PC/NC
7.13.	ARP poisoning detection	C/PC/NC
7.14.	IP Source Filtering as a protective and effective mechanism against ARP attacks	C/PC/NC
7.15.	Role-based authentication for routed domains	C/PC/NC
7.16.	BYOD provides on-boarding of guest, IT/non-IT issued and silent devices; restriction/remediation of traffic from non-compliant devices. RADIUS CoA dynamically enforces User Network Profiles based on authentication, profiling, posture check of devices using Unified Policy Access Manager (UPAM)	C/PC/NC
7.17.	The minimum password size range is 1-30 characters.	C/PC/NC
7.18.	Allows the switch to be authenticated as a supplicant device using X.509 certificates.	C/PC/NC

8. Quality of Service (QoS) features

The switch must support the following:

8.1.	Priority queues: Eight hardware-based queues per port for flexible QoS management	C/PC/NC
8.2.	Traffic prioritization: Flow-based QoS with internal and external (a.k.a., remarking) prioritization.	C/PC/NC
8.3.	Bandwidth management: Flow-based traffic policing and bandwidth management, ingress rate limiting; egress rate shaping per port.	C/PC/NC
8.4.	Queue management: Configurable scheduling algorithms — Strict Priority Queuing (SPQ), Weighted Round Robin (WRR)	C/PC/NC
8.5.	Congestion avoidance: Support for End- to-End Head-Of-Line (E2EHOL) Blocking Protection	C/PC/NC
8.6.	Auto QoS for switch management traffic	C/PC/NC

9. Software Defined Networking (SDN) features.

The switch must support the following:

9.1.	Fully programmable RESTful web services interface with XML and JSON support. API enables access to CLI and individual mib objects.	C/PC/NC

10. Software Defined Networking (SDN) features.

The switch must support the following:

10.1.	Intuitive CLI in a scriptable BASH environment via console, Telnet, or Secure Shell (SSH) v2 over IPv4/IPv6	C/PC/NC
10.2.	Powerful WebView Graphical Web Interface via HTTP and HTTPS over IPv4/ IPv6+	C/PC/NC
10.3.	This feature allows for a USB-to-Ethernet interface for switches that lack an OOB management port. This interface is treated just like an OOB interface. All functions and CLIs related to an OOB management port are applicable to the USB-to-Ethernet dongle.	C/PC/NC
10.4.	This feature allows for applying an ACL on the EMP port of the switch. It enables policy-based routing on the EMP ports. The configuration is enabled using the empacl policy-list type.	C/PC/NC
10.5.	File upload using USB, TFTP, FTP, SFTP, or SCP using IPv4/IPv6	C/PC/NC
10.6.	Human-readable ASCII-based configuration files for off-line editing, bulk configuration, and out-of-the-box auto-provisioning	C/PC/NC

10.7.	Multiple OS image support with fallback recovery	C/PC/NC
10.8.	Dynamic Host Configuration Protocol (DHCP) relay for IPv4/IPv6	C/PC/NC
10.9.	DHCPv4 and DHCPv6 server	C/PC/NC
10.10.	Loopback IP address support for management	C/PC/NC
10.11.	Policy- and port-based mirroring	C/PC/NC
10.12.	Remote port mirroring	C/PC/NC
10.13.	sFlow v5 and Remote Monitoring (RMON)	C/PC/NC
10.14.	The switch can work in a“thin client” mode. In this mode no configuration can be saved in the “Running” directory of the switch. A basic configuration with minimal network reachability configuration is stored on the switch running directory. The final configuration of a thin client is pushed by a Network Management System (NMS).	C/PC/NC

11. Certifications

The switch must support the following:

11.1.	The switch proposed must possess a Common Criteria certification, ensuring compliance with internationally recognized security standards.	C/PC/NC
11.2.	The switch proposed must hold a valid Federal Information Processing Standards (FIPS) certification, meeting the designated FIPS publication 140-2.	C/PC/NC

12. Video surveillance

The switch must support the following:

12.1.	The switch support plugins that enable remote troubleshooting for common camera issues directly from the video surveillance management system.	C/PC/NC