Tender Specifications

Switches

Overview

This document outlines the technical specifications for network switches required as part of the tender. The devices should meet the performance, scalability, and management features needed to support a robust and efficient network. The specifications have been designed to ensure that the switches are future-proof and able to handle both current and anticipated network demands, including Power over Ethernet (PoE) capabilities and remote management.

1. Switch General Requirements

- **Form Factor**: 1U rackmountable (hardware included)
- **Power Supply**: Internal AC/DC power supply; must include redundant power supply options
- **Cooling**: Integrated fans with near-silent cooling for deployment in workspace environments
- **Certifications**: CE, FCC, IC
- **Management Interface**: Ethernet In-band

2. Port Configuration

The switches must offer a variety of port configurations, including high-power PoE and fiber connectivity to handle different network environments:

- **RJ45 Ports**:
    - Minimum of 24 RJ45 Ethernet ports supporting Gigabit Ethernet (GbE) speeds.
    - Some switches should support PoE, PoE+, and PoE++ with power outputs ranging from 15.4W to 60W per port.

- **SFP+ Ports**:
    - SFP+ ports for 10G uplinks must be included, with a minimum of 2 per switch for high-capacity uplinks.
- **SFP28 Ports** (for certain high-end switches):
    - 25G uplink options should be available on certain switches to provide enhanced performance.

3. Switching Capacity & Throughput

- **Non-Blocking Throughput**:
    - Minimum of 44 Gbps for lower-end models, up to 224 Gbps for higher-end switches.
- **Switching Capacity**:
    - Ranges from 88 Gbps for standard models to 760 Gbps for higher-end aggregation models.
- **Forwarding Rate**:
    - Minimum of 65 million packets per second (Mpps) to support high-density environments.

4. PoE Capabilities

- **PoE/PoE+/PoE++**:
    - Support for IEEE 802.3af/at/bt PoE standards.
    - Total PoE budgets starting from 400W, with higher-end switches supporting up to 720W.
    - Must support both 802.3at and 802.3bt (PoE++) to deliver up to 60W per port.
- **PoE Input/Output**:

- Configurations must provide flexibility in PoE output, with lower-end models starting at 25W per port and higher-end switches offering up to 60W for devices requiring high power.

5. Layer 3 Features

- **Routing Capabilities**:
  - Layer 3 features must include static routing, inter-VLAN routing, and DHCP server/relay support.
- **Security Features**:
  - The switches must support advanced security protocols such as 802.1X control, MAC address filtering, and port isolation.

6. Remote Management & Software Features

- **Centralized Management**:
  - The devices should integrate with a cloud-based or centralized controller, enabling configuration, monitoring, and provisioning from a single interface.
- **Deep Packet Inspection (DPI)**:
  - The software should offer DPI for bandwidth monitoring and detailed traffic analytics, showing which applications or IP addresses are using the most bandwidth.
- **Multi-Site Management**:
  - A single controller should manage multiple sites and deployments, offering detailed reporting and analytics for large-scale environments.
- **Advanced Switch Configuration**:
  - Must support advanced features like VLAN configuration, port mirroring, storm control, and jumbo frames.
- **Scalable Network Controller**:

- Must offer central configuration management, network mapping, and cloning of settings across multiple switches.

7. Environmental & Mechanical

- **Operating Temperature**: -5° C to 40° C (23° F to 104° F)
- **Humidity**: 10% to 90% non-condensing
- **Enclosure**: Steel for higher durability, with optional weather-resistant housing for outdoor installations.
- **Weight**:
  - Varies depending on model, ranging from approximately 230g for compact models to over 6 kg for larger rack-mountable units.

8. Advanced Features

- **Jumbo Frame Support**: Must support jumbo frames to improve network performance.
- **Port Aggregation**: Must support LACP for port aggregation.
- **Spanning Tree Protocol (STP)**: STP and Rapid STP support with the ability to disable it on specific ports.
- **Link Layer Discovery Protocol (LLDP)**: LLDP-MED and detailed port diagnostics.

Conclusion

The switches procured through this tender must meet the outlined specifications to ensure reliable, scalable, and high-performance network operations. Remote management features are critical, as is the ability to support PoE++ for power-hungry devices like access points and surveillance cameras. The specified features ensure that the switches will be future-proof and able to integrate seamlessly with existing infrastructure.