

FAQ for Eaton's Power over Ethernet (PoE) Industrial Switches

General Questions

What is a PoE switch and how does it work?

A Power over Ethernet (PoE) switch delivers both data and electrical power over standard Ethernet cables to powered devices (PDs) such as IP cameras, wireless access points and VoIP phones. It adheres to IEEE 802.3af/at/bt standards for power transmission.

What's the difference between PoE, PoE+, and PoE++?

PoE (802.3af): Up to 15.4W per port

PoE+ (802.3at): Up to 30W per port

PoE++ (802.3bt): Up to 60W (Type 3) or 90W (Type 4) per port

What's the default IP address of an Eaton managed switch?

192.168.0.254 (Default login credentials: admin/admin)

What methods are available for accessing a switch?

Managed Switches: Web GUI, Console, Telnet

Lite-Managed Switches: Web GUI

Unmanaged Switches: Not accessible

What are the default CLI modes for configuration?

User Mode: >

Privileged Mode: #

Global Configuration: (config)#

Interface Configuration: (config-if)#

What is a management VLAN and what are its benefits?

A management VLAN is used for remote management of the switch using Telnet, SSH, SNMP, etc. By default, it is VLAN1. Benefits include centralized control, enhanced security and reduced administrative overhead.

PoE Operation and Safety

What protections are in place for cable damage or short circuits on PoE ports?

Eaton PoE switches integrate multiple protections.

Overload Protection: IEEE 802.3af (892mA), 802.3at (1200mA)

Automatic Cut-Off: Power is cut when current exceeds safe threshold

Internal Fuses: Each PSE channel has a fuse that disconnects power to prevent damage

What happens if a new PD connects to a high-priority port during power budget overload?

The new PD will not preempt existing connections. The switch enforces priority rules only when links are down or power is cycled.

What happens if total power demand exceeds the switch's PoE budget?

The switch prioritizes ports based on configured PoE priority levels (high/low). If the budget is exceeded, lower-priority ports are powered off or held in standby.

Can the switch detect if a PD is ready after a reboot?

Yes. The "Start-Up Time" feature allows the switch to delay PoE provisioning (60–300 seconds configurable), ping the PD and act based on response or lack thereof.

What is the power-on sequence after a reboot or power cycle?

By default, all PoE ports are powered on simultaneously. Users can configure port-specific power delays if sequential powering is needed.

Loop Detection and Network Protection

What is loop detection?

Loop detection identifies and blocks switching loops, which can degrade network performance. A port causing a loop is automatically disabled.

When does a switching loop occur?

Loops occur when multiple Layer 2 paths exist between two devices. For example, connecting two switch ports directly can result in a loop.

What happens when a loop is detected?

Port Status: Blocked

LED Status: Off

A log entry is also generated.

Which ports should have loop detection enabled?

Downlink ports are recommended for loop detection.

Security and Authentication

How do I configure 802.1X authentication?

Configuration includes enabling 802.1X globally and on specific ports, setting RADIUS server credentials, assigning guest VLANs and defining authentication timers.

How do I disable or enable web GUI access via CLI?

Enable: `http server port 80`

Disable: `no web server`

Alternatively, disable through GUI under Maintenance > Server

VLAN, Multicast and LACP

Where can I configure VLAN priority?

Options include: MAC-based VLAN
Port-based VLAN ACL-based VLAN
QinQ

Why are multicast MAC addresses used instead of IP addresses in static settings?

Static multicast uses MAC addresses as it's a Layer 2 operation. IP addresses are translated to MAC addresses for IGMP snooping and MVR functions.

What do "T" and "A" stand for in LACP status?

T (Timeout): Link inactive
A (Active): Link up and active

Can dual-homing be used with LACP?

Yes, Eaton switches support dual-homing with LACP, allowing configuration of active/backup trunk links.

Traffic Control and Monitoring

What is the traffic monitoring feature used for?

This feature helps detect and block ports flooding with broadcast, multicast or unknown unicast (DLF) traffic.

Can traffic monitoring and storm control be enabled simultaneously?

No. Only one of these features can be active at a time.

Why is the port not blocked after enabling storm control?

Storm Control limits traffic volume but doesn't block ports. To block traffic, use the traffic monitoring feature.

What is the max unit for storm control on INS-8648P?

Each unit = 652 pps. The maximum configurable units are approximately 2300.

Maintenance and Best Practices

What are the best practices for switch installation?

- Use proper grounding to prevent ESD
- Choose spacious enclosures for airflow
- Follow correct DIN-rail installation steps
- Use dual-power sources to avoid interruptions

What are the key maintenance recommendations?

- Prevent network storms with ring redundancy (e.g., ERPS, Xpress Ring)
- Enable authentication on all access ports
- Use Syslog, email alerts and terminal alarms for real-time monitoring

What precautions should be taken to prevent overheating?

- Use larger cabinets with airflow space
- Avoid blocking vents with cables
- Use fans or perforated doors for enclosed spaces

Troubleshooting

Why does the switch lose connection with monitoring tools?

This is typically related to third-party software configurations, not the switch itself.

The power alarm is triggered above 57V DC. Why?

Although the switch accepts up to 60V DC, the protection threshold is set at 57V DC for safety.

What is the maximum number of management hosts allowed?

Up to 3 management hosts can be configured under the same VLAN.

Why does the fiber port status show "Link Down"?

Please note: The fiber ports support third-party SFP modules.

Possible reasons for a fiber port link to show the status 'Link Down' are:

Loose fiber connectors

Make sure the cables are firmly connected at both sides of the link.

Mismatched SFP modules

Make sure the specifications (link speed, multi/single-mode, RX/TX) of the SFP modules used for the link match the specific switch and with each other.

Cross-connected cables

Make sure the RX/TX fibers are connected correctly according to the cables and SFP modules used for the link.



A-to-A Fiber Patch Cable



A-to-B Fiber Patch Cable

Learn more:

