

Release Notes for the Industrial Ethernet 1000 Switch (Software Release 1.9.1)

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Hardware Supported

Table 1: Switch Models Supported

Model	FE Uplink (copper)	Gig Uplink (SFP)	FE Downlink (Copper)	POE(+) - Downlink	Description
IE-1000-4T1T-LM	1	0	4	0	IE1K with total of 5 FE ports 10/100
IE-1000-6T2T-LM	2	0	6	0	IE1K with total of 8 FE ports 10/100
IE-1000-4P2S-LM	0	2	0	4	IE1K with 2 GE SFP, 4 PoE 10/100 with total of 6 ports
IE-1000-8P2S-LM	0	2	0	8	IE1K with 2 GE SFP, 8 PoE 10/100 with total of 10 ports

SFP Modules Supported

The SFP modules are switch Ethernet SFP modules that provide connections to other devices. Depending on the switch model, these field-replaceable transceiver modules provide uplink interfaces. The modules have LC connectors for fiber-optic connections. For a complete list of supported SFP modules refer to the [Data Sheet](#).

Express Setup Requirements

Here's a short video showing how to perform the express setup process on the IE 1000: <https://www.youtube.com/watch?v=Bc6UL-2Jf6Q>

You need this equipment to set up the switch:

- Computer with Windows 7 or Windows 10 or a Mac.

- Web browser (Microsoft Internet Explorer 11, Firefox 46.01 and 47.0, or Microsoft Edge 89.0) with JavaScript enabled. (Disable pop-up blockers and proxy settings.)
- A straight-through or crossover Category 5 Ethernet cable to connect your computer to the switch port.
- A small paper clip to reach the Express Setup button.



Note Before running Express Setup, disable any wireless client running on your computer.

Installation Notes

You can assign IP information to your switch by using these methods:

- Express Setup program, as described in [Cisco IE 1000 Industrial Ethernet Switch Hardware Installation Guide](#).
- DHCP-based setup.



Note If the switch fails to acquire the IP address from the DHCP server, it may fall back to the default IP address 192.168.1.254. Please ensure the server is connected then reboot the switch.



Note If Express Setup fails in the Web Browser, press and hold the Express Setup button for 15-20 seconds to reset the switch to factory defaults.

New Features in This Release

This release includes the following Cisco Device Manager enhancement:

- **Interface Description**—You can now add a port description or labels to help identify interfaces connected to end devices.

The number of characters for port descriptions is 1 to 60 characters.

Smartport roles when applied also set interface labels, and these labels appear as interface descriptions on the Port Settings page. Setting a Smartport role overwrites the port description.

Software Features

Smartports Macros

Smartports macros provide port configurations that customer can manually apply based on the device connected to the port.

Port Mirroring

Port mirroring copies traffic from a source port on the switch to a destination port on the same switch for analysis.

Error Disable Event

If a specific error occurs on a port, the switch automatically disables the port so that it does not send or receive traffic. Supported error events are link flap and DHCP rate limit.

Storm Control

Provides configuration of storm control policer rate to prevent LAN ports from being disrupted by excessive traffic.

A Storm control alarm is generated if:

- Unicast traffic destined for an unknown (Unicast MAC, VLAN ID) is captured by the unicast storm policer.
- Multicast traffic destined for an unknown (Multicast MAC, VLAN ID) is captured by the multicast storm policer.

To classify unknown traffic: If the MAC and VLAN ID are not part of the MAC table, then the traffic is treated as unknown traffic and an alarm is raised.

Storm Control alarms for broadcast traffic are not supported.

Syslog

Syslog displays a record of events that occurred on the device and its ports. Syslog entries can be viewed on the Web GUI or forwarded to a remote syslog server.

Common Industrial Protocol (CIP)

CIP is an industrial control protocol. It provides a comprehensive suite of messages and services for the collection of industrial automation applications. The IE 1000 natively supports CIP without any configuration needed. It passed ODVA CIP conformance testing and can be integrated into an industrial automation environment.

Web GUI interface only

Through a user-friendly web device manager, the Cisco IE 1000 provides easy out-of-the-box configuration and simplified operational manageability to deliver advanced and secure industrial networks.

BPDU Guard

The STP PortFast BPDU guard enhancement allows network designers to enforce the STP domain borders and keep the active topology predictable. The devices behind the ports that have STP PortFast enabled are not able to influence the STP topology. At the reception of BPDUs, the BPDU guard operation disables the port that has PortFast configured. The BPDU guard transitions the port into errdisable state, and a message appears on the console.

DHCP Server

The DHCP Server feature is a full DHCP Server implementation that assigns and manages IP addresses from specified address pools within the switch to DHCP clients.

Ether Channel LACP

Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad.

IGMP

IGMP is an IPv4 protocol that a host uses to request multicast data for a particular group. Using the information obtained through IGMP, the software maintains a list of multicast group or channel memberships on a per-interface basis. The systems that receive these IGMP packets send multicast data that they receive for requested groups or channels out the network segment of the known receivers.

HTTP/HTTPS, SSH, and Telnet

The Cisco IE 1000 Switch provides connectivity via HTTP/HTTPS, SSH and Telnet.

MST spanning tree mode

MST maps multiple VLANs into a spanning tree instance, with each instance having a spanning tree topology independent of other spanning tree instances. This architecture provides multiple forwarding paths for data traffic, enables load balancing, and reduces the number of STP instances required to support a large number of VLANs. MST improves the fault tolerance of the network because a failure in one instance (forwarding path) does not affect other instances (forwarding paths).

MST provides rapid convergence through explicit handshaking as each MST instance uses the IEEE 802.1w standard, which eliminates the 802.1D forwarding delay and quickly transitions root bridge ports and designated ports to the forwarding state.

802.1x

IEEE 802.1x Port Based Authentication on the switch.

IE1000 supports a maximum key length is 1536 bits in 802.1x Authentication.

QOS Priority port

The Priority Port feature allows the end user to specify a port which is connected to high priority end devices (eg: IP phone, or PLC), as a Priority Port. Once the Priority Port is configured, all the Ethernet packets received from that end device will have higher priority than packets received from other end devices connected to the IE1000.

PoE Management

PoE Management Modes:

- Auto-LLDP: use LLDP for max power draw; reserves what is negotiated
- Auto-PD Class: PD class determines max power draw; reserves the class max
- Static: max power determined by value in ‘max power field’; reserves based on max power field

Port-security

Port Security limits the number of users on a given port. A user is identified by a MAC address and VLAN ID. If Port Security is enabled on a port, only the specified maximum number of users are allowed on the port. If this number is exceeded, an action is taken (described below). Port Security works together with MAC address learning to restrict access to a port.

SNMP v2/v3, trap

The switch supports SNMPv2 and SNMPv3 traps.

SNMP traps enable an agent to notify the management station of significant events by way of an unsolicited SNMP message.



Note System CPU utilization may reach 100% while performing SNMP walk on a highly loaded system, depending on the network topology and operations being performed. This does not cause any functional impact to the device.

STP port fast

Port Fast immediately brings an interface configured as an access or trunk port to the forwarding state from a blocking state, bypassing the listening and learning states.

You can use Port Fast on interfaces connected to a single end device or server, to allow those devices to immediately connect to the network, rather than waiting for the spanning tree to converge.

Interfaces connected to a single end device or server should not receive bridge protocol data units (BPDUs). An interface with Port Fast enabled goes through the normal cycle of spanning-tree status changes when the switch is restarted.

Virtual LAN (VLAN)

A VLAN is a group of devices on one or more LANs that are configured to communicate as if they were attached to the same wire, when in fact they are located on a number of different LAN segments. Because VLANs are based on logical instead of physical connections, they are extremely flexible.

VLANs define broadcast domains in a Layer 2 network. A broadcast domain is the set of all devices that will receive broadcast frames originating from any device within the set. Broadcast domains are typically bounded by routers because routers do not forward broadcast frames. Layer 2 switches create broadcast domains based on the configuration of the switch. Switches are multiport bridges that allow you to create multiple broadcast domains. Each broadcast domain is like a distinct virtual bridge within a switch.

Alarm

The switch software monitors switch conditions on a per port or a switch basis. If the conditions present on the switch or a port do not match the set parameters, the switch software triggers an alarm or a system message.

The Cisco IE 1000 PoE(+) switches have one external alarm port and support one output relay.

Caveats

There are no open or resolved caveats in this release.

Related Documentation

Installation, Configuration, Maintenance, and Operation Guides

<http://www.cisco.com/c/en/us/support/switches/industrial-ethernet-1000-series-switches/tsd-products-support-series-home.html>

Online Help (available on the switch)

Device Manager online help

SFP Information

- Compatibility Information: http://www.cisco.com/en/US/products/hw/modules/ps5455/products_device_support_tables_list.html
- Installation Notes: http://www.cisco.com/en/US/products/hw/modules/ps5455/prod_installation_guides_list.html