Configuring EEE

- Restrictions for EEE, on page 1
- Information About EEE, on page 1
- How to Configure EEE, on page 2
- Monitoring EEE, on page 3
- Configuration Examples for Configuring EEE, on page 3
- Additional References for EEE, on page 4
- Feature History for Configuring EEE, on page 4

Restrictions for EEE

Energy Efficient Ethernet (EEE) has the following restrictions:

- Changing the EEE configuration resets the interface because the device has to restart Layer 1 autonegotiation.
- We recommend that you enable Link Layer Discovery Protocol (LLDP) for devices that require longer wakeup times before they are able to accept data on their receive paths. This enables the device to negotiate for extended system wakeup times from the transmitting link partner.
- If a Multigigabit Ethernet port link is negotiated to 100 Mbps speeds, EEE will not initiate power-saving on the device.

Information About EEE

This section provides information about EEE.

EEE Overview

Energy Efficient Ethernet (EEE) is an IEEE 802.3az standard that is designed to reduce power consumption in Ethernet networks during idle periods.

Default EEE Configuration

EEE is disabled by default.

How to Configure EEE

You can enable or disable EEE on an interface that is connected to an EEE-capable link partner.

Enabling or Disabling EEE

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**interface** *interface-id* **Example:** `Device(config)# interface gigabitethernet 1/0/1`	Specifies the interface to be configured, and enters interface configuration mode.
Step 3	**power efficient-ethernet auto** **Example:** `Device(config-if)# power efficient-ethernet auto`	Enables EEE on the specified interface. When EEE is enabled, the device advertises and autonegotiates EEE to its link partner.
Step 4	**no power efficient-ethernet auto** **Example:** `Device(config-if)# no power efficient-ethernet auto`	Disables EEE on the specified interface.
Step 5	**end** **Example:** `Device(config-if)# end`	Exits interface configuration mode, and returns to privileged EXEC mode.
Step 6	**copy running-config startup-config** **Example:** `Device# copy running-config startup-config`	(Optional) Saves your entries in the configuration file.

Monitoring EEE

Table 1: Commands for Displaying EEE Settings

Command	Purpose
show eee capabilities interface *interface-id*	Displays EEE capabilities for the specified interface.
show eee status interface *interface-id*	Displays EEE status information for the specified interface.
show eee counters interface *interface-id*	Displays EEE counters for the specified interface. **Note** Starting from Cisco IOS XE Gibraltar 16.12.1, the **show ee** **interface** *interface-id* command is not supported on line ca Multigigabit (mGig) Ethernet ports.

Following are examples of the **show eee** commands:

```
Device# show eee capabilities interface gigabitEthernet2/0/1

Gi2/0/1
EEE(efficient-ethernet): yes (100-Tx and 1000T auto)
Link Partner : yes (100-Tx and 1000T auto)

ASIC/Interface : EEE Capable/EEE Enabled
```

```
Device# show eee status interface gigabitEthernet2/0/1

Gi2/0/1 is up
EEE(efficient-ethernet): Operational
Rx LPI Status : Low Power
Tx LPI Status : Low Power
Wake Error Count : 0

ASIC EEE STATUS
Rx LPI Status : Receiving LPI
Tx LPI Status : Transmitting LPI
Link Fault Status : Link Up
Sync Status : Code group synchronization with data stream intact
```

```
Device# show eee counters interface gigabitEthernet2/0/1

LP Active Tx Time (10us) : 66649648
LP Transitioning Tx : 462
LP Active Rx Time (10us) : 64911682
LP Transitioning Rx : 153
```

Configuration Examples for Configuring EEE

This example shows how to enable EEE for an interface:

```
Device# configure terminal
Device(config)# interface gigabitethernet 1/0/1
Device(config-if)# power efficient-ethernet auto
```

This example shows how to disable EEE for an interface:

```
Device# configure terminal
Device(config)# interface gigabitethernet 1/0/1
Device(config-if)# no power efficient-ethernet auto
```

Additional References for EEE

Related Documents

Related Topic	Document Title
For complete syntax and usage information for the commands used in this chapter.	See the *Interface and Hardware Commands* section of the *Command Reference (Catalyst 9400 Series Switches)* .

Feature History for Configuring EEE

This table provides release and related information for features explained in this module.

These features are available on all releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Everest 16.6.1	Energy Efficient Ethernet	Energy Efficient Ethernet (EEE) is an IEEE 802.3az standard that is designed to reduce power consumption in Ethernet networks during idle periods.
Cisco IOS XE Gibraltar 16.12.1	EEE on Multigigabit (mGig) Ethernet ports	Energy Efficient Ethernet was introduced on line cards with mGig Ethernet ports.
Cisco IOS XE Cupertino 17.7.1	Energy Efficient Ethernet	This feature was implemented on supervisor modules C9400X-SUP-2 and C9400X-SUP-2XL, which were introduced in this release.

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to Cisco Feature Navigator.