# Configuring EEE



# Restrictions for EEE

EEE has the following restrictions:

- Changing the EEE configuration resets the interface because the device has to restart Layer 1 autonegotiation.
- You might want to enable the Link Layer Discovery Protocol (LLDP) for devices that require longer wakeup times before they are able to accept data on their receive paths. Doing so enables the device to negotiate for extended system wakeup times from the transmitting link partner.

# 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.

EEE can be enabled on devices that support low power idle (LPI) mode. Such devices can save power by entering LPI mode during periods of low utilization. In LPI mode, systems on both ends of the link can save power by shutting down certain services. EEE provides the protocol needed to transition into and out of LPI mode in a way that is transparent to upper layer protocols and applications.

# Default EEE Configuration

# 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**<br>**Example:**<br>`Device# configure terminal` | Enters global configuration mode. |
| **Step 2** | **interface** *interface-id*<br>**Example:**<br>`Device(config)# interface gigabitethernet1/0/1` | Specifies the interface to be configured, and enter interface configuration mode. |
| **Step 3** | **power efficient-ethernet auto**<br>**Example:**<br>`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**<br>**Example:**<br>`Device(config-if)# no power efficient-ethernet auto` | Disables EEE on the specified interface. |
| **Step 5** | **end**<br>**Example:**<br>`Device(config-if)# end` | Returns to privileged EXEC mode. |
| **Step 6** | **copy running-config startup-config**<br>**Example:** | (Optional) Saves your entries in the configuration file. |

| | Command or Action | Purpose |
|---|---|---|
| | `Device# copy running-config startup-config` | |

# 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. |

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

```
Switch#show eee capabilities interface gigabitEthernet 2/0/1
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
```

```
Switch#show eee status interface gigabitEthernet 2/0/1
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
```

```
Switch#show eee counters interface gigabitEthernet 2/0/1

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 gigabitethernet1/0/1
```

```
Device(config-if)# power efficient-ethernet auto
```

This example shows how to disable EEE for an interface:

```
Device# configure terminal
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# no power efficient-ethernet auto
```

# Additional References for EEE

### MIBs

| MIB | MIBs Link |
|---|---|
| All the supported MIBs for this release. | To locate and download MIBs for selected platforms, Cisco IOS releases, and feature sets, use Cisco MIB Locator found at the following URL:<br>http://www.cisco.com/go/mibs |

### Technical Assistance

| Description | Link |
|---|---|
| The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.<br>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.<br>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password. | http://www.cisco.com/support |

# 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. |

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn.