

Power Over Ethernet (PoE)

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Power over Ethernet Overview

Power over Ethernet (PoE) is typically used to power up devices such as Access points, IP Cameras and IP Phones connected to the device's Ethernet ports. The total PoE available power is 30W to be shared by the 4 LAN ports.

The power allocation is as follows:

- 1 x POE+ (AT Type2, Class 4) port (25.5 W)
- 1 x POE (AT Type1 or AF-Class 0/3) ports (15.4 W)
- 4 x POE (AF, Class 1, Class 2) Ports (3.84W or 6.49W)

Device Detection and Power Allocation

The router will detect a Cisco Pre-standard or an IEEE-compliant PD when the PoE is enabled and the connected device is not being powered by an AC adapter.

After device detection, the router will determine the power requirements based on power classification class. Depending on the available power in the power budget, the router determines if a port can be powered. The router initially allocates this power when it detects and powers the device. Power negotiation using CDP/LLDP protocols happens thereafter. Supported protocols for power negotiation are CDP for Cisco PD, and LLDP for non-Cisco PDs. Maximum power budget for 4 LAN ports combined at any time is 30.8W. On reload the PoE ports are powered down until the unit reboots.

Command Line Interface

This section describes the CLI to use for configuring and displaying PoE.

To configure auto or off:

```
power inline auto | never
```

Configuration example:

```
Router#config terminal
Router#interface g0/1/<0,1,2,3>
Router(config-if)#power inline {auto|never}
```

To Verify your configuration:

```
Router#show power inline
Available:30.0(w)  Used:22.5(w)  Remaining:7.5(w)

Interface Admin  Oper       Power   Device              Class Max
                            (Watts)
--------- ------ ---------- ------- ------------------ ----- ----
Gi0/1/0   auto   on         15.4    Ieee PD            4     30.0
Gi0/1/1   auto   off        0.0     n/a                n/a   30.0
Gi0/1/2   auto   off        0.0     n/a                n/a   30.0
Gi0/1/3   auto   on         7.1     IP Phone 8845      2     30.0
Router#
```

To show power on a particular interface:

```
Router#show power inline {interface-id}
```

Displays PoE status for a router for the specified interface.

```
show power inline interface-id detail
```

To show power consumption:

```
Router#show power
Main PSU :
    Total Power Consumed: 20.99 Watts
    Configured Mode : N/A
    Current runtime state same : N/A
    PowerSupplySource : External PS
POE Module :
    Configured Mode : N/A
    Current runtime state same : N/A
    Total power available : 30 Watts
Router#
```

The list of commands for debugging PoE follows:

Command	Description
Debug ilpower controller	Display PoE controller debug messages
Debug ilpower event	Display PoE event debug messages
Debug ilpower port	Display PoE port manager debug messages
Debug ilpower powerman	Display PoE power management debug messages
Debug ilpower cdp	Display PoE CDP debug messages
Debug ilpower registries	Display PoE registries debug messages

Command	Description
Debug ilpower scp	Display PoE scp debug messages