CHAPTER 10

Configuring Power over Ethernet

Note Before reading this chapter, read the "Preparing for Installation" section of the *Catalyst 4500 Series Installation Guide*. It is important to ensure that your installation site has enough power and cooling to accommodate the additional electrical load and heat introduced by PoE.

This chapter describes how to configure Power over Ethernet (PoE) on the Catalyst 4500 series switch.

This chapter contains the following sections:

Overview

The Catalyst 4500 series switch provides support for Power over Ethernet (PoE) for both Cisco Prestandard PoE and the IEEE 802.3af standard (ratified in 2003). PoE is supported by all Catalyst 4500 series chassis and requires a PoE module and power supply. The amount of PoE power available depends on the PoE capabilities of individual power supplies. Support for PoE enables the system to power inline devices, such as IP phones, IP video phones, and wireless access points over standard copper cabling (Category 5, 5e, or 6 cabling).

In addition, with PoE, you do not need to provide wall power for each PoE enabled device. This eliminates the cost for additional electrical cabling that would otherwise be necessary for connected devices. Moreover, PoE enables you to isolate critical devices on a single power system, enabling the entire system to be supported by UPS backup.

You typically deploy a Catalyst 4500 series switch in one of two deployment scenarios. The first scenario is data-only, which requires power to operate the switch and the associated modules. The second scenario supports data and PoE (also termed “inline power”) for deployments where the attached device derives power from the Ethernet port.

Catalyst 4500 series switches can sense if a powered device is connected to a PoE module. They can supply PoE to the powered device if there is no power on the circuit. (If there is power on the circuit, the switch does not supply it.) The powered device can also be connected to an AC power source and supply its own power to the voice circuit.

Note For complete syntax and usage information for the switch commands used in this chapter, see the *Cisco Catalyst 4500 Series Switch Command Reference* and related publications at this location:

http://www.cisco.com/en/US/products/hw/switches/ps4324/index.html

If the command is not found in the *Cisco Catalyst 4500 Command Reference*, you can locate it in the larger Cisco IOS library. Refer to the *Catalyst 4500 Series Switch Cisco IOS Command Reference* and related publications at this location:

http://www.cisco.com/en/US/products/ps6350/index.html

Hardware Requirements

To power a device using PoE, your chassis must use at least one of the power supplies listed in Table 10-1, and connect the device to at least one of the switching modules listed in Table 10-1.

Table 10-1 Hardware Requirements

Switching Modules	Power Supplies
WS-X4148-RJ45V	PWR-C45-1300ACV=
WS-X4224-RJ45V	PWR-C45-1400DCV=
WS-X4248-RJ21V	PWR-C45-2800ACV=
WS-X4248-RJ45V	PWR-C45-4200ACV=
WS-X4524-GB-RJ45V	
WS-X4524-GB-RJ45V	
WS-X4548-GB-RJ45V	

Power Management Modes

If your switch has a module capable of providing PoE to end stations, you can set each interface on the module to automatically detect and apply PoE if the end station requires power.

The Catalyst 4500 series switch has three PoE modes:

- **auto**—PoE interface. The supervisor engine directs the switching module to power up the interface *only* if the switching module discovers the phone and the switch has enough power. You can specify the maximum wattage that is allowed on the interface. If you do not specify a wattage, then the switch will deliver no more than the hardware-supported maximum value. This mode has no effect if the interface is not capable of providing PoE.
- **static**—High priority PoE interface. The supervisor engine preallocates power to the interface, even when nothing is connected, guaranteeing that there will be power for the interface. You can specify the maximum wattage that is allowed on the interface. If you do not specify a wattage, then the switch preallocates the hardware-supported maximum value. If the switch does not have enough power for the allocation, the command will fail. The supervisor engine directs the switching module to power up the interface *only* if the switching module discovers the powered device.

- **never**—Data interface only The supervisor engine never powers up the interface, even if an unpowered phone is connected. This mode is only needed when you want to make sure power is never applied to a PoE-capable interface.

The switch can measure the actual PoE consumption for an 802.3af-compliant PoE module, and displays this in the **show power module** command. However, it cannot display the consumption of an individual interface on an 802.3af-compliant PoE module.

PoE consumption cannot be measured on the WS-X4148-RJ45V PoE module. Therefore, for all PoE calculations, the PoE consumption on this module is presumed to be equal to its administrative PoE.

For more information, see the "Displaying the PoE Consumed by a Module" section on page 10-8.

For most users, the default configuration of "auto" works well, providing plug and play capability. No further configuration is required. However, to make an interface higher priority or data only, or to specify a maximum wattage, perform this task:

	Command	Purpose
Step 1	`Switch(config)# interface {fastethernet | gigabitethernet} slot/port`	Selects the interface to configure.
Step 2	`Switch(config-if)# power inline {auto [max milli-watts] | never | static [max milli-watts]}`	The **auto** keyword sets the interface to automatically detect and supply power to the powered device. This is the default configuration. The **static** keyword sets the interface to higher priority than auto. If necessary, you can use the **max** keyword to specify the maximum wattage allowed on the interface (4000 to 15400 milliwatts). Use the **never** keyword to disable detection and power for the PoE capable interface.
Step 3	`Switch(config-if)# end`	Exits configuration mode.
Step 4	`Switch# show power inline {fastethernet | gigabitethernet} slot/port`	Displays the PoE state for the switch.

Note If you set a non-PoE-capable interface to automatically detect and apply power, an error message indicates that the configuration is not valid.

The following example shows how to set the Fast Ethernet interface 4/1 to automatically detect PoE and send power through that interface, and to verify the PoE configuration:

```
Switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)# interface fastethernet 4/1
Switch(config-if)# power inline auto
Switch(config-if)# end
Switch# show power inline fastethernet 4/1
Available:677(w)  Used:11(w)  Remaining:666(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------- -----
Fa4/1     auto   on         11.2       10.0       Ieee PD             0
```

```
Interface  AdminPowerMax   AdminConsumption
             (Watts)           (Watts)
---------- --------------- --------------------
Fa4/1                 15.4                 10.0
Switch#
```

The following example shows how to configure an interface so that it never supplies power through the interface:

```
Switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)# interface fastethernet 5/2
Switch(config-if)# power inline never
Switch(config-if)# end
Switch#
```

Intelligent Power Management

All Catalyst 4500 PoE-capable modules use Intelligent Power Management to provide power on each interface. When a powered device (PD) is attached to a PoE-capable port, the port will detect the PD and provision power accordingly. If a Cisco PD is used, the switch and PD negotiate power using CDP packets to determine the precise amount of power needed by the PD. If the PD is 802.3af compatible, the difference between what is mandated by the 802.3af class and what is actually needed by the PD is returned to the power budget for use by additional devices. In this way, power negotiation enables customers to stretch their power budget and use it more effectively.

Power negotiation also enables the interoperability of newer Cisco powered devices with older legacy PoE-capable ports from Cisco. Newer Cisco PDs do not consume more than what the switch port can provide.

Configuring Power Consumption for Powered Devices on an Interface

This section contains the following subsections:

Overview

By default, when the switch detects a powered device on an interface, it assumes the powered device consumes the maximum the port can provide (7 W on a legacy Power over Ethernet (PoE) module and 15.4W on the IEEE PoE modules introduced in Cisco IOS Release 12.2(18)EW). Then, when the switch receives a CDP packet from the powered device, the wattage automatically adjusts downward to the specific amount required by that device. Normally, this automatic adjustment works well, and no further configuration is required or recommended. However, you can specify the powered device's consumption for the entire switch (or for a particular interface) to provide extra functionality from your switch. This is useful when CDP is disabled or not available.

Note When manually configuring the consumption for powered devices, you need to account for the power loss over the cable between the switch and the powered device.

To change the power consumption for the entire switch, perform this task:

	Command	Purpose
Step 1	`Switch(config)# [no] power inline consumption default milli-watts`	Sets the PoE consumption (in milliwatts) of all powered devices connected to the switch. The power consumption can range from 4000 to 15,400. To re-enable the automatic adjustment of consumption, either use the **no** keyword or specify 15,400 milliwatts.
Step 2	`Switch(config)# end`	Exits configuration mode.
Step 3	`Switch# show power inline consumption default`	Displays the administrative PoE consumption of powered devices connected to the switch. The administrative PoE is not the measured PoE value.

This example shows how to set the default PoE consumption of all powered devices connected to the switch to 5000 milliwatts, and to verify the PoE consumption:

```
Switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)# power inline consumption default 5000
Switch(config)# end
Switch# show power inline consumption default
Default PD consumption : 5000 mW
Switch#
```

To change the power consumption of a single powered device, perform this task:

	Command	Purpose
Step 1	`Switch(config)# interface {fastethernet | gigabitethernet} slot/port`	Selects the interface to configure.
Step 2	`Switch(config-if)# [no] power inline consumption milli-watts`	Sets the PoE consumption (in milliwatts) of the powered device connected to a specific interface. The power consumption can range from 4000 to 15,400. To re-enable the automatic adjustment of consumption, either use the **no** keyword or specify 15,400 milliwatts.
Step 3	`Switch(config-if)# end`	Exits configuration mode.
Step 4	`Switch# show power inline consumption {fastethernet | gigabitethernet} slot/port`	Displays the PoE consumption for the interface.

This example shows how to set the PoE consumption to 5000 milliwatts for Fast Ethernet interface 4/1 regardless what is mandated by the 802.3af class of the discovered device, or by any CDP packet received from the powered device. This example also verifies the PoE consumption on Fast Ethernet interface 4/1:

```
Switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)# interface fastethernet 4/1
Switch(config-if)# power inline consumption 5000
Switch(config-if)# end
Switch# show power inline fastethernet 4/1
Available:677(w)  Used:11(w)  Remaining:666(w)
```

```
Interface Admin  Oper            Power(Watts)     Device              Class
                                From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------- -----

Fa4/1     auto   on         11.2       10.0       Ieee PD             0

Interface  AdminPowerMax   AdminConsumption
             (Watts)           (Watts)
---------- --------------- --------------------

Fa4/1                15.4                10.0
Switch#
```

PoE and Supported Cabling Topology

When using PoE, pairs 2 and 3 (pins 1, 2, 3, and 6) of the four pairs in a standard UTP cable are used for both the Ethernet data signals and the DC power at the same time. In DC, PoE flows from pair 3 (pins 3 and 6) to the device using PoE and back to pair 2 (pins 1 and 2) while the Ethernet port transmits differential signals in pair 2 (between pins 1 and 2). This method of supplying DC power is sometimes called “phantom power” because the power signals travel over the same two pairs used to transmit Ethernet signals. The inline power signals are transparent to the Ethernet signals and do not interfere with each other. The main electrical parameter that affects inline power operation and performance is the DC resistance of the cable. The inline power method is designed to work with category 3 cable and above, up to 100 meters.

PoE has been tested and found to work with the IBM Token Ring STP cable (100 meters) when used with a Token Ring to Fast Ethernet adapter.

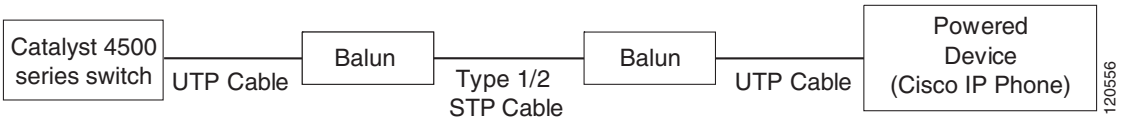
When you use PoE modules with type 1/2 shielded twisted pair (STP) cable configurations (90 and 125 meters), the modules perform the same as with Category 5 cable for the IEEE 802.3af standard at 10 and 100 Mbps.

The following adapters have been tested and are the only ones supported by Cisco:

- LanTel Silver Bullet (SB-LN/VIP-DATA adapter)
- BIP-1236/S (BATM)
- RIT P/N 13712017
- RIT balun with integrated unshielded twisted pair (UTP) cable, 6 and 24 foot lengths

In Figure 10-1, a Catalyst 4500 series switch is connected to a balun through a short length of Category 5 UTP cable. Type 1 or Type 2 STP cable connects this balun to a second balun. A short length of Category 5 UTP cable connects the second balun to another Powered Device (such as a Cisco IP phone)

Figure 10-1 Supported Adapter Topology



Displaying the Operational Status for an Interface

Each interface has an operational status which reflects the PoE status for an interface. The operational status for an interface is defined as one of the following:

- on—Power is supplied by the port.
- off—Power is not supplied by the port. If a powered device is connected to an interface with external power, the switch does not recognize the powered device. The "Device" column in the **show power inline** command displays as n/a.
- Power-deny—The supervisor engine does not have enough power to allocate to the port, or the power that is configured for the port is less than the power required by the port; power is not being supplied by the port.
- err-disable—The port is unable to provide power to the connected device that is configured in static mode.
- faulty—The port failed diagnostics tests.

You can use the **show power inline** command to view the operational status for an interface.

This example shows how to display the operational status for all interfaces on module 3.

```
Switch# show power inline module 3
Available:677(w)  Used:117(w)  Remaining:560(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------- -----

Fa3/1     auto   on         17.3       15.4       Ieee PD             0
Fa3/2     auto   on         4.5        4.0        Ieee PD             1
Fa3/3     auto   on         7.1        6.3        Cisco IP Phone 7960 0
Fa3/4     auto   on         7.1        6.3        Cisco IP Phone 7960 n/a
Fa3/5     auto   on         17.3       15.4       Ieee PD             0
Fa3/6     auto   on         17.3       15.4       Ieee PD             0
Fa3/7     auto   on         4.5        4.0        Ieee PD             1
Fa3/8     auto   on         7.9        7.0        Ieee PD             2
Fa3/9     auto   on         17.3       15.4       Ieee PD             3
Fa3/10    auto   on         17.3       15.4       Ieee PD             4
Fa3/11    auto   off        0          0          n/a                 n/a
Fa3/12    auto   off        0          0          n/a                 n/a
Fa3/13    auto   off        0          0          n/a                 n/a
Fa3/14    auto   off        0          0          n/a                 n/a
Fa3/15    auto   off        0          0          n/a                 n/a
Fa3/16    auto   off        0          0          n/a                 n/a
Fa3/17    auto   off        0          0          n/a                 n/a
Fa3/18    auto   off        0          0          n/a                 n/a

--------- ------ ---------- ---------- ---------- ------------------- -----

Totals:          10   on    117.5      104.6
Switch#
```

This example shows how to display the operational status for Fast Ethernet interface 4/1:

```
Switch# show power inline fa4/1
Available:677(w)  Used:11(w)  Remaining:666(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------- -----

Fa4/1     auto   on          11.2       10.0       Ieee PD             0

Interface  AdminPowerMax   AdminConsumption
             (Watts)           (Watts)
---------- --------------- --------------------

Fa4/1                 15.4                 10.0
Switch#
```

Displaying the PoE Consumed by a Module

The switch can measure the actual PoE consumption for an 802.3af-compliant PoE module, and it displays the measured PoE in both the **show power module** and **show power detail** commands. However, the switch cannot display the consumption of an individual interface on an 802.3af-compliant PoE module, nor can it measure the actual PoE consumption for the WS-X4148-RJ45V module. Therefore, for all PoE calculations, the PoE consumption on the WS-X4148-RJ45V module is presumed to be equal to its administrative PoE.

The 802.3af-compliant PoE modules can consume up to 20 W of PoE to power FPGAs and other hardware components on the module. Be sure to add at least 20 W to your PoE requirements for each 802.3af-compliant PoE module to ensure that the system has adequate power for the PDs connected to the switch.

The example below displays the PoE consumption for an 802.3af-compliant module using the **show power module** command.

The “Inline Power Oper” column displays the amount of PoE consumed by the powered devices that are attached to the module, in addition to the PoE consumed by the FPGAs and other hardware components on the module. The “Inline Power Admin” column displays only the amount of PoE allocated by the powered devices attached to the module.

Note The operating PoE consumption for an 802.3af-compliant module can be non-zero, even when there are no powered devices attached to the module, because of the PoE consumed by FPGAs and other hardware components on the module. In addition, the operating PoE can vary due to fluctuations in the PoE consumed by the hardware components.

```
Switch# show power module

Watts Used of System Power (12V)
Mod   Model               currently  out of reset  in reset
----  ----------------    ---------  ------------  --------
 1    WS-X4013+TS             330         330         330
 2    WS-X4548-GB-RJ45V        60          60          20
 3    WS-X4548-GB-RJ45V        60          60          20
 --   Fan Tray                 30          --          --
----------------------   ---------  ------------   -------
       Total                 480         450         370
```

```
                        Watts used of Chassis Inline Power (-50V)
                        Inline Power Admin  Inline Power Oper
Mod   Model               PS     Device       PS     Device     Efficiency
----  ----------------  ----------------    ----------------    ----------
 2    WS-X4548-GB-RJ45V    138      123         73       65          89
 3    WS-X4548-GB-RJ45V      0        0         22       20          89
-----------------------  ----------------    ----------------    ----------
       Total               138      123         95       85

                        Watts used of Module Inline Power (12V -> -50V)
                        Inline Power Admin  Inline Power Oper
Mod   Model               PS     Device       PS     Device     Efficiency
----  ----------------  ----------------    ----------------    ----------
 1    WS-X4013+TS         128      128         63       63          100
-----------------------  ----------------    ----------------    ----------

Switch#
```

The example below displays the PoE consumption for an 802.3af-compliant module using the **show power detail** and **show power inline** commands.

The “Inline Power Oper” column displays the amount of PoE consumed by the powered devices that are attached to the module, in addition to the PoE consumed by the FPGAs and other hardware components on the module. The “Inline Power Admin” column displays only the amount of PoE allocated by the powered devices attached to the module.

```
Switch# show power detail

Power                                              Fan      Inline
Supply  Model No          Type       Status        Sensor   Status
------  ----------------  ---------  ------------  -------  -------
PS1     PWR-C45-1300ACV   AC 1300W   good          good     good
PS2     none              --         --            --       --

Power supplies needed by system    : 1
Power supplies currently available : 1

Power Summary                      Maximum
 (in Watts)              Used     Available
----------------------   ----     ---------
System Power (12V)        480        1000
Inline Power (-50V)       138         800
Backplane Power (3.3V)      0           0
----------------------   ----     ---------
Total                     618 (not to exceed Total Maximum Available = 1300)

Module Inline Power Summary (Watts)
(12V -> -48V on board conversion)
---------------------------------
                    Maximum
Mod      Used      Available
---      ----      ---------
1         128            158
---      ----      ---------
```

```
                          Watts Used of System Power (12V)
Mod   Model               currently  out of reset  in reset
----  ------------------  ---------  ------------  --------
 1    WS-X4013+TS            330         330         330
 2    WS-X4548-GB-RJ45V       60          60          20
 3    WS-X4548-GB-RJ45V       60          60          20
 --   Fan Tray                30          --          --
-----------------------   ---------  ------------   -------
       Total                 480         450         370

                        Watts used of Chassis Inline Power (-50V)
                        Inline Power Admin  Inline Power Oper
Mod   Model                PS     Device       PS     Device     Efficiency
----  ------------------  ----------------    ----------------    ----------
 2    WS-X4548-GB-RJ45V    138      123         73       65          89
 3    WS-X4548-GB-RJ45V      0        0         22       20          89
-----------------------  ----------------    ----------------    ----------
       Total                138      123         95       85

                        Watts used of Module Inline Power (12V -> -50V)
                        Inline Power Admin  Inline Power Oper
Mod   Model                PS     Device       PS     Device     Efficiency
----  ------------------  ----------------    ----------------    ----------
 1    WS-X4013+TS          128      128         64       64         100
-----------------------  ----------------    ----------------    ----------

Switch# show power inline g1/1
Module 1 Inline Power Supply: Available:158(w)  Used:128(w)  Remaining:30(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi1/1     auto   on          10.3       10.3       CNU Platform        3

Interface  AdminPowerMax   AdminConsumption
             (Watts)           (Watts)
---------- --------------- --------------------

Gi1/1                 15.4                 15.4

switch# show power inline g2/1
Chassis Inline Power Supply: Available:800(w)  Used:138(w)  Remaining:662(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi2/1     auto   on          11.5       10.2       CNU Platform        n/a

Interface  AdminPowerMax   AdminConsumption
             (Watts)           (Watts)
---------- --------------- --------------------

Gi2/1                 15.4                 15.4
```

```
Switch# show power inline module 1
Module 1 Inline Power Supply: Available:158(w)  Used:128(w)  Remaining:30(w)

Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi1/1     auto   on         10.3       10.3       CNU Platform       3
Gi1/2     auto   on         10.3       10.3       CNU Platform       3
Gi1/3     auto   on         10.3       10.3       CNU Platform       3
Gi1/4     auto   on         10.3       10.3       CNU Platform       3
Gi1/5     auto   on         10.3       10.3       CNU Platform       3
Gi1/6     auto   on         10.3       10.3       CNU Platform       3
Gi1/7     auto   on         10.3       10.3       CNU Platform       3
Gi1/8     auto   on         10.3       10.3       CNU Platform       3
Gi1/9     auto   on         10.3       10.3       CNU Platform       3
Gi1/10    auto   on         15.4       15.4       Cisco/Ieee PD      3
Gi1/11    auto   on         10.3       10.3       CNU Platform       3
Gi1/12    auto   on         10.3       10.3       CNU Platform       3
--------- ------ ---------- ---------- ---------- ------------------ -----

Totals:          12   on    128.2      128.2
switch#

switch# show power inline module 2
Chassis Inline Power Supply: Available:800(w)  Used:138(w)  Remaining:662(w)
Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi2/1     auto   on         11.5       10.2       CNU Platform       n/a
Gi2/2     auto   on         11.5       10.2       CNU Platform       n/a
Gi2/3     auto   on         11.5       10.2       CNU Platform       n/a
Gi2/4     auto   on         11.5       10.2       CNU Platform       n/a
Gi2/5     auto   off        0.0        0.0        n/a                n/a
Gi2/6     auto   off        0.0        0.0        n/a                n/a
Gi2/7     auto   off        0.0        0.0        n/a                n/a
Gi2/8     auto   off        0.0        0.0        n/a                n/a
Gi2/9     auto   on         11.5       10.2       CNU Platform       3
Gi2/10    auto   on         11.5       10.2       CNU Platform       n/a
Gi2/11    auto   on         11.5       10.2       CNU Platform       n/a
Gi2/12    auto   on         11.5       10.2       CNU Platform       n/a
Gi2/13    auto   on         11.5       10.2       CNU Platform       3
Gi2/14    auto   on         11.5       10.2       CNU Platform       3
Gi2/15    auto   on         11.5       10.2       CNU Platform       3
Gi2/16    auto   on         11.5       10.2       CNU Platform       3
Gi2/17    auto   off        0.0        0.0        n/a                n/a
Gi2/18    auto   off        0.0        0.0        n/a                n/a
Interface Admin  Oper            Power(Watts)     Device              Class
                              From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi2/19    auto   off        0.0        0.0        n/a                n/a
Gi2/20    auto   off        0.0        0.0        n/a                n/a
Gi2/21    auto   off        0.0        0.0        n/a                n/a
Gi2/22    auto   off        0.0        0.0        n/a                n/a
Gi2/23    auto   off        0.0        0.0        n/a                n/a
Gi2/24    auto   off        0.0        0.0        n/a                n/a
Gi2/25    auto   off        0.0        0.0        n/a                n/a
```

```
Gi2/26    auto   off        0.0        0.0        n/a                n/a
Gi2/27    auto   off        0.0        0.0        n/a                n/a
Gi2/28    auto   off        0.0        0.0        n/a                n/a
Gi2/29    auto   off        0.0        0.0        n/a                n/a
Gi2/30    auto   off        0.0        0.0        n/a                n/a
Gi2/31    auto   off        0.0        0.0        n/a                n/a
Gi2/32    auto   off        0.0        0.0        n/a                n/a
Gi2/33    auto   off        0.0        0.0        n/a                n/a
Gi2/34    auto   off        0.0        0.0        n/a                n/a
Gi2/35    auto   off        0.0        0.0        n/a                n/a
Gi2/36    auto   off        0.0        0.0        n/a                n/a
Gi2/37    auto   off        0.0        0.0        n/a                n/a
Gi2/38    auto   off        0.0        0.0        n/a                n/a
Gi2/39    auto   off        0.0        0.0        n/a                n/a
Gi2/40    auto   off        0.0        0.0        n/a                n/a
Interface Admin  Oper            Power(Watts)     Device             Class
                                 From PS    To Device
--------- ------ ---------- ---------- ---------- ------------------ -----

Gi2/41    auto   off        0.0        0.0        n/a                n/a
Gi2/42    auto   off        0.0        0.0        n/a                n/a
Gi2/43    auto   off        0.0        0.0        n/a                n/a
Gi2/44    auto   off        0.0        0.0        n/a                n/a
Gi2/45    auto   off        0.0        0.0        n/a                n/a
Gi2/46    auto   off        0.0        0.0        n/a                n/a
Gi2/47    auto   off        0.0        0.0        n/a                n/a
Gi2/48    auto   off        0.0        0.0        n/a                n/a
--------- ------ ---------- ---------- ---------- ------------------ -----

Totals:          12   on    138.2      123.0
Switch#
```