



Connecting Avaya 4600 Series IP Telephones with the Cisco Catalyst 3550-24 PWR Inline Power Switch - Issue 1.2

Abstract

These Application Notes describe how to connect and configure Avaya 4600 Series IP telephones and Wireless Access Points with the Cisco Catalyst 3550-24 PWR Inline Power switch. In addition to showing the various Avaya powering arrangements, they demonstrate the administration commands for displaying and controlling the powering status of the Catalyst 3550 switch ports.

1. Introduction

“Inline power” is a feature offered on Ethernet switches. It is a means by which the switch can supply power to a network device within the same cable that carries the Ethernet signaling. This simplifies network installation and powering design, removing the need for a separate power supply for each IP telephone in the network. IEEE 802.3af-2003 defines a standard protocol to be used by power sourcing equipment (PSE) and powered devices (PD). The Avaya 4600 Series IP telephones and Avaya Wireless Access Points are IEEE 802.3af-2003 compliant PDs.

Since The Catalyst 3550-24 PWR switch only supports Cisco pre-standard PoE, which is not 802.3af-2003 compliant¹, these configurations are not part of an Avaya offer intended to comply with IEEE 802.3af-2003. However, testing has shown that the configurations outlined here do result in successful operation. These Application Notes do not imply successful operation for any other configurations not specifically mentioned here or successful operation for any future versions of the Cisco Catalyst 3550.

The Avaya product configurations addressed by these Application Notes are shown in **Figure 1**. The following Avaya products are directly connected to the switch:

- Avaya 4602SW SIP telephone
- Avaya 4602 and 4602SW IP telephones
- Avaya 4610SW IP telephone
- Avaya 4620 IP telephone with and without EU24
- Avaya 4620SW IP telephone with and without EU24
- Avaya 4630SW IP telephone
- Avaya Gen-1 4612 and 4624 IP telephones with Avaya 30A switch bases
- Avaya Gen-2 4606, 4612, and 4624 IP telephones
- Avaya Wireless AP-6 802.11a/b/g Access Point

The Avaya Gen-1 4612 and 4624 IP telephones require the Avaya 30A Switch Base. **Figure 2** shows the connections for the 30A switch base. The Avaya 4612 and 4624 telephones can be identified as Gen-1 or Gen-2 by inspecting the model number. “1A” in the model number indicates Gen-1; “2A” indicates Gen-2. The model number can be found by:

- Inspecting the label attached to the bottom of the telephone.

OR

- Pressing **Mute, V, I, E, W, #** on the keypad and then pressing * until the model number appears. Press # to exit. Examples of model numbers are “4612D01A-003” (Gen-1) and 4612D02A-003 (Gen-2).

¹ For details see *Cisco PoE Product Snapshot* at:
http://www.cisco.com/warp/public/cc/pd/si/casi/ca6000/prodlit/psnap_br.pdf (2004)

The powering tests included verification of the following after the product was connected to the switch:

- Successful boot operation
- For Avaya IP telephones, successful registration with an Avaya Media Server/Gateway and completion of a test call
- For Wireless LAN Access Points, successful registration for an Avaya IP softphone with an Avaya Media Server/Gateway and completion of a test call.

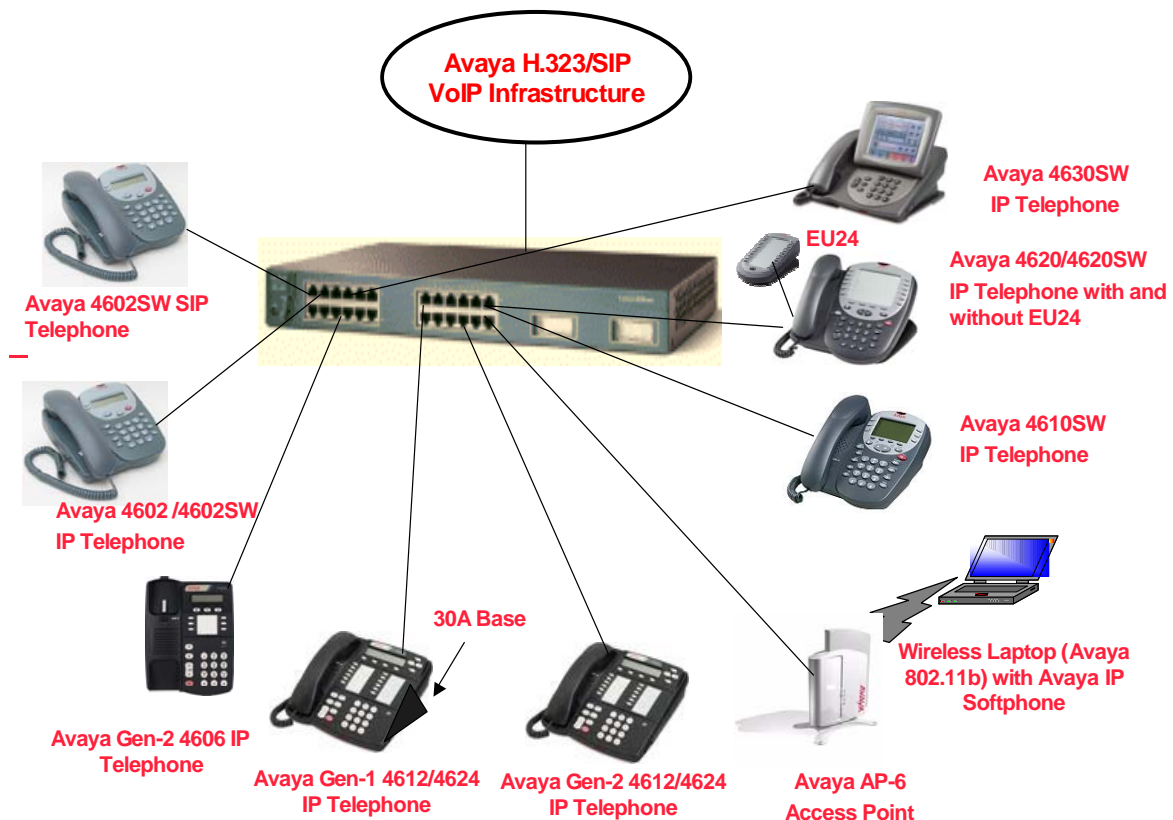


Figure 1: Avaya 4600 Series IP Telephone and Wireless Access Point Configurations with the Cisco Catalyst 3550-24 PWR inline power switch

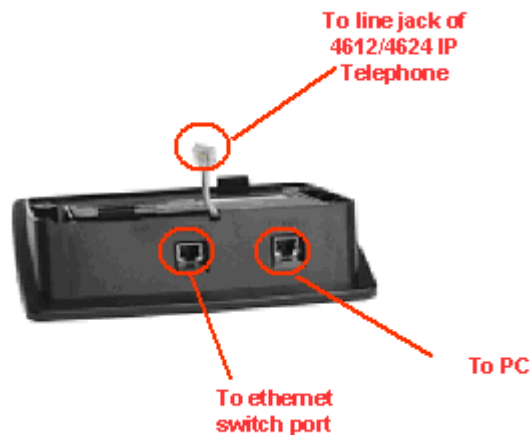


Figure 2: Avaya 30A Switch Base Connections

2. Equipment and Software Validated

The following equipment and software were used for the sample configuration provided:

Equipment	Software
Cisco Catalyst 3550-24 PWR Inline Power Switch	12.1(22)EA1
Avaya 4602SW SIP Telephone	1.0.6
Avaya 4602 IP Telephone	1.8.2
Avaya 4602SW IP Telephone	1.8.2
Avaya 4606 IP Telephone	1.8.2
Avaya 4610SW IP Telephone	2.1.1
Avaya 4620SW IP Telephone	2.1.2
Avaya 4620 IP Telephone	2.1.1
Avaya 4630SW IP Telephone	2.0.1
Avaya 4612/4624 Gen-1 IP Telephone with 30A switch	1.8.2
Avaya 4612/4624 Gen-2 IP Telephone	1.8.2
Avaya Wireless AP-6 Access Point	2.4.5(758)
Avaya 30A Ethernet Switch Base	-

Table 1 - Network Components and Software Versions

3. Configuring Catalyst 3550 Inline Power

The Catalyst 3550-24 PWR switch supports Cisco pre-standard PoE. All 24-port configurations support 24 simultaneous full powered PoE ports at 15.4 Watts for maximum powered device support.

This section describes the commands that can be issued to monitor and control inline power status of the switch ports. All switch ports (or interfaces) have inline power set to **auto** as

default. The Avaya IP telephones and Wireless Access Points will receive power automatically when they are plugged into the switch port if the switch senses a “maintain power signature”.

Three CLI commands can be used to configure inline power status for a switch port:

- **power inline never** permanently disables inline-power on a port.
- **power inline auto** sets the switch port to supply power automatically.
- **power inline delay {shutdown *seconds* initial *seconds*}**
 - *shutdown seconds*: Configure the time that the switch continues to provide power to the device after linkdown. The range is 0 to 20 seconds.
 - *Initial seconds*: Configure an initial time that the power shutdown delay is in effect. The range is 0 to 300 seconds.

The **initial** time period begins when the PD is detected by the switch. If linkdown occurs on the connected device during the initial time period, the **shutdown** time determines how long the switch continues to provide power to the device.

In order to support Avaya 4602, 4602SW, Gen-2 4606, Gen-2 4612, Gen-2 4624 IP telephones, and Avaya Wireless AP-6 Access Point, the **power inline delay shutdown** must be configured. Note however that when the **power inline delay shutdown** command is active on a port, the port remains powered after unplugging the PD for the configured time interval. To avoid product damage, any non-IEEE power device must not be connected during the delay shutdown time interval. For these reasons, it is recommended to dedicate all the PoE ports to IEEE power devices using the **power inline delay shutdown** command.

The following screen is the annotated port (or interface) configuration. Note that all switch ports have inline power set to **auto** as default, which does not appear in the configuration. The **shutdown** time is configured to 5 seconds and **initial** time to 100 seconds for the testing. Customers can tune these timers to meet their need.

```
interface FastEthernet0/1
switchport access vlan 88
switchport mode access
power inline delay shutdown 5 initial 100
spanning-tree portfast
```

Native VLAN configuration
Configure switch mode to access
Configure delay shutdown times
Enable portfast for an IP
telephone

4. Verification Steps

The following CLI session demonstrates connection, verification, and control of an Avaya IP telephone.

Steps	Description																																																																														
1.	<ul style="list-style-type: none">Connect an Avaya IP telephone as shown in Figure 1 to Ethernet port 0/1 on the switch.Verify that the telephone is powered and is booting by inspecting the display.Check status of the port using the command shown. <pre>*Mar 1 20:49:31: %LINK-3-UPDOWN: Interface FastEthernet0/1, changed state to up</pre> <pre>*Mar 1 20:49:32: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up</pre> <pre>C3550#show power inline fastEthernet 0/1</pre> <table><tr><th>Interface</th><th>Admin</th><th>Oper</th><th>Power (Watts)</th><th>Device</th><th>Class</th></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Fa0/1</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr></table> <p>All Avaya telephones will show 15 watts allocated power, independent of the actual power drawn. Note that the port defaults to an administrative state of “auto”, and an operational state of “on”. The switch does not display Class information.</p> <ul style="list-style-type: none">Verify that the telephone can successfully register with an Avaya Media Server/Gateway.Verify that a successful test call can be completed.	Interface	Admin	Oper	Power (Watts)	Device	Class	-----	-----	-----	-----	-----	-----	Fa0/1	auto	on	15.0	Ieee device																																																													
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2.	<ul style="list-style-type: none">To check inline power status on all the ports, use the command show power inline. <pre>C3550#show power inline</pre> <table><tr><th>Interface</th><th>Admin</th><th>Oper</th><th>Power (Watts)</th><th>Device</th><th>Class</th></tr><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>Fa0/1</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/2</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/3</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/4</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/5</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/6</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/7</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/8</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/9</td><td>auto</td><td>on</td><td>15.0</td><td>Ieee device</td><td></td></tr><tr><td>Fa0/10</td><td>auto</td><td>off</td><td>0.0</td><td>n/a</td><td>n/a</td></tr><tr><td colspan="6">--More--</td></tr></table>	Interface	Admin	Oper	Power (Watts)	Device	Class	-----	-----	-----	-----	-----	-----	Fa0/1	auto	on	15.0	Ieee device		Fa0/2	auto	on	15.0	Ieee device		Fa0/3	auto	on	15.0	Ieee device		Fa0/4	auto	on	15.0	Ieee device		Fa0/5	auto	on	15.0	Ieee device		Fa0/6	auto	on	15.0	Ieee device		Fa0/7	auto	on	15.0	Ieee device		Fa0/8	auto	on	15.0	Ieee device		Fa0/9	auto	on	15.0	Ieee device		Fa0/10	auto	off	0.0	n/a	n/a	--More--					
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5. Conclusion

The Cisco 3550-24 PWR inline power switch can provide inline power to Avaya 4612/4624 Gen-1 IP telephones with Avaya 30A switch bases, Avaya 4610SW, 4620, 4620SW, 4630SW IP telephones, and Avaya 4602SW SIP telephone. The switch can also provide inline power to Avaya 4602, 4602SW, 4606 Gen-2, 4612/4624 Gen-2 IP telephones and Avaya Wireless AP-6 Access Point when the **power inline delay shutdown** is configured.

The Avaya IP telephones and Wireless Access Points are designed to the IEEE 802.3af-2003 standard. Since Cisco does not claim that the Cisco 3550 is compliant with the IEEE 802.3af-2003 standard², the configurations described in these Application Notes is not supported by Avaya. These Application Notes do not imply successful operation of any other configurations not specifically mentioned here or future versions of the Cisco 3550.

² For details see Cisco PoE Product Snapshot at:
http://www.cisco.com/warp/public/cc/pd/si/casi/ca6000/prodlit/psnap_br.pdf (2004)

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