Avaya Solution & Interoperability Test Lab

Connecting Avaya 4600 Series IP Telephones and Avaya Wireless LAN Access Points with the 3Com SuperStack 3 Switch 4400-PWR (Inline Power Ethernet Switch) - Issue 1.0

Abstract

These Application Notes describe how to connect and configure Avaya 4600 Series IP Telephones and Avaya wireless LAN access points with the 3Com SuperStack 3 Switch 4400-PWR (inline power Ethernet switch). The various Avaya powering arrangements and the commands for displaying and controlling the powering status of the switch ports are described.

1. Introduction

"Inline power" is a feature offered on some 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 powering and powered devices.

The 3Com SuperStack 3 Switch 4400-PWR is a 24-port (24 10/100Base-TX) Ethernet switch. It supplies 150 watts of power for PoE applications compatible with the IEEE 802.3af-2003 standard. Avaya 4600 Series IP telephones, Avaya wireless LAN access points, and the 3Com SuperStack 3 Switch 4400-PWR comply with this standard. These Application Notes show how Avaya IP telephones and wireless LAN access points can be connected to the 3Com SuperStack 3 Switch 4400-PWR. Web-based configuration that display and control powering status of the switch ports are also demonstrated.

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

- 4602 and 4602SW IP Telephones
- 4610SW IP Telephone
- 4620 and 4620SW IP Telephones (including the optional EU24 Button Expansion Module)
- 4630SW IP Screenphone
- Gen-2 4606, 4612, and 4624 IP Telephones
- Gen-1 4612 and 4624 IP Telephones with 30A Ethernet Switch Base
- AP 3 and AP 5 Access Points

The Gen-1 Avaya 4612 and 4624 IP Telephones require the Avaya 30A Switch Base if power over Ethernet is required. **Figure 2** shows the connections for the 30A switch base. The 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 "4612D0**1A**-003" (Gen-1) and 4612D0**2A**-003 (Gen-2).
The powering tests included verification of the following after each product was connected to the switch:

- Successful boot operation
- For IP telephones, successful registration with an Avaya Media Server/Gateway and successful completion of calls using the IP telephones (e.g. initiate calls, receive calls, etc.)
- For wireless LAN access points, successful registration of a wireless laptop and use of the administration web interface on the access point from the laptop.

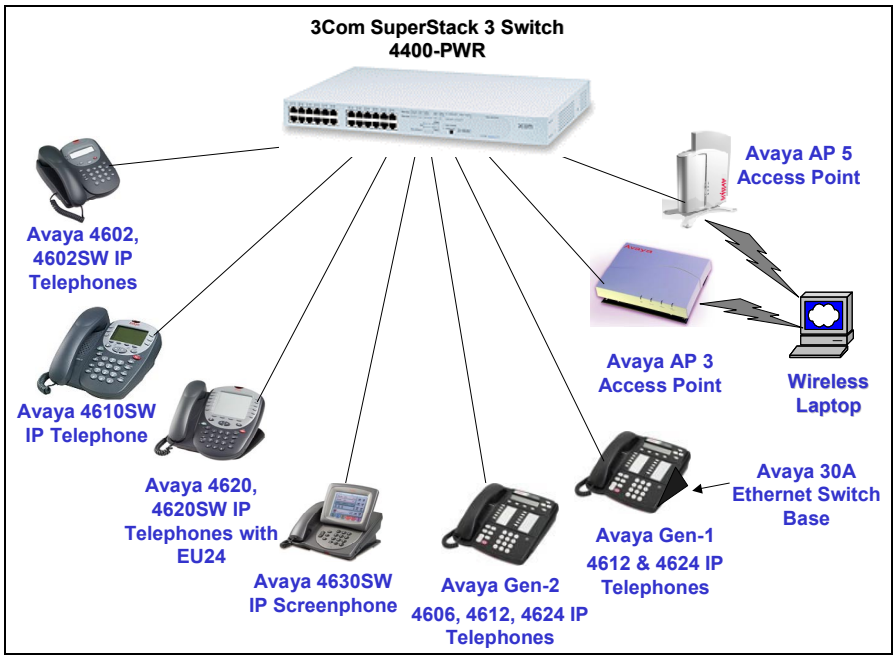


Figure 1: Avaya 4600 Series IP Telephone and Wireless LAN Access Point Configurations with the 3Com SuperStack 3 Switch 4400-PWR

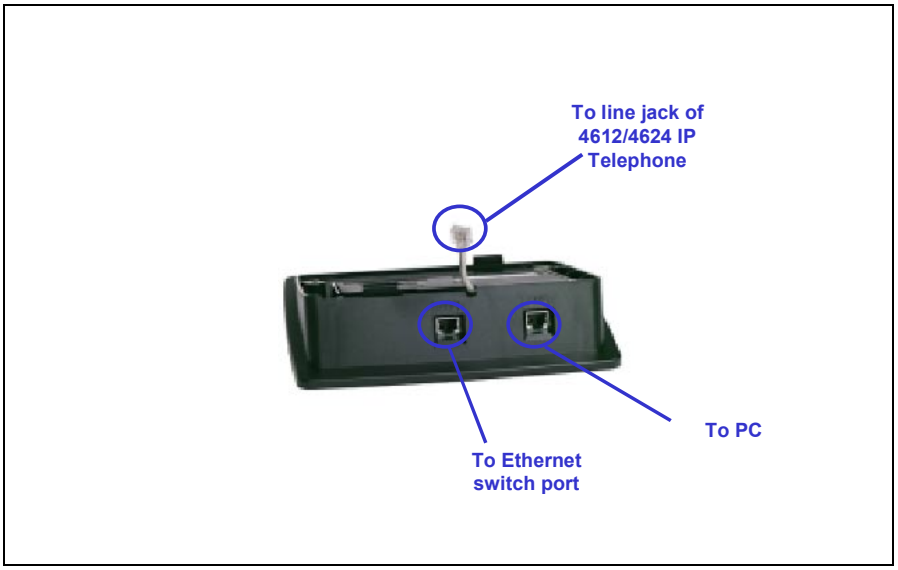


Figure 2: Avaya 30A Switch Base Connections

2. Equipment and Software Validated

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

Equipment	Software
Avaya 4602 IP Telephone	1.7
Avaya 4602SW IP Telephone	1.7
Avaya 4610SW IP Telephone	2.0
Avaya 4620 IP Telephone with EU24 Button Expansion Module	2.0
Avaya 4620SW IP Telephone with EU24 Button Expansion Module	2.0
Avaya 4630SW IP Screenphone	1.8
Avaya 4606 IP Telephone (Gen-2)	1.73
Avaya 4612 IP Telephone (Gen-1, Gen-2)	1.73
Avaya 4624 IP Telephone (Gen-1)	1.73
Avaya 4624 IP Telephone (Gen-2)	1.8
Avaya AP 3 Access Point (Version 2)	2.1.2(412)
Avaya AP 5 Access Point	2.1.1(375)
Avaya 30A Ethernet Switch Base	-
3Com SuperStack 3 Switch 4400-PWR	V.3.12

Table 1: Equipment and Software Validated

3. Configure the 3Com SuperStack 3 Switch 4400-PWR

This section describes the configuration steps to control and monitor inline power status. Either the command line interface (CLI) or the web-based management interface can be used to accomplish these tasks. These Application Notes demonstrate the configurations using the web-based interface. By default, the switch tries to obtain an IP address from a DHCP or BOOTP server on the network. If neither server is found, the switch configures itself with its default IP address 169.254.100.100. In these Application Notes, there is no DHCP server available in the configuration.

Steps	Description
1.	**Access the switch using a web browser** • Configure a laptop or PC with an IP address in the 169.254.100.0/24 subnet. Launch a web browser and point to http://169.254.100.100. • Log in using the appropriate credentials as shown in **Figure 3**.

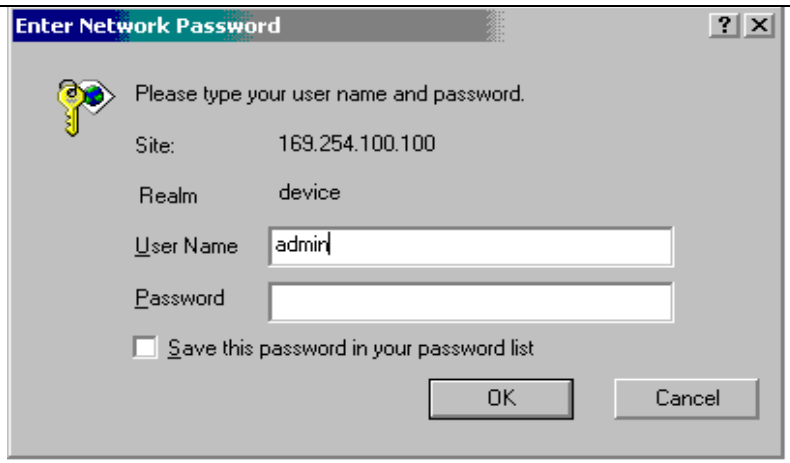


Figure 3: Log in to the Switch

- From the main menu, click ***Device View*** to display device information as shown in **Figure 4**.

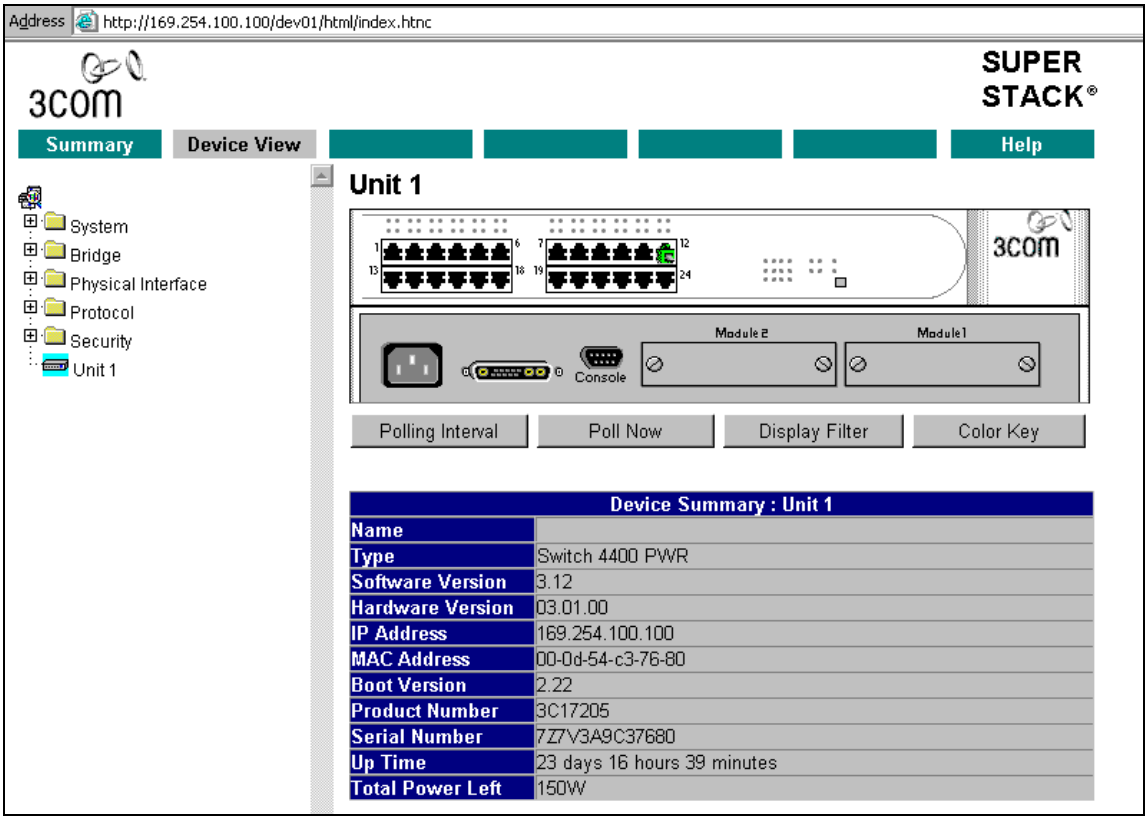


Figure 4: Device View

To access power configuration information, expand the folder ***Physical interface → Power*** in the navigation panel as shown in **Figure 4**.

2. **Configure switch port inline power**

1. Click ***Device View*** on the Toolbar.
2. Select ***Physical Interface -> Power -> Configure*** in the navigation panel;
3. The following window displays the switch default power configuration.

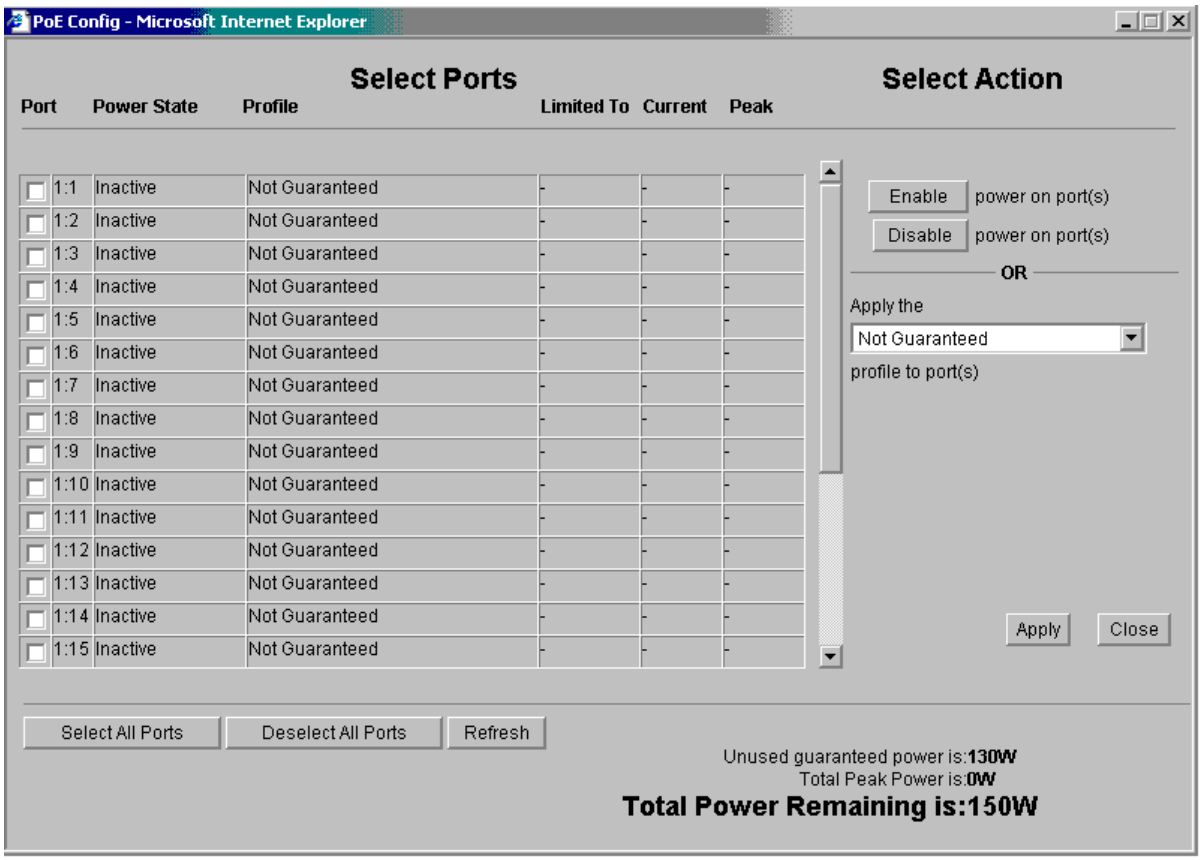


Figure 5: Port Inline Power Configuration

Note that for all ports, **Power State** is **Inactive** and **Profile** is set to **Not Guaranteed,** as there are no Powered Devices (PDs) connected to the switch.

The screen lists the following information for all the switch ports:

Power State
The Power over Ethernet status for that port. This can take one of the following values:

- Active — The port is currently delivering power.
- Inactive — No device is currently requesting power from the port.

- Disabled — The port has been configured not to supply power.
- FAULT — The port is in error.

Profile
The Profile that has been selected for a port. This can take one of the following values:

- Guaranteed — The device on the port has power reserved for it, as listed in the ***Limited To*** column.
- Not Guaranteed — The device on the port has no power reserved for it. It will receive power if the switch is below its maximum power budget, and all ports with higher priorities are receiving power.

Limited To
The power that has been guaranteed to a device. If no power has been guaranteed, a hyphen ('-') is displayed and the port is limited to 15.4 watts as defined in the Power over Ethernet specification (IEEE 802.3af-2003).

Current
The power that is currently supplied to a port. If no power is currently supplied, a hyphen ('-') is displayed.

Peak
The maximum power that has been supplied by a port since the counter was last reset.

The following example can be used to verify that the switch can auto-detect the PDs and supply power to them.

- Plug the Avaya 4620, 4612 and 4602SW IP phones into ports 1-3.
- Click ***Refresh*** as shown in **Figure 5**. **Figure 6** shows that all three IP telephones are automatically powered up, and the power status is changed to ***Active***. Note that the Current and Peak power for all three IP telephones are displayed also.

3.

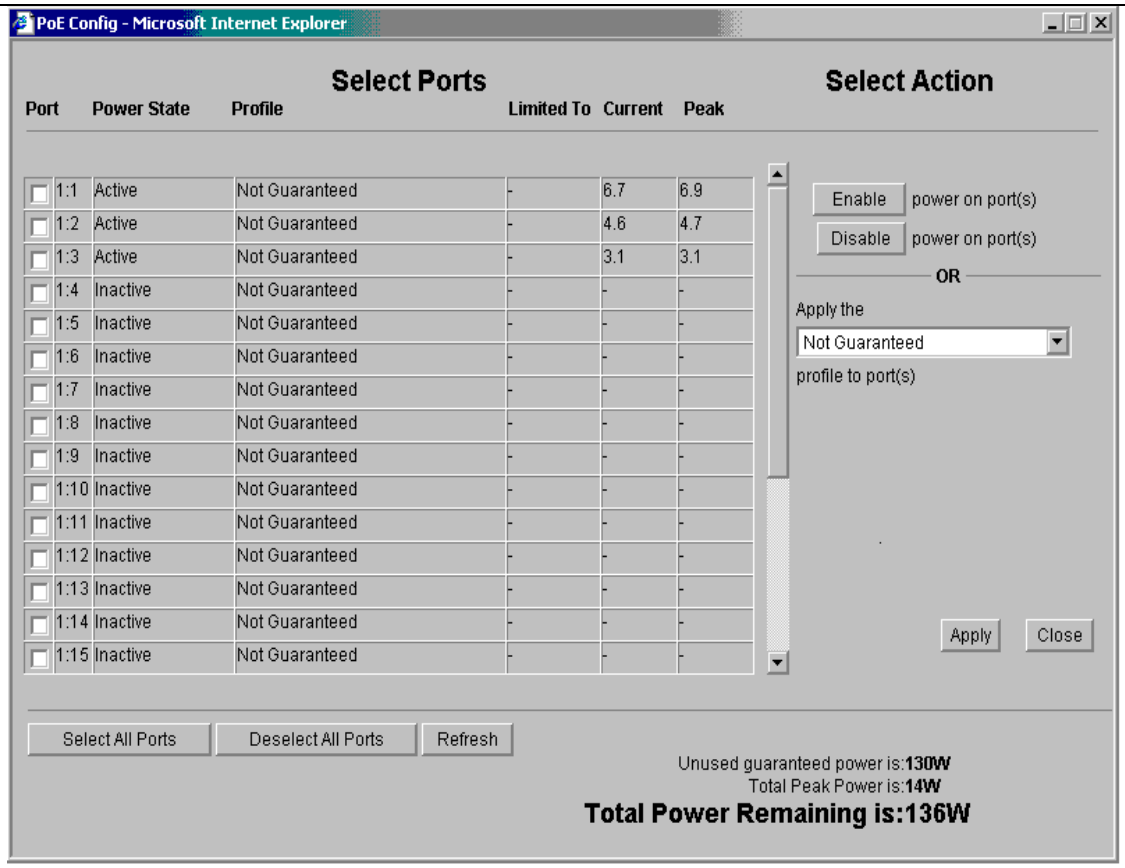


Figure 6: Display Inline Power Status

Configure port power profile.
By default, the maximum power for all ports is not guaranteed. To guarantee that PDs get their specified maximum power, their profile can be configured using the ***Guaranteed*** profile.

Guaranteeing Power on a Port
To guarantee power to a port:
In the ***Port*** column, select the port or ports that are guaranteed for power.
In the drop-down box:

- Select the profile that corresponds to the switch ports connecting to that device type.
  Or
- Select *Guaranteed* and enter the maximum power required by the device type in the text box that appears below.
- Click ***Apply***.

Repeat for each type of device that needs guaranteed power.

For example, follow the steps above to change ports 1-3 to use the guaranteed profile.

Figure 7 shows all three ports are configured to use the **Guaranteed** profile. Note the power limit is set to 15.4 watts for ports 1 and 2, and 7 watts for port 3, since both the 4620 and 4612 IP telephones are class 3 devices and the 4602SW IP phone is a class 1 device.

Table 2 shows the required power allocations defined by IEEE 802.3af-2003, based on the class.

Class	Usage	Power (Watts)
0	Default	15.4
1	optional	4
2	optional	7
3	optional	15.4

Table 2: IEEE 802.3af-2003 Power Classes

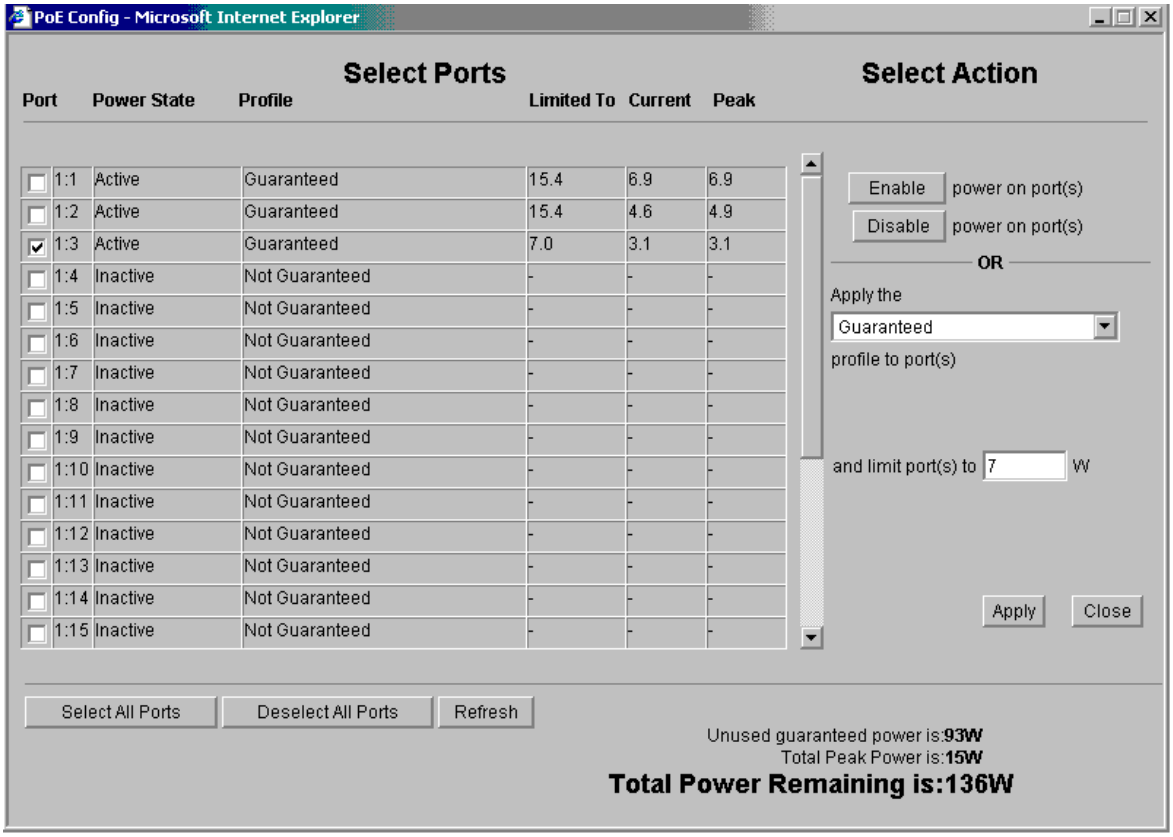


Figure 7: Port Inline Power Profile Configuration

Removing Guaranteed Power from a Port

To remove guaranteed power from a port:

- In the ***Port*** column, select the port or ports from which the guaranteed power needs to be removed.
- Select ***Not Guaranteed*** from the drop-down box.
- Click ***Apply***.

Disabling Power on a Port

To disable power on a port:

- In the ***Port*** column, select the port or ports for which the power is to be disabled.
- Click ***Disable***.

Enabling Power on a Port

To enable power on a port:

- In the ***Port*** column, select the port or ports for which the power is to be enabled.
- Click ***Enable***.

For example, **Figure 8** shows the power status for ports 1-3 after disabling inline power.

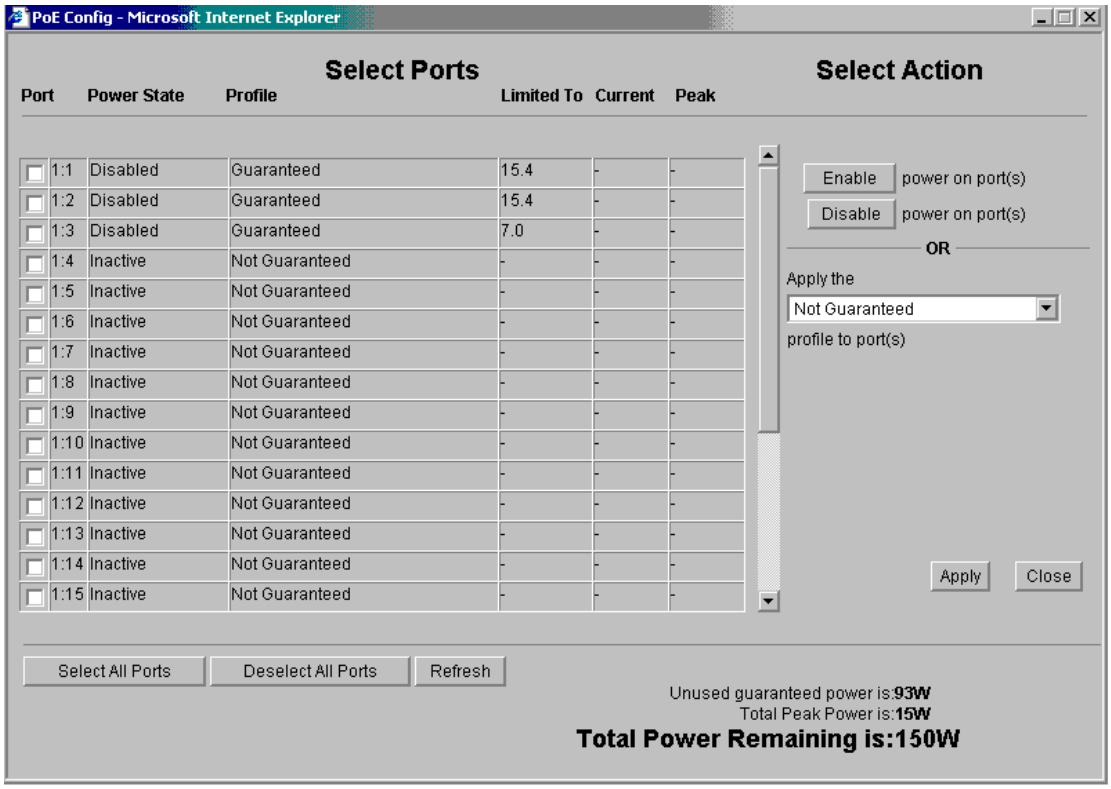
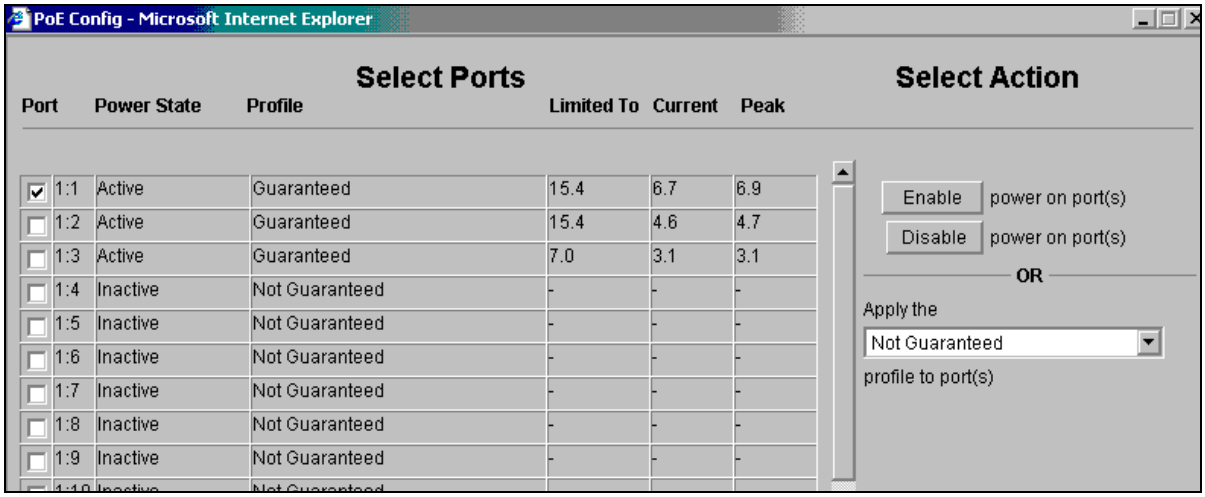


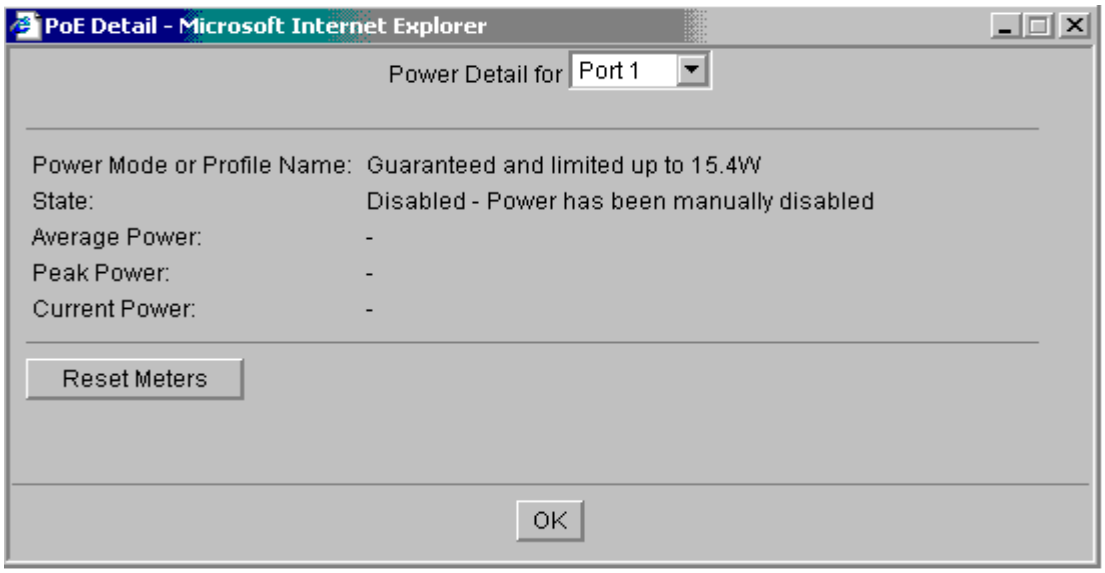
Figure 8: Disable Inline Power Configuration

Note the power state for ports 1-3 is changed to ***Disabled***.

4. Verification Steps

The following steps can be used to verify proper connection, configuration, and powering of Avaya IP telephones.

Steps	Description
1.	Disable inline power to port 1 and verify that the telephone loses power. • In the ***Port*** column, select port 1:1 and click ***Disable*** as shown in **Figure 9**. • Click ***Refresh*** for the change to take effect.  **Figure 9: Disable Inline Power for Port 1** To view port 1 power status: • Click ***Device View*** on the Toolbar. • Select ***Physical Interface -> Power -> Detail*** in the navigation panel. • From the ***Power Detail for Port*** drop-down box, select port 1.

	The following window is displayed:  **Figure 10: Display Port 1 Power Status** Note that the power state is ***Disabled*** as shown in **Figure 10**.
2.	Enable inline power for port 1 and verify that the telephone receives power. • In the ***Port*** column, select port 1:1 and click ***Enable***. • Click ***Refresh*** for the change to take effect. • Select ***Physical Interface -> Power -> Detail*** in the navigation panel. • From the ***Power Detail for Port*** drop-down box, select port 1.

The following window is displayed. Note that the power state has changed to ***Active*** as shown in **Figure 11**.

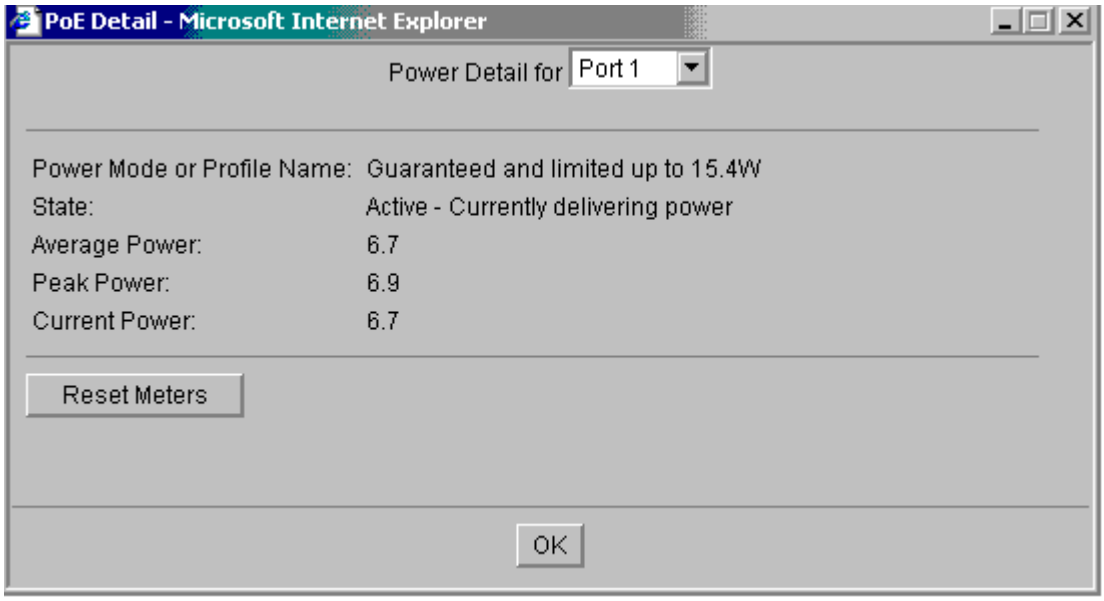


Figure 11: Port 1 Power is enabled

5. Conclusion

The following Avaya IP telephones and wireless LAN access points were tested with the 3Com SuperStack 3 Switch 4400-PWR inline power switch, and were successfully powered:

- IP telephones:
  - 4602 and 4602SW
  - 4610SW
  - 4620 and 4620SW, including EU24 Button Expansion Module
  - 4630SW
  - Gen-1 4612 and 4624 with 30A switch base
  - Gen-2 4606, 4612, and 4624

- Wireless LAN access points
  - AP 3
  - AP 5

Please e-mail any questions or comments pertaining to these Application Notes along with the full title name and filename, located in the lower right corner, directly to the Avaya Solution & Interoperability Test Lab at interoplabnotes@list.avaya.com