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Avaya Solution & Interoperability Test Lab

Application Notes for the HP ProCurve 2520-8-PoE Switch Supporting Power over Ethernet with Avaya Endpoints – Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the HP ProCurve 2520-8-PoE Switch to provide inline Power over Ethernet (PoE) to Avaya 1600/5600/9600 Series IP Telephones.

Information in these Application Notes has been obtained through DevConnect compliance testing and additional technical discussions. Testing was conducted via the DevConnect Program at the Avaya Solution and Interoperability Test Lab.

1. Introduction

Power over Ethernet (PoE) allows both power and data to be simultaneously carried over standard Ethernet cables. PoE-enabled Ethernet switches can supply power directly to Ethernet devices, thereby simplifying installation and removing the need for separate power supplies for those devices. The IEEE 802.3af standard defines the mechanisms for Power Sourcing Equipment (PSE), such as PoE-enabled Ethernet switches, to detect, classify, and supply power to Powered Devices (PDs), such as PoE-enabled IP telephones. In the compliance-tested configuration described in these Application Notes, the HP ProCurve 2520-8-PoE Switch was configured to supply inline PoE to Avaya PDs. The ProCurve 2520-8-PoE Series Switch supports the IEEE 802.3af PoE standard as well as the upcoming draft IEEE 802.3at standard for Power over Ethernet Plus (PoE+), which can provide up to 30 W per port.

1.1. Interoperability Compliance Testing

The interoperability testing focused on verifying PoE interoperability with the ProCurve 2520-8-PoE Switch and Avaya IP Telephones.

The power tests included verification of the following after each powered device was connected to the switch:

- Successful boot operation.
- Connecting a mix of Avaya IP Telephones to the switch, power cycling the switch and verifying successful boot operation of the PDs and registration of the telephones.

1.2. Support

For technical support on ProCurve products, consult the support pages at:
http://www.procurve.com/customercare/support

2. Reference Configuration

As illustrated in **Figure 1**, the Avaya PDs covered in these Application Notes include the following:

- Avaya 9600 Series IP Telephones
- Avaya 5600 Series IP Telephones
- Avaya 1600 Series IP Telephones

For compliance testing, the Avaya 1600/9600 Series IP Telephones registered to Avaya Aura^{TM} Communication Manager and the Avaya 5600 Series IP Telephones registered to Avaya IP Office.

See **Table 1** for a detailed list of specific models tested:
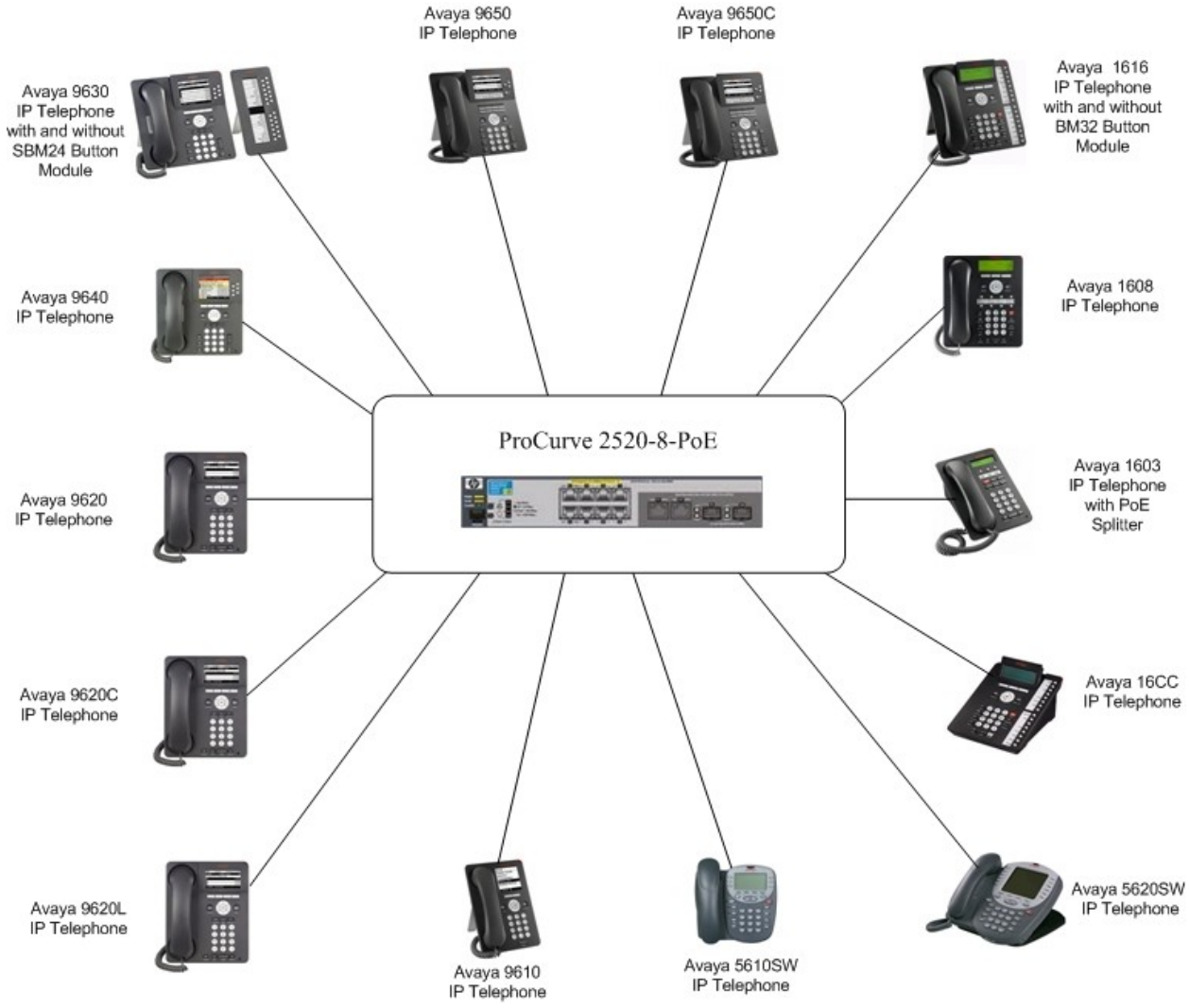
Figure 1: HP ProCurve 2520-8-PoE Switch and Avaya IP Telephones

3. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya PBX Products	
Avaya S8300 Server running Avaya Aura^{TM} Communication Manager	Avaya S8300 Server running Avaya Aura^{TM} Communication Manager (5.2)

Avaya G450 Media Gateway
   MGP
    MM712 DCP Media Module
	
	28.22.0
	HW9

Avaya IP Office (IP500)	5.0 (8)
Avaya Telephony Sets	
Avaya 9650 one-X Deskphone Edition IP Telephone	3.0
Avaya 9650C one-X Deskphone Edition IP Telephone	3.0
Avaya 9640G one-X Deskphone Edition IP Telephone	3.0
Avaya 9640 one-X Deskphone Edition IP Telephone	3.0
Avaya 9630 one-X Deskphone Edition IP Telephone with and without SBM24 24-button module	3.0
Avaya 9620 one-X Deskphone Edition IP Telephone with and without GigE Adapter	3.0
Avaya 9620C one-X Deskphone Edition IP Telephone	3.0
Avaya 9620L one-X Deskphone Edition IP Telephone	3.0
Avaya 9610 one-X Deskphone Edition IP Telephone	3.0
Avaya one-X Value Edition 1608 IP Telephone	1.1
Avaya one-X Value Edition 1616 IP Telephone with and without BM32 32-button module	1.1
Avaya one-X Value Edition 1603 IP Telephone with PoE Splitter	1.1
Avaya 5620SW IP Telephone (Registered to IPO)	8.016
Avaya 5610SW IP Telephone (Registered to IPO)	8.016
ProCurve Products	
HP ProCurve 2520-8-PoE Switch	S.14.03

Table 1: Equipment and Software Tested

4. Configure Avaya Aura^{TM} Communication Manager and Avaya IP Office

- No ProCurve 2520-8-PoE Switch specific configuration is required on Avaya Aura ^{TM} Communication Manager or Avaya IP Office to support this solution.
- For additional configuration details, refer to Section [9].

5. Configure the ProCurve 2520-8-PoE Switch

The configuration covered here is specific to PoE and does not include configuration of other features available in the ProCurve 2520-8-PoE Switch. Consult the ProCurve 2520-8-PoE Switch configuration manual **[9]** for additional configuration details.

Inline PoE is supported on the ProCurve 2520-8-PoE Switch. By default, PoE support is enabled on the system and on all ports.

6. General Test Approach and Test Results

6.1. Test Approach

The general test approach was to:

- Connect the Avaya IP Telephones to ports on the ProCurve 2520-8-PoE Switch and verify that the PDs successfully booted.

- Power cycle the ProCurve 2520-8-PoE Switch and verify successful boot operation of the PDs and registration of the telephones.

6.2. Test Results

All Power over Ethernet test cases completed successfully. The ProCurve 2520-8-PoE Switch successfully provided inline power to all of the Avaya IP Telephones listed in **Table2**. **Table 2** lists the measured power of the Avaya IP Telephones when connected to the ProCurve 2520-8-PoE Switch. The power listed as measured by the ProCurve 2520-8-PoE Switch is for PDs under idle conditions.

Note: Cable length and impedance affect power usage, so the measurements listed here may vary based on the cable used.

Table 2 summarizes the measured output of the Avaya IP Telephones.

Avaya Powered Device	802.3af Class	Volts	Measured Power (W) (Idle)
16CC	2	48.1	2.6
1603 with PoE Splitter	2	48.0	3.7
1608	2	48.0	3.6
1616 (D02A Series (NEW)	2	48.0	2.7
1616 (D01A Series (OLD)	3	48.0	5.2
1616 with BM32	2	48.0	3.2
5610SW	2	48.0	3.1
5620SW	2	48.0	3.6
9610	2	48.0	3.8
9620L	1	48.1	1.9
9620	2	48.0	4.3
9620C	2	48.0	3.8
9630	2	48.0	4.5
9630 with SMB24	2	48.0	5.0
9640	2	48.0	3.8
9650	2	48.0	4.5
9650C	2	48.0	3.7

Table 2: IEEE 802.3af Class and Measured Power

Table 3 summarizes the maximum output power at the PSE for the IEEE 802.3af classes.

Class	PSE Output Max. Power (W)
0	15.4
1	4.0
2	7.0
3	15.4
4	Class 4 is reserved for future use by PoE+ to provide up to 30W at the PSE

Table 3: IEEE 802.3af Classes

7. Verification Steps

The following steps may be used to verify the configuration of PoE related parameters:

- Verify that the PoE **Operational Status** in **ON** at the system level by entering the command **show power-over-ethernet**.

```
ProCurve Switch 2520-8-PoE# show power-over-ethernet

Status and Counters - System Power Status


  Pre-standard Detect : On
  Operational Status  : On
  Usage Threshold (%) : 80

 Chassis power-over-ethernet:

  Total Available Power  :   195 W
  Total used Power       :     5 W +/- 6W
  Total Remaining Power  :   190 W
```

- Verify that **Power Enable** is **Yes** at the port level by entering the command **show power-management brief**.

```
ProCurve Switch 2520-8-PoE# show power-over-ethernet brief

 Status and Counters - Port Power Status

  PoE   | Power   Power     Alloc Alloc  Actual Configured Detection    Power
  Port  | Enable  Priority  By    Power  Power  Type       Status       Class
  ----- + ------- --------- ----- ------ ------ ---------- -----------  ------
  1     | Yes     low       usage 17 W   0.0 W             Delivering   0
  2     | Yes     low       usage 17 W   0.0 W             Searching    0
  3     | Yes     low       usage 17 W   0.0 W             Searching    0
  4     | Yes     low       usage 17 W   0.0 W             Searching    0
  5     | Yes     low       usage 17 W   0.0 W             Searching    0
  6     | Yes     low       usage 17 W   0.0 W             Searching    0
  7     | Yes     low       usage 17 W   0.0 W             Searching    0
  8     | Yes     low       usage 17 W   0.0 W             Searching    0
  9     | Yes     low       usage 17 W   0.0 W             Searching    0
  10    | Yes     low       usage 17 W   0.0 W             Searching    0
  11    | Yes     low       usage 17 W   0.0 W             Searching    0
  12    | Yes     low       usage 17 W   0.0 W             Searching    0
```

- Connect the Avaya PD to a PoE enabled port on the ProCurve 2520-8-PoE Switch and verify that the PD powers on successfully. If the PD does not power on, enter the command **show power-over-ethernet <portlist>** where **<portlist>** is the name of the port on the ProCurve 2520-8-PoE Switch.

```
Status and Counters - Port Power Status for port 1

  Power Enable       : Yes
                                       LLDP Detect       : disabled
  Priority          : low            Configured Type   :
  AllocateBy        : usage          Value             : 17 W
  Detection  Status : Delivering     Power Class       : 2

  Over Current Cnt  : 0              MPS Absent Cnt    : 0
  Power Denied Cnt  : 0              Short Cnt         : 0

  Voltage           : 49.4 V         Current           : 96 mA
  Power             : 4.7 W
```

- Verify that Avaya 1600/5600/9600 Series IP Telephones have successfully registered to either Avaya Aura™ Communication Manager or Avaya IP Offce

   o For the Avaya 1600/9600 Series IP Telephones check Avaya Aura ™ Communication Manager

   o For the Avaya 5600 Series IP Telephones check Avaya IP Office.

8. Conclusion

These Application Notes describe the steps for configuring the HP ProCurve 2520-8-PoE Switch to provide inline PoE to Avaya IP telephones. It was verified that PoE was delivered successfully to all Avaya PD's tested.

9. Additional References

The following Avaya product documentation can be found at http://support.avaya.com.

[1] *Administering Avaya Aura™ Communication Manager,* May 2009, Issue 5.0, Document Number 03-300509.
[2] *Avaya one-X Deskphone Edition for 9600 Series IP Telephones Administrator Guide Release 3.0,* Document Number 16-300698.
[3] *Avaya one-X Deskphone Value 1600 Series IP Telephones Installation and Maintenance Guide Release 1*, Document # 16-601443.
[4] *4600 Series IP Telephone LAN Administrator Guide*, Document Number: 555-233-507.
[5] *IP Office Installation,* Document Number 15-601042
[6] *IP Office 5.0 Manager*, Document Number 15-601011
[7] *H323 IP Telephone Installation,* Document # 15-601046

The HP product documentation can be found at:
http://www.procurve.com/customercare/support/manuals/index.htm

10. Change History

Issue	Date	Reason
1.0	11/16/2009	Final Document