Avaya Solution & Interoperability Test Lab

Application Notes for the Hitachi ApresiaLight 209-PoE Switch Supporting Power over Ethernet with Avaya Endpoints – Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the Hitachi ApresiaLight 209-PoE Switch to provide inline Power over Ethernet (PoE) to Avaya 1600/4600/9600 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 Hitachi ApresiaLight 209-PoE Switch configured to supply inline PoE to Avaya PDs.

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

- Avaya 9600 Series IP Telephones (including the Avaya 9630 IP Telephone with and without a SBM24 Button module
- Avaya 4600 Series IP Telephones
- Avaya 1600 Series IP Telephones
- Avaya Quick Edition IP Telephones and Avaya G11 PSTN Gateway.

See **Table 1** for a detailed list of specific models tested.

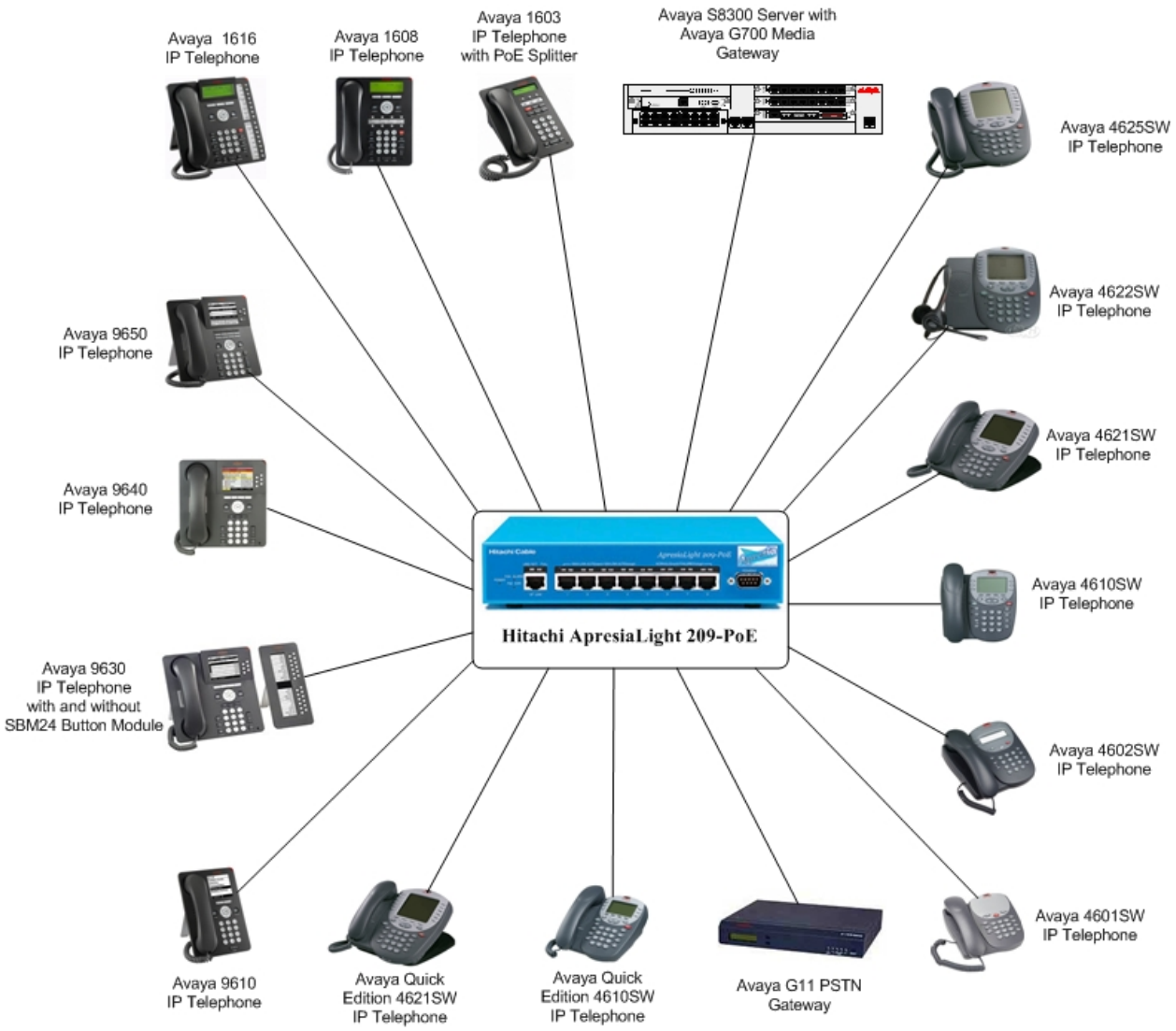


Figure 1: Hitachi ApresiaLight 209-PoE Switch with Avaya Communication Manager, Avaya IP Telephones and Avaya G11 PSTN Gateway

2. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300 Server with Avaya G700 Media Gateway	Avaya Communication Manager 5.1 – (R015-01.0.414.3)
Avaya 9650 IP Telephone	Avaya one-X™ Deskphone Edition 2.0 (H.323)
Avaya 9640 IP Telephone	Avaya one-X Deskphone Edition 2.0 (H.323)
Avaya 9630 IP Telephone with and without SBM24 Button Module	Avaya one-X Deskphone Edition 2.0 (H.323)
Avaya 9620 IP Telephone with and without GigE Adapter	Avaya one-X Deskphone Edition 2.0 (H.323)
Avaya 9610 IP Telephone	Avaya one-X Deskphone Edition 2.0 (H.323)
Avaya 1608 IP Telephone	Avaya one-X Value Edition 1.0.3 (H.323)
Avaya 1616 IP Telephone	Avaya one-X Value Edition 1.0.3 (H.323)
Avaya 1603 IP Telephone with PoE Splitter	Avaya one-X Value Edition 1.0.3 (H.323)
Avaya 4625SW IP Telephone	2.9 (H.323)
Avaya 4622SW IP Telephone	2.9 (H.323)
Avaya 4621SW IP Telephone	2.9 (H.323)
Avaya 4610SW IP Telephone	2.9 (H.323)
Avaya 4602SW IP Telephone	2.9 (H.323)
Avaya 4601SW IP Telephone	2.3 (H.323)
Avaya G11 PSTN Gateway	3.2.1
Avaya Quick Edition 4610SW IP Telephone	3.2.1 (SIP)
Avaya Quick Edition 4621SW IP Telephone	3.2.1 (SIP)
Hitachi ApresiaLight 209-PoE Switch	1.00.03

Table 1: Equipment and Software Tested

3. Configure Avaya Communication Manager and Avaya G11 PSTN Gateway

- No Hitachi ApresiaLight 209-PoE specific configuration is required on Avaya Communication Manager or Avaya one-X G11 PSTN Gateway to support this solution.
- Consult the Avaya Communication Manager Administrator Guide **[1]** for additional configuration details.

4. Configure the Hitachi ApresiaLight 209-PoE Switch

The configuration covered here is specific to PoE and does not include configuration of other features available in the Hitachi ApresiaLight 209-PoE Switch. Consult the Hitachi ApresiaLight 209-PoE Switch configuration manual **[7]** for additional configuration details.

Inline PoE is supported on the Hitachi ApresiaLight 209-PoE Switch. By default, PoE support is enabled on the system and on all ports.

5. Interoperability Compliance Testing

The interoperability testing focused on verifying PoE interoperability with the Hitachi ApresiaLight 209-PoE Switch, Avaya IP Telephones and the Avaya G11 PSTN Gateway.

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.

5.1. General Test Approach

The general test approach was to:

- Connect the Avaya IP Telephones and Avaya G11 PSTN Gateway to ports on the Hitachi ApresiaLight 209-PoE Switch and verify that the PDs successfully booted.
- Power cycle the Hitachi ApresiaLight 209-PoE Switch and verify successful boot operation of the PDs and registration of the telephones.

5.2. Test Results

All Power over Ethernet test cases completed successfully. The Hitachi ApresiaLight 209-PoE Switch successfully provided inline power to all of the Avaya IP Telephones and Avaya G11 PSTN Gateway listed in **Table2**. **Table 2** lists the measured power of the Avaya IP Telephones and Avaya G11 PSTN Gateway when connected to the Hitachi ApresiaLight 209-PoE Switch. The power listed as measured by the Hitachi ApresiaLight 209-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.

Avaya Powered Device	Actual Power (mW) (Idle)
Avaya 1603 IP Telephone with PoE Splitter	3940
Avaya 1608 IP Telephone	3849
Avaya 1616 IP Telephone	5707
Avaya 4601SW IP Telephone	2282
Avaya 4602SW IP Telephone	2415
Avaya 4610SW IP Telephone	2757
Avaya 4621SW IP Telephone	3922
Avaya 4622SW IP Telephone	3849
Avaya 4625SW IP Telephone	6565
Avaya 9610 IP Telephone	3609
Avaya 9620 IP Telephone	4255
Avaya 9630 IP Telephone	4264
Avaya 9630 IP Telephone with SBM24 Button Module	4648
Avaya 9640 IP Telephone	3589
Avaya 9650 IP Telephone	3853
Avaya Quick Edition 4610SW IP Telephone	2282
Avaya Quick Edition 4621SW IP Telephone	5042
Avaya G11 PSTN Gateway	2768

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.

Note: Class information is not supplied by the Hitachi ApresiaLight 209-PoE Switch and the **(mW)** output shown in Table 2 can be referenced to **Table 3** to see what class the Avaya endpoint fall in.

Class	PSE Output Max. Power (W)
0	15.4
1	4.0
2	7.0
3	15.4
4	Reserved-Treat as Class 0

Table 3: IEEE 802.3af Classes

Inline PoE is supported on the Hitachi ApresiaLight 209-PoE Switch. By default, PoE support is enabled on the system and on all ports.

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

- Verify that port **Status** is **enabled** at the port level by entering the command, **show poe ports all**.

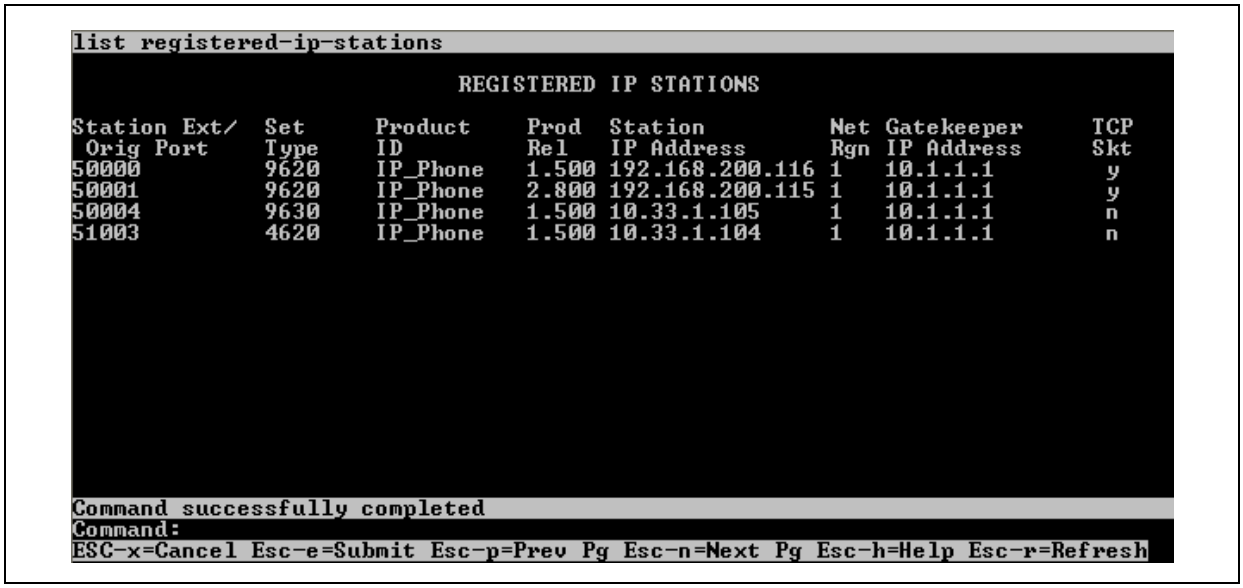
```
[adpro]# show poe ports all
Command: show poe ports all

 Classification State = disabled

 Port#   Class   Status      Power(mW)   LimitPower(mW)
 ------------------------------------------------------
  01       0     enabled      4698          16000
  02       0     enabled      2757          16000
  03       0     enabled      4192          16000
  04       0     enabled      5649          16000
  05       0     enabled      5032          16000
  06       0     enabled      5051          16000
  07       0     enabled         0          16000
  08       0     enabled         0          16000

 Actual total power = 27.37 (W) [Max Limit 64.00 (W)]
```

- Verify that Avaya 1600/4600/9600 Series IP Telephones have successfully registered with Avaya Communication Manager. Use the **list registered-ip-stations** command on Avaya Communication Manager.



6. Troubleshooting

- If the PD does not power up, check the inline power configuration. Enter **show poe ports all**. Check to see if there is a limit or priority setting on the port. If the output shows that the "Detection Status" is at "Fault" there may be a priority setting or insufficient available power to power the PD. The Hitachi ApresiaLight 209-PoE provides up to 16000 (mW) per port. For more information refer to http://www.hitachi-cable.us/.

7. Support

For technical support on Hitachi products, consult the support pages at:
http://www.hitachi-cable.us/

8. Conclusion

These Application Notes describe the steps for configuring the Hitachi ApresiaLight 209-PoE Switch to provide inline PoE to Avaya IP telephones and the Avaya Quick Edition G11 PSTN Gateway. 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] *Administrator Guide for Avaya Communication Manager*, Document Number 03-300509
[2] *Avaya one-X Deskphone for 9600 Series IP Telephones Installation and Maintenance Guide Release 2.0*, Document Number 16-601943
[3] *Avaya one-X Deskphone Value Edition 1600 Series IP Telephones Installation and Maintenance Guide Release 1*, Document # 16-601443
[4] *4600 Series IP Telephone Release 2.8 LAN Administrator Guide*, Doc # 555-233-507, February, 2007
[5] *Avaya one-X Quick Edition Release 3.2.0 Telephone System Administration Guide*, Doc # *16-601412, August 2007*
[6] *Avaya one-X™ Quick Edition Safety and Quick Installation Instructions for: G11 Global Analog Gateway* 16-601414 Issue 2, May 2007

Hitachi documentation can obtained through support at: http://www.hitachi-cable.us/

[7] *support at: http://www.hitachi-cable.us/*

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 DevConnect Program at devconnect@avaya.com.