Avaya Solution & Interoperability Test Lab

Application Notes for the Hitachi ApresiaLight 216T-PoE Switch Supporting Power over Ethernet with Avaya Endpoints – Issue 1.0

Abstract

These Application Notes describe the procedures for configuring the Hitachi ApresiaLight 216T-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 216T-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.
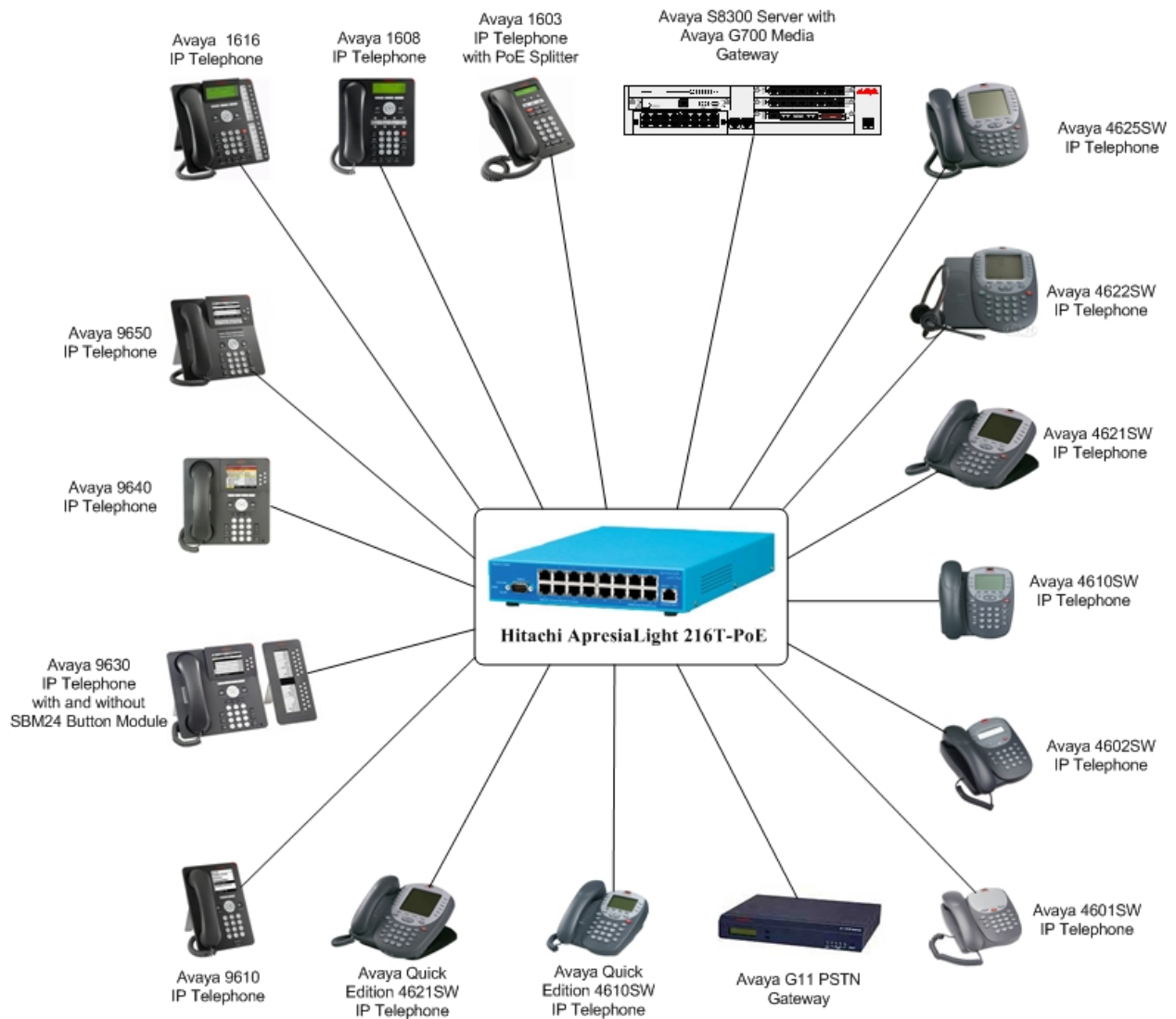
Figure 1: Hitachi ApresiaLight 216T-PoE Switch with Avaya Communication Manager, Avaya IP Telephones and Avaya G11 PSTN Gateway

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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 216T-PoE Switch	1.06.02

Table 1: Equipment and Software Tested

3. Configure Avaya Communication Manager and Avaya G11 PSTN Gateway

- No Hitachi ApresiaLight 216T-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.

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4. Configure the Hitachi ApresiaLight 216T-PoE Switch

The configuration covered here is specific to PoE and does not include configuration of other features available in the Hitachi ApresiaLight 216T-PoE Switch. Consult the Hitachi ApresiaLight 216T-PoE Switch configuration manual **[7]** for additional configuration details.

Inline PoE is supported on the Hitachi ApresiaLight 216T-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 216T-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 216T-PoE Switch and verify that the PDs successfully booted.
- Power cycle the Hitachi ApresiaLight 216T-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 216T-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 216T-PoE Switch. The power listed as measured by the Hitachi ApresiaLight 216T-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	5062
Avaya 1608 IP Telephone	4086
Avaya 1616 IP Telephone	5707
Avaya 4601SW IP Telephone	3436
Avaya 4602SW IP Telephone	3455
Avaya 4610SW IP Telephone	3522
Avaya 4621SW IP Telephone	5156
Avaya 4622SW IP Telephone	5031
Avaya 4625SW IP Telephone	8028
Avaya 9610 IP Telephone	4481
Avaya 9620 IP Telephone	4177
Avaya 9630 IP Telephone	5105
Avaya 9630 IP Telephone with SBM24 Button Module	4877
Avaya 9640 IP Telephone	4257
Avaya 9650 IP Telephone	4790
Avaya Quick Edition 4610SW IP Telephone	2186
Avaya Quick Edition 4621SW IP Telephone	5015
Avaya G11 PSTN Gateway	4460

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 216T-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 216T-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 State** is **enabled** at the port level by entering the command, **show poe ports all**.

```
[adpro]# show poe ports all

Command: show poe ports all

 Port   Class    Port        Actual       Limit
        State    State       Power(mW)    Power(mW)
  +-------------------------------------------------+
   01     OFF     enabled        0         16000
   02     OFF     enabled        0         16000
   03     OFF     enabled        0         16000
   04     OFF     enabled        0         16000
   05     OFF     enabled        0         16000
   06     OFF     enabled        0         16000
   07     OFF     enabled        0         16000
   08     OFF     enabled        0         16000
   09     OFF     enabled     8028         16000
   10     OFF     enabled     5156         16000
   11     OFF     enabled     5062         16000
   12     OFF     enabled     4877         16000
   13     OFF     enabled     4257         16000
   14     OFF     enabled     5105         16000
   15     OFF     enabled        0         16000
   16     OFF     enabled        0         16000
```

- 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.

```
list registered-ip-stations

                         REGISTERED IP STATIONS

Station Ext/   Set    Product   Prod   Station          Net Gatekeeper     TCP
 Orig Port     Type   ID        Rel    IP Address       Rgn IP Address     Skt
50000          9620   IP_Phone  1.500  192.168.200.116  1   10.1.1.1       y
50001          9620   IP_Phone  2.800  192.168.200.115  1   10.1.1.1       y
50004          9630   IP_Phone  1.500  10.33.1.105      1   10.1.1.1       n
51003          4620   IP_Phone  1.500  10.33.1.104      1   10.1.1.1       n




Command successfully completed
Command:
ESC-x=Cancel Esc-e=Submit Esc-p=Prev Pg Esc-n=Next Pg Esc-h=Help Esc-r=Refresh
```

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 216T-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 216T-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/*