



## **Avaya Solution & Interoperability Test Lab**

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# **Application Notes for Extreme Networks 8500-G48T-e module for Power over Ethernet Support for Avaya IP Telephones – Issue 1.0**

### **Abstract**

These Application Notes describe the procedures for configuring the Extreme Networks 8500-G48T-e module to provide inline Power over Ethernet (PoE) to Avaya 1600//9600 Series IP Telephones registered to Avaya Aura® Communication Manager and Avaya Aura® Session Manager.

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 telephone. In the compliance-tested configuration described in these Application Notes, the Extreme Networks 8500-G48T-e module with 8800 S-POE service module is configured to supply inline PoE to Avaya PDs. No Extreme Networks specific configuration is required on Avaya Aura® Communication Manager or Avaya Aura® Session Manager to support this solution.

The 8500-G48T-e is a single slot module offering 10/100/1000 Mbps Ethernet connectivity for the BlackDiamond (BD) 8800 series Ethernet switch. The 8800 S-POE service module is installed to provide PoE capability.

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

- Avaya 1603 IP Telephone with PoE Splitter
- Avaya 1603SW IP Telephone with PoE Splitter
- Avaya 1608 IP Telephone
- Avaya 1616 IP Telephone with/without BM32 Button Module
- Avaya 9601 IP Telephone
- Avaya 9608 IP Telephone
- Avaya 9611G IP Telephone
- Avaya 9620L IP Telephone
- Avaya 9620C IP Telephone
- Avaya 9621G IP Telephone
- Avaya 9630G IP Telephone
- Avaya 9640G IP Telephone
- Avaya 9641G IP Telephone with/without SMB24 Button Module
- Avaya 9650C IP Telephone
- Avaya 9670C IP Telephone

## 2. General Test Approach and Test Results

The general test approach was to:

- Connect the Avaya IP Telephones to ports on the 8500-G48T-e module and verify that they successfully boot.
- Verify completion of a test call.
- Power-cycle the 8500-G48T-e module and verify successful boot operation and registration of the devices

### 2.1. Interoperability Compliance Testing

The interoperability testing focused on verifying PoE interoperability between the Extreme Networks 8500-G48T-e module, Avaya IP Telephones.

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

- Successful boot operation (PoE).
- For SIP Avaya IP Telephones, successful registration with Avaya Aura® Session Manager.
- For H.323 Avaya IP Telephones, successful registration with Avaya Aura® Communication Manager.
- Completion of a test call.
- Connecting a mix of Avaya IP Telephones to the switch, power cycling the switch and verifying successful boot operation and registration of the devices to with Avaya Aura® Session Manager and Avaya Aura® Communication Manager.

### 2.2. Test Results

All Power over Ethernet test cases completed successfully. The 8500-G48T-e module successfully provided inline power to the different Avaya IP telephones. During compliance testing, Avaya IP Telephones successfully obtained power and transferred data over standard Ethernet cables from the Extreme Networks 8500-G48T-e module.

**Table 1** below lists the IEEE 802.3af class, allocated power, and measured power of the Avaya IP Telephones when connected to the 8500-G48T-e module. The power listed as measured by the Extreme Networks BD8810 switch is for an idle phone. Cable length and impedance affects power usage, so the measurements listed here may vary based on the cable used.

Avaya Powered Device	802.3af Class	Volts	Measured Power (W) (Idle)
Avaya 1603 IP Telephone with PoE Splitter	2	48.1	4.0
Avaya 1603SW IP Telephone with PoE Splitter	2	48.1	4.0
Avaya 1608 IP Telephone	2	48.1	4.0
Avaya 1616 IP Telephone	2	48.1	2.8
Avaya 1616 IP Telephone with BM32 Button Module	2	48.1	3.4
Avaya 9601 IP Telephone	1	48.1	1.9
Avaya 9608 IP Telephone	1	48.1	2.5
Avaya 9611G IP Telephone	1	48.1	2.5
Avaya 9620L IP Telephone	1	48.1	2.1
Avaya 9620C IP Telephone	2	48.1	4.0
Avaya 9621G IP Telephone	2	48.1	2.6
Avaya 9630G IP Telephone	2	48.1	3.8
Avaya 9640G IP Telephone	2	48.1	3.9
Avaya 9641G IP Telephone	2	48.1	2.7
Avaya 9641G IP Telephone with SMB24 Button Module	2	48.1	3.2
Avaya 9650C IP Telephone	2	48.1	4.0
Avaya 9670C IP Telephone	2	48.1	4.8

**Table 2** below summarizes the IEEE 802.3af classes.

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

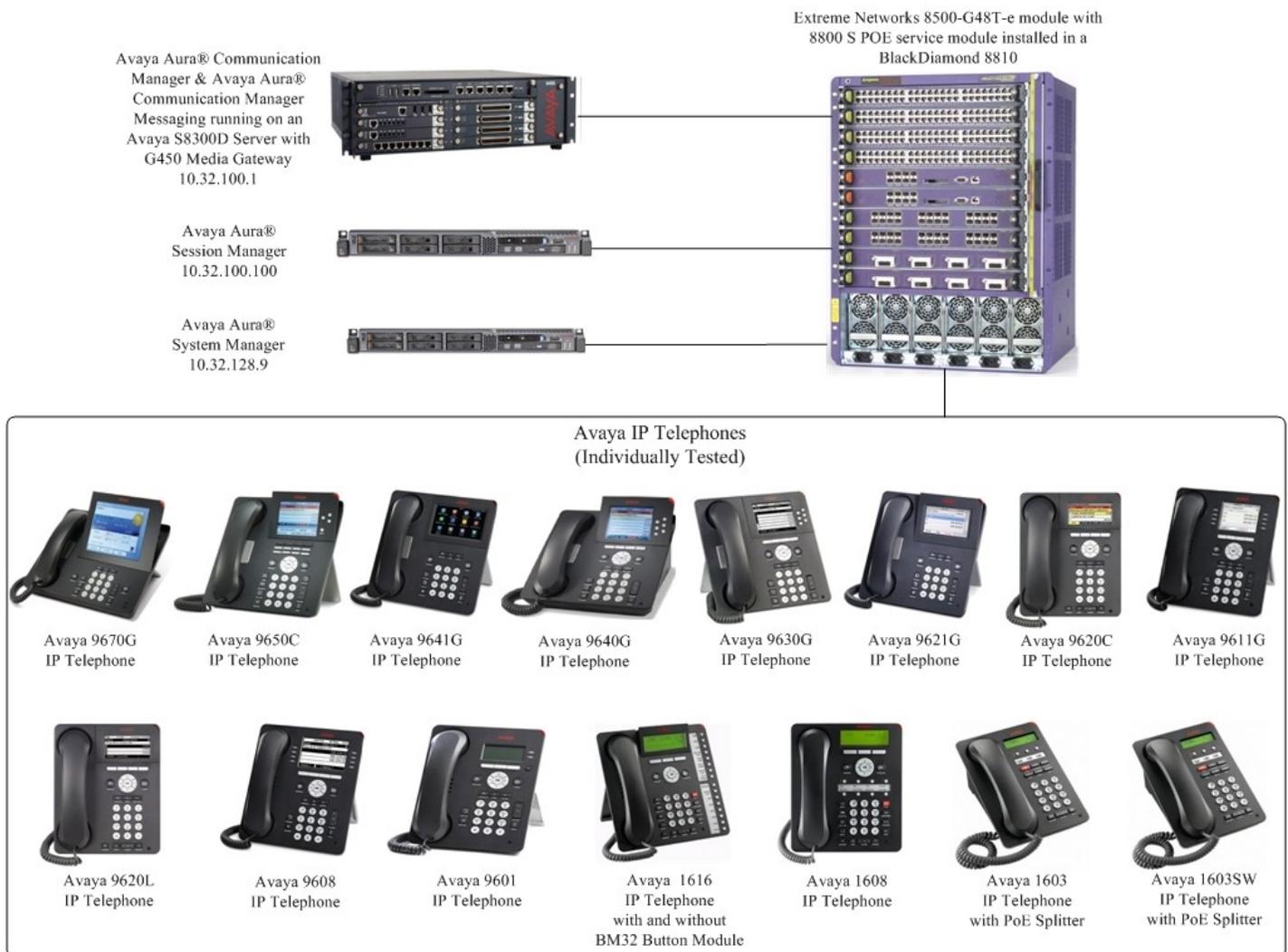
## 2.3. Support

For technical support on Extreme Networks products, consult the support pages at <http://www.extremenetworks.com> or contact the Extreme Networks at: 800-998-2408.

## 3. Reference Configuration

**Figure 1** illustrates the configuration used in these Application Notes. All Avaya 16xx and 96xx series telephones are registered with Avaya Aura® Communication Manager (H.323) or Avaya Aura® Session Manager (SIP)

**Figure 1** is for illustration purpose only and not all Avaya IP Telephones were simultaneously powered on during testing.



**Figure 1: PoE sample network configuration**

## 4. Equipment and Software Validated

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

Equipment	Software/Firmware
Avaya S8300D Server running Avaya Aura® Communication Manager	Avaya Aura® Communication Manager 6.1
Avaya G450 Media Gateway MGP MM712 DCP Media Module	30.13.2 HW9
Avaya S8800 Server	Avaya Aura® Session Manager (6.1)
Avaya S8800 Server	Avaya Aura® System Manager (6.1)
Avaya 1603 IP Telephone with PoE Splitter	Avaya one-X™ Deskphone Value Edition H.323 (1.3)
Avaya 1603SW IP Telephone with PoE Splitter	Avaya one-X™ Deskphone Value Edition H.323 (1.3)
Avaya 1608 IP Telephone	Avaya one-X™ Deskphone Value Edition H.323 (1.3)
Avaya 1616 IP Telephone with/without BM32 Button Module	Avaya one-X™ Deskphone Value Edition 1.3 (H.323)
Avaya 9601 IP Telephone	Avaya one-X® Deskphone SIP (6.1)
Avaya 9608 IP Telephone	Avaya one-X® Deskphone SIP (6.1)
Avaya 9611G IP Telephone	Avaya one-X® Deskphone SIP (6.1)
Avaya 9620L IP Telephone	Avaya one-X™ Deskphone Edition H.323 (3.1.1)
Avaya 9620C IP Telephone	Avaya one-X™ Deskphone Edition H.323 (3.1.1)
Avaya 9621G IP Telephone	Avaya one-X® Deskphone SIP (6.1)
Avaya 9630G IP Telephone	Avaya one-X® Deskphone SIP (2.6)
Avaya 9640G IP Telephone	Avaya one-X® Deskphone SIP (2.6)
Avaya 9641G IP Telephone with/without SMB24 Button Module	Avaya one-X® Deskphone SIP (6.1)
Avaya 9650C IP Telephone	Avaya one-X® Deskphone SIP (2.6)
Avaya 9670C IP Telephone	Avaya one-X® Deskphone SIP (2.6)
Extreme Networks BlackDiamond 8500 G48T-e 48-port 10/100/1000BASE-T RJ-45 with optional PoE	ExtremeXOS 12.1.5.6
BlackDiamond 8810	ExtremeXOS 12.1.5.6

## 5. Configure Avaya Telephony Equipment

There is no configuration requirement on Avaya Aura® Communication Manager, Avaya Aura® Session Manager or Avaya IP telephones to use the 8500 G48T-e 48 PoE module. It is assumed that all Aura® Telephony components, appropriate licenses and authentication files have been configured already, e.g., trunks, dial plans, etc, and will not be covered in this document. For detailed information on the installation, maintenance, and configuration of Communication Manager and Session Manager, please reference [1], [2], and [3].

## 6. Configure BlackDiamond 8810 Chassis

This section shows the necessary steps in configuring the 8500-G48T-e module installed in the BlackDiamond 8810 chassis as shown in the **Figure 1**.

Install the BD 8800 S-POE power module onto the 8500-G48T-e. Insert the 8500-G48T-e back into the BD 8810 chassis. In-line power is enabled by default; the configuration of the VLANs and ports required to support the environment in **Figure 1** are shown below:

1. Log into the Extreme BlackDiamond 8810 Switch.

Connect to the Extreme BlackDiamond 8810. Log in using the appropriate Login ID and Password.

Login:

Password:

BD-8810.1#

2. If any of the ports are configured with VLAN information use the **configure vlan <VLAN NAME> delete ports <port>** command to delete it.

BD-8810.2# **configure vlan <VLAN NAME> delete ports <port>**

3. Create VLAN 100 and add ports to the VLAN.

BD-8810.3# **create vlan vlan100**

BD-8810.4# **configure vlan100 ipaddress 10.32.100.254/24**

BD-8810.5# **enable ipforwarding vlan100**

BD-8810.6# **configure vlan100 add ports all**

## 7. Verification Steps

Inline Power over Ethernet (PoE) is supported on the Extreme Networks 8500-G48T-e module. By default, PoE support is enabled on the system and on all ports.

- Use the “show inline-power” command to verify available power available on the switch.

```
BD-8810.5 # show inline-power

                Inline Power System Information
Configured      : Enabled
System Power Surplus      : 1164 Watts available for budgeting
Redundant Power Surplus   : 600 Watts available for budgeting to maintain N+1
Power Usage Threshold    : 70 percent (per slot)
Disconnect Precedence    : deny-port

Slot  Inline-Power  Firmware Status  Budgeted      Measured
7     Enabled      Operational    Power (Watts) Power (Watts)  Legacy
                    50 W              0 W          Disabled
```

- Use the “show inline-power stats slot <slot#>” command to display the PoE status of the slot.

```
BD-8810.6 # show inline-power stat slot 7

Inline-Power Slot Statistics
Slot: 7
Firmware status      : Operational
Firmware revision    : 605b2

Total ports powered      : 0
Total ports awaiting power : 48
Total ports faulted     : 0
Total ports disabled    : 0
```

- Use the “show inline-power configuration port <port#>” command to verify available power available on the port.

```
BD-8810.7 # show inline-power configuration ports 7:4
```

Port	Config	Operator Limit	Priority	Label
7:4	Enabled	15400 mW	Low	

- Use the “show inline-power info detail port <port #>” command to display the PoE status of the individual port.

```
* BD-8810.10 # show inline-power info detail ports 7:4
```

```
Port 7:4
```

```
Configured Admin State: enabled
Inline Power State      : delivering
MIB Detect Status      : delivering
Label                   :
Operator Limit          : 15400 milliwatts
PD Class                 : class2
Max Allowed Power       : 15.400 W
Measured Power          : 3.500 W
Line Voltage            : 48.1 Volts
Current                 : 74 mA
Fault Status            : None
Detailed Status         : valid resistor detected, 802.3a
Priority                 : low
```

## 8. Conclusion

These Application Notes describe the steps for configuring the Extreme Networks 8500-G48T-e module to provide inline Power over Ethernet (PoE) to the Avaya 9600 and 1600 Series IP Telephones.

## 9. Additional References

Product documentation for Avaya products may be found at <http://support.avaya.com>

- [1] *Installing and Configuring Avaya Aura® Communication Manager*, Doc ID 03-603558, Release 6.0.1 December 2010
- [2] *Administering Avaya Aura™ Communication Manager*, Release 6.0, Doc ID 03-300509 June 2010
- [3] *Installing and Configuring Avaya Aura® Session Manager*, Doc ID 03-603473, Release 6.1 January 2011
- [4] *Administering Avaya Aura® Session Manager*, Doc ID 03-603324, Release 6.1 November 2010
- [5] *Administering Avaya Aura® System Manager*, Release 6.1 November 2010
- [6] *Installing and Upgrading Avaya Aura® System Manager*, Release 6.1 November 2010
- [7] *Avaya one-X™ Deskphone SIP Administrator Guide*, Release 6, Doc ID 16-603838 December 2010
- [8] *Avaya one-X™ Deskphone H.323 Administrator Guide Release*, Doc ID 6.0 16-300698 August 2010
- [9] *Avaya one-X™ Deskphone Edition for 9600 Series IP Telephones Administrator Guide*, Doc ID 16-300698 Issue 7 November 2009
- [10] *Avaya one-X™ Deskphone SIP for 9600 Series IP Telephones Administrator Guide*, Release 2.6, Doc ID 16-601944
- [11] *Avaya 1600 Series IP Deskphones Administrator Guide*, Release 1.3.x

Product documentation for Extreme Networks products may be found at <http://www.extremenetworks.com>

- [12] *BlackDiamond 8800 Series Switches Hardware Installation Guide*, Part number:100284-00
- [13] *ExtremeXOS® Command Reference Guide*, Part number: 100376-00

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