



Configuring the Avaya ERS 2550T-PWR Switch for Power Over Ethernet with Avaya 96x0 and 16xx Series IP Telephones Registered to Avaya Aura™ Session Manager and Avaya Aura™ Communication Manager – Issue 1.0

Abstract

These Application Notes describe the Power over Ethernet (PoE) configuration of the Avaya 96x0 and 16xx Series IP Telephones registered to Avaya Aura™ Session Manager and Avaya Aura™ Communication Manager with an Avaya ERS 2550T-PWR Switch (formerly known as Nortel ERS 2550T-PWR Switch).

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. The Avaya ERS 2550T-PWR switch provides 50 ports (the first 24 ports are PoE capable while ports 25-50 are not).

The Avaya product configurations addressed by these Application Notes are shown in **Figure 1**. The following Avaya powered devices were covered:

- Avaya one-X Deskphone Edition 9620L IP Telephone
- Avaya one-X Deskphone Edition 9620C IP Telephone
- Avaya one-X Deskphone Edition 9630 IP Telephone
- Avaya one-X Deskphone Edition 9630G IP Telephone
- Avaya one-X Deskphone Edition 9640 IP Telephone
- Avaya one-X Deskphone Edition 9640G IP Telephone
- Avaya one-X Deskphone Edition 9650 IP Telephone
- Avaya one-X Deskphone Edition 9650C IP Telephone
- Avaya one-X Deskphone Edition 9670G IP Telephone
- Avaya one-X Deskphone Value Edition 1603 IP Telephone
- Avaya one-X Deskphone Value Edition 1603SW IP Telephone
- Avaya one-X Deskphone Value Edition 1608 IP Telephone
- Avaya one-X Deskphone Value Edition 1616 IP Telephone

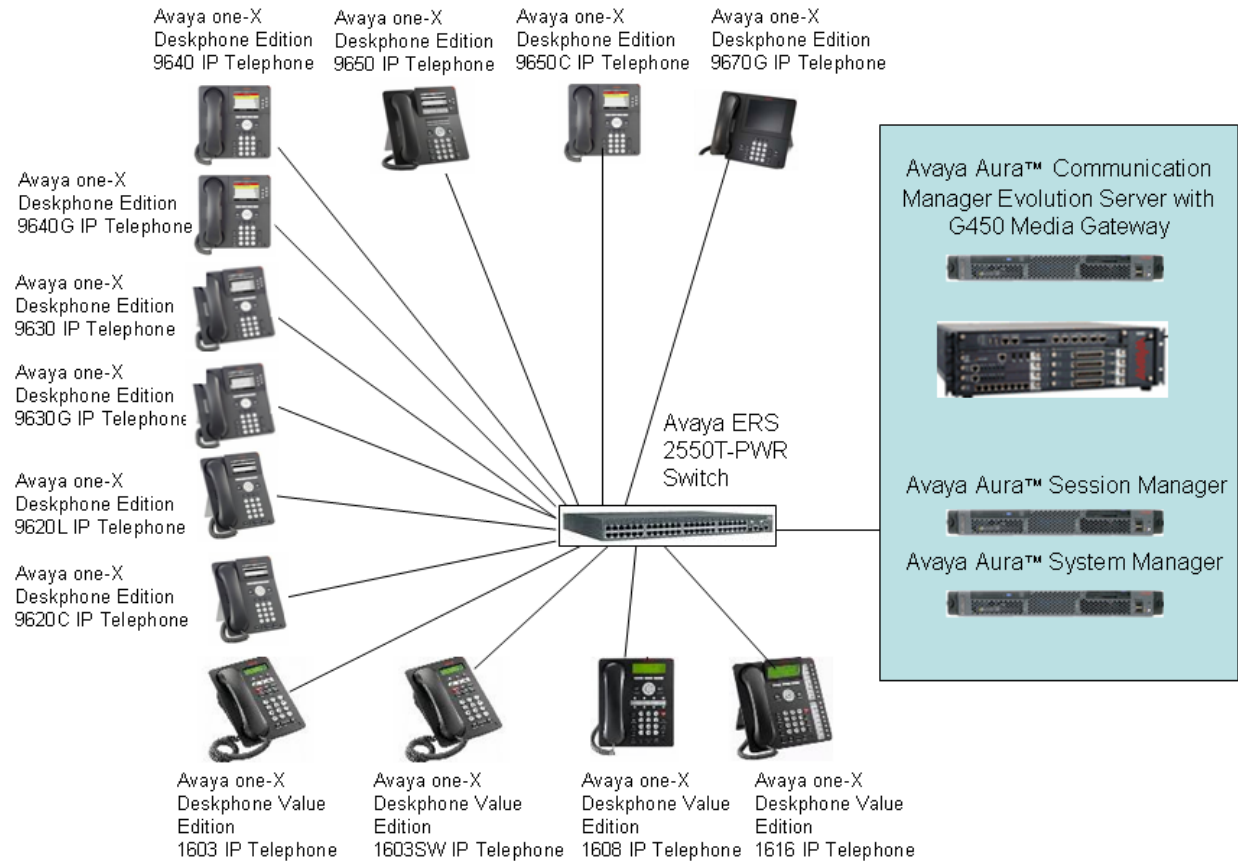


Figure 1: PoE Configuration

2. Equipment and Software Validated

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

DEVICE DESCRIPTION	VERSION TESTED
Avaya S8800 Server	Avaya Aura™ Communication Manager 6.0 (R016x.00.0.345.0)
Avaya G450 Media Gateway	30.13.2
Avaya S8800 Server	Avaya Aura™ Session Manager 6.0
Avaya S8800 Server	Avaya Aura™ System Manager 6.0
Avaya one-X Deskphone Edition 9620L IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9620C IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9630 IP Telephone	V3.1.1 (ha96xxua3_11.bin)
Avaya one-X Deskphone Edition 9630G IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9640 IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9640G IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9650 IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9650C IP Telephone	V2.6 (SIP96xx_2_6_0_0.bin)
Avaya one-X Deskphone Edition 9670G IP Telephone	V3.1.1(ha9670ua3_11.bin)
Avaya one-X Deskphone Value Edition 1603 IP Telephone	V1.3 (ha1603ua1_3000.bin)
Avaya one-X Deskphone Value Edition 1603SW IP Telephone	V1.3 (ha1603ua1_3000.bin)
Avaya one-X Deskphone Value Edition 1608 IP Telephone	V1.3 (ha1608ua1_3000.bin)
Avaya one-X Deskphone Value Edition 1616 IP Telephone	V1.3 (ha1616ua1_3000.bin)
Avaya ERS 2550T-PWR	SW: V4.3.0.004 FW: 1.0.0.14 HW:01 PoE Module FW: V4.0.0

3. Configuration of the Avaya Endpoints

There is no configuration requirement on the Avaya endpoints to use PoE. For details on configuring Avaya Aura™ Communication Manager Servers, Gateways, or Endpoints, consult the Administrator Guide for Avaya Aura™ Communication Manager [1].

4. Configuration of the Avaya ERS 2550T-PWR Switch

By default, the switch will send a trap when the overall power consumption reaches 80% or above of the overall available power on a per slot basis. The threshold can be changed from 1 to 99% by typing in the following commands:

```
2550T-PWR#conf t
Enter configuration commands, one per line. End with CNTL/Z.
2550T-PWR(config)#poe poe-power-usage-threshold ?
<1-99> Power usage threshold in percentage
unit Set power usage threshold of an unit in stack
```

If notification messages are not needed, issue the command “no snmp-server notification-control <description or SNMP notification OID>”

By default, the switch PoE power detection mode is set to 802.3af and legacy “802dot3af_and_legacy”. This was the setting used during testing. The switch PoE power detection mode can be changed with the following commands:

```
2550T-PWR#conf t
2550T-PWR(config)#poe poe-pd-detect-type ?
802dot3af Set PD detection mode in 802.3af
802dot3af_and_legacy Set PD detection mode in 802.3af and legacy
unit Set PD detection mode of an unit in stack
```

PoE is enabled by default in the Avaya ERS 2550T-PWR switch. If the configuration has changed, PoE can be enabled on a port by using the command “no poe-shutdown port <port #>” at the interface configuration level. The example below enables PoE on port 2.

```
2550T-PWR(config)#interface fastEthernet all
2550T-PWR(config-if)#no poe-shutdown port 2
2550T-PWR(config-if)#
```

Alternatively, the following commands could have been used to achieve the behavior described above.

```
2550T-PWR(config)#interface fastEthernet 2
2550T-PWR(config-if)#no poe-shutdown
2550T-PWR(config-if)#
```

Although ports 25-50 do not support PoE, the command “poe poe-shutdown port <port #>” can be used to disable PoE on ports 1-24 when a device attached to these ports does not use PoE. The example below disables PoE on port 2.

```
2550T-PWR(config)#interface fastEthernet all
2550T-PWR(config-if)#poe poe-shutdown port 2
2550T-PWR(config-if)#
```

Alternatively, the following commands could have been used to achieve the behavior described above.

```
2550T-PWR(config)#interface fastEthernet 2
2550T-PWR(config-if)#poe poe-shutdown
2550T-PWR(config-if)#
```

By default, the PoE priority level is set to low on all ports. It is recommended to change this setting to either high or critical for all VoIP ports. The command “poe poe-priority port <port #> <critical, high, low>” can be used to set PoE priority on a port when a PoE device attached to it. The example below sets the PoE priority on port 2 to high.

```
2550T-PWR(config)#interface fastEthernet all
2550T-PWR(config-if)#poe poe-priority port 2 high
2550T-PWR(config-if)#
```

Alternatively, the following commands could have been used to achieve the behavior described above.

```
2550T-PWR(config)#interface fastEthernet 2
2550T-PWR(config-if)#poe poe-priority high
2550T-PWR(config-if)#
```

Also, by default PoE power limit is set to 16W maximum per port. The value can be changed from 3 to 16 watts using the command “poe poe-limit port <port #> <3-16>”. The example below sets the PoE power limit to 16.

```
2550T-PWR(config)#interface fastEthernet all
2550T-PWR(config-if)#poe poe-limit port 2 16
2550T-PWR(config-if)#
```

Alternatively, the following commands could have been used to achieve the behavior described above.

```
2550T-PWR(config)#interface fastEthernet 2
2550T-PWR(config-if)#poe poe-limit 16
2550T-PWR(config-if)#
```

5. Observations

The following table shows power classification and measured power reported by the **Avaya ERS 2550T-PWR** switch. IP Telephones were connected directly to the switch. Cables of different lengths were used. Cable length and impedance affects power usage, so the measurements listed here may vary based on the cable used. The power measurements reported here are only for reference purposes.

Avaya Powered Device	802.3af Class	Measured Power While Idle (W)
Avaya one-X Deskphone Edition 9620L IP Telephone	Class 1	2.0
Avaya one-X Deskphone Edition 9620C IP Telephone	Class 2	4.0
Avaya one-X Deskphone Edition 9630 IP Telephone	Class 2	4.8
Avaya one-X Deskphone Edition 9630G IP Telephone	Class 2	4.1
Avaya one-X Deskphone Edition 9640 IP Telephone	Class 2	4.0
Avaya one-X Deskphone Edition 9640G IP Telephone	Class 2	3.1
Avaya one-X Deskphone Edition 9650 IP Telephone	Class 2	4.2
Avaya one-X Deskphone Edition 9650C IP Telephone	Class 2	4.2
Avaya one-X Deskphone Edition 9670G IP Telephone	Class 2	4.3
Avaya one-X Deskphone Value Edition 1603 IP Telephone	Class 2	4.6
Avaya one-X Deskphone Value Edition 1603SW IP Telephone	Class 2	4.4
Avaya one-X Deskphone Value Edition 1608 IP Telephone	Class 2	4.0
Avaya one-X Deskphone Value Edition 1616 IP Telephone	Class 2	3.2

6. Verification Steps

When the IP Telephones are properly powered, the IP Telephones should register and receive dial tone when they are off-hook. If the IP Telephones are not receiving power, check the cable used and check the port configuration to ensure PoE was enabled on the port.

The “show poe-main-status” command can be used to show the global PoE switch status.

```
2550T-PWR#show poe-main-status
PoE Main Status - Stand-alone
-----
Available DTE Power      : 168 Watts
DTE Power Status         : Normal
DTE Power Consumption    : 52 Watts
DTE Power Usage Threshold : 80 %
Traps Control Status     : Enable
PD Detect Type           : 802.3af and Legacy
Power Source Present     : AC Only
AC Power Status          : Present
DC Power Status          : Not Present
2550T-PWR#
```

The “show poe-port-status” or “show poe-port-status <port | unit/port>” commands can be used to show the port PoE status. The example below shows this information for port 2.

```
2550T-PWR#show poe-port-status 2
      Admin      Current      Limit
Port  Status    Status      Classification (Watts) Priority
----  -
2     Enable    Delivering Power      2          16      High
2550T-PWR#
```

The “show poe-power-measurement” or “show poe-power-measurement <port | unit/port>” commands can be used to show the power used on a PoE port. The example below shows this information for port 2.

```
2550T-PWR#show poe-power-measurement 2
Port Volt(V) Current(mA) Power(Watt)
----  -
2     50.2    84          4.200
2550T-PWR#
```

7. Conclusion

These Application Notes described the configuration of the Avaya 96x0 and 16xx Series IP Telephones with Avaya ERS 2250T-PWR switch (formerly known as Nortel ERS 2550T-PWR switch). The Avaya ERS 2550T-PWR switch was able to provide PoE for the Avaya IP Telephones to work properly.

8. Additional References

The Avaya Unified Communications product documentation is available at <http://support.avaya.com>.

The Avaya ERS 2550T-PWR switch documentation is available at <http://support.nortel.com/go/main.jsp?cscat=OVERVIEW&poid=17981>

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