

Example: Configuring VoIP on an EX Series Switch Without Including LLDP-MED Support

You can configure voice over IP (VoIP) on an EX Series switch to support IP telephones. The Link Layer Discovery Protocol–Media Endpoint Discovery (LLDP-MED) protocol is sometimes used with IP phones to forward VoIP parameters from the switch to the phone. Not all IP phones support LLDP-MED, however.

This example describes how to configure VoIP on an EX Series switch without LLDP-MED and without 802.1X:

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Requirements

This example uses the following hardware and software components:

- JUNOS Release 9.1 or later for EX Series switches.
- One EX4200 switch acting as an authenticator port access entity (PAE). The interfaces on the authenticator PAE form a control gate that blocks all traffic to and from supplicants until they are authenticated.
- A IP phone that does not support LLDP-MED.

Before you configure VoIP, be sure you have:

- Performed basic bridging and VLAN configuration on the switch. See Example: Setting Up Basic Bridging and a VLAN for an EX Series Switch.
- Configured the IP phone as a member of the voice VLAN.
- (Optional) Configured interface `ge-0/0/2` for Power over Ethernet (PoE). The PoE configuration is not necessary if the VoIP supplicant is using a power adapter. See Configuring PoE (CLI Procedure).

Overview

Instead of using a regular telephone, you connect an IP telephone directly to the switch. An IP phone has all the hardware and software needed to handle VoIP. You also can power an IP telephone by connecting it to one of the Power over Ethernet (PoE) interfaces on the switch.

To configure VoIP on an EX Series switch to support an IP phone that does not support LLDP-MED, add the port to which you want to connect the IP phone as a member of the voice VLAN and configure the data VLAN as the native VLAN on the EX Series switch. This configuration ensures that the voice traffic and data traffic do not affect each other.

In this example, the interface ge-0/0/2 on the EX4200 switch is connected to a non-LLDP-MED IP phone.



NOTE: The implementation of a voice VLAN on an IP telephone is vendor-specific. Consult the documentation that came with your IP telephone for instructions on configuring a voice VLAN. For example, on an Avaya phone, you can ensure that the phone gets the correct VoIP VLAN ID even in the absence of LLDP-MED by enabling DHCP option 176.

Configuration

To configure VoIP without LLDP-MED or 802.1X authentication:

CLI Quick Configuration

To quickly configure VoIP, copy the following commands and paste them into the switch terminal window:

```
[edit]
set vlans data-vlan vlan-id 77
set vlans voice-vlan vlan-id 99
set vlans data-vlan interface ge-0/0/2.0
set ethernet-switching-options voip interface ge-0/0/2.0 vlan voice-vlan
set ethernet-switching-options voip interface ge-0/0/2.0 forwarding-class
assured-forwarding
set interfaces ge-0/0/2 unit 0 family ethernet-switching vlan members voice-vlan
set interfaces ge-0/0/2 unit 0 family ethernet-switching native-vlan-id data-vlan
```

Step-by-Step Procedure

Configure VoIP:

1. Configure the VLANs for data and voice:

```
[edit vlans]
user@switch# set data-vlan vlan-id 77
user@switch# set voice-vlan vlan-id 99
```

2. Configure the VLAN data-vlan on the interface:

```
[edit vlans]
user@switch# set data-vlan interface ge-0/0/2.0
```

3. Configure VoIP on the interface and specify the assured-forwarding forwarding class to provide the most dependable class of service:

```
[edit ethernet-switching-options]
user@switch# set voip interface ge-0/0/2.0 vlan voice-vlan
user@switch# set voip interface ge-0/0/2.0 forwarding-class
assured-forwarding
```

4. Add the interface as a member of the voice VLAN:

```
[edit interfaces]
```

```
set ge-0/0/2 unit 0 family ethernet-switching vlan members voice-vlan
```

5. Configure data-vlan as native to this trunk interface:

```
[edit interfaces]
user@switch# set ge-0/0/2 unit 0 family ethernet-switching native-vlan-id
data-vlan
```

Results Display the results of the configuration:

```
[edit]
user@switch# show configuration
interfaces {
  ge-0/0/2 {
    unit 0 {
      family ethernet-switching {
        port-mode trunk;
        vlan {
          members voice-vlan;
        }
        native-vlan-id data-vlan;
      }
    }
  }
}
vpls {
  data-vlan {
    vlan-id 77;
    interface {
      ge-0/0/2.0;
    }
  }
  voice-vlan {
    vlan-id 99;
  }
}
ethernet-switching options {
  voip {
    interface ge-0/0/2.0 {
      vlan voice-vlan;
      forwarding-class assured-forwarding;
    }
  }
}
```

Verification

To confirm that the configuration is working properly, perform the following task:

- Verifying the VLAN Association With the Interface on page 4

Verifying the VLAN Association With the Interface

Purpose Display the interface state and VLAN membership.

Action user@switch> **show ethernet-switching interfaces**
Ethernet-switching table: 0 entries, 0 learned

```
user@switch> show ethernet-switching interfaces
Interface  State  VLAN members  Blocking
ge-0/0/0.0 down  default       unblocked
ge-0/0/1.0 down  employee-vlan unblocked
ge-0/0/5.0 down  employee-vlan unblocked
ge-0/0/3.0 down  employee-vlan unblocked
ge-0/0/8.0 down  employee-vlan unblocked
ge-0/0/10.0 down default       unblocked
ge-0/0/11.0 down employee-vlan unblocked
ge-0/0/23.0 down default       unblocked
ge-0/0/2.0 up    voice-vlan    unblocked
           data-vlan    unblocked
```

Meaning The field VLAN members shows that the ge-0/0/2.0 interface supports both the data-vlan VLAN and voice-vlan VLAN. The State field shows that the interface is up.

- Related Topics**
- Example: Setting Up VoIP with 802.1X and LLDP-MED on an EX Series Switch
 - Example: Configuring VoIP on an EX Series Switch Without Including 802.1X Authentication
 - Understanding 802.1X and VoIP on EX Series Switches
 - Understanding 802.1X and LLDP and LLDP-MED on EX Series Switches

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