

## Example: Setting Up Q-in-Q Tunneling on EX-series Switches

Service providers can use Q-in-Q tunneling to transparently pass Layer 2 VLAN traffic from a customer site, through the service provider network, to another customer site without removing or changing the customer VLAN tags or class-of-service (CoS) settings. You can configure Q-in-Q tunneling on EX-series switches.

This example describes how to set up Q-in-Q:

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### Requirements

This example requires one EX-series switch with JUNOS Release 9.3 or later for EX-series switches.

Before you begin setting up Q-in-Q tunneling, make sure you have created and configured the necessary customer VLANs. See [Configuring VLANs for EX-series Switches \(CLI Procedure\)](#) or [Configuring VLANs for EX-series Switches \(J-Web Procedure\)](#).

### Overview and Topology

In this service provider network, there are multiple customer VLANs mapped to one service VLAN.

Table 1 on page 1 lists the settings for the example topology.

**Table 1: Components of the Topology for Setting Up Q-in-Q Tunneling**

Interface	Description
ge-0/0/11.0	Tagged S-VLAN trunk port
ge-0/0/12.0	Untagged customer-facing access port
ge-0/0/13.0	Untagged customer-facing access port
ge-0/0/14.0	Tagged S-VLAN trunk port

### Configuration

**CLI Quick Configuration** To quickly create and configure Q-in-Q tunneling, copy the following commands and paste them into the switch terminal window:

```
[edit]
set vlans qinqvlan vlan-id 4001
set vlans qinqvlan dot1q-tunneling customer-vlans 1-100
```

```

set vlans qinqvlan dot1q-tunneling customer-vlans 201-300
set interfaces ge-0/0/11 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/11 unit 0 family ethernet-switching vlan members 4001
set interfaces ge-0/0/12 unit 0 family ethernet-switching port-mode access
set interfaces ge-0/0/12 unit 0 family ethernet-switching vlan members 4001
set interfaces ge-0/0/13 unit 0 family ethernet-switching port-mode access
set interfaces ge-0/0/13 unit 0 family ethernet-switching vlan members 4001
set interfaces ge-0/0/14 unit 0 family ethernet-switching port-mode trunk
set interfaces ge-0/0/14 unit 0 family ethernet-switching vlan members 4001
set ethernet-switching-options dot1q-tunneling ether-type 0x9100

```

**Step-by-Step Procedure** To configure Q-in-Q tunneling:

1. Set the VLAN ID for the S-VLAN:

```

[edit vlans]
user@switch# set qinqvlan vlan-id 4001

```

2. Enable Q-in-Q tunneling and specify the customer VLAN ranges:

```

[edit vlans]
user@switch# set qinqvlan dot1q-tunneling customer-vlans 1-100
user@switch# set qinqvlan dot1q-tunneling customer-vlans 201-300

```

3. Set the port mode and VLAN information for the interfaces:

```

[edit interfaces]
user@switch# set ge-0/0/11 unit 0 family ethernet-switching port-mode trunk
user@switch# set ge-0/0/11 unit 0 family ethernet-switching vlan members 4001
user@switch# set ge-0/0/12 unit 0 family ethernet-switching port-mode access
user@switch# set ge-0/0/12 unit 0 family ethernet-switching vlan members 4001
user@switch# set ge-0/0/13 unit 0 family ethernet-switching port-mode access
user@switch# set ge-0/0/13 unit 0 family ethernet-switching vlan members 4001
user@switch# set ge-0/0/14 unit 0 family ethernet-switching port-mode trunk
user@switch# set ge-0/0/14 unit 0 family ethernet-switching vlan members 4001

```

4. Set the Q-in-Q EtherType value:

```

[edit]
user@switch# set ethernet-switching-options dot1q-tunneling ether-type 0x9100

```

**Results** Check the results of the configuration:

```

user@switch> show configuration vlans qinqvlan
vlan-id 4001;

```

```
dot1q-tunneling {  
  customer-vlans [ 1-100 201-300 ];  
}
```

## Verification

To confirm that the configuration is working properly, perform these tasks:

- Verifying That Q-in-Q Tunneling Was Enabled on page 3

### Verifying That Q-in-Q Tunneling Was Enabled

**Purpose** Verify that Q-in-Q tunneling was properly enabled on the switch.

**Action** Use the show vlans command:

```
user@switch> show vlans qinqvlan extensive  
VLAN: qinqvlan, Created at: Thu Sep 18 07:17:53 2008  
802.1Q Tag: 4001, Internal index: 18, Admin State: Enabled, Origin: Static  
Dot1q Tunneling Status: Enabled  
Customer VLAN ranges:  
                1-100  
                201-300  
Protocol: Port Mode  
Number of interfaces: Tagged 2 (Active = 0), Untagged  4 (Active = 0)  
                    ge-0/0/11.0, tagged, trunk  
                    ge-0/0/14.0, tagged, trunk  
                    ge-0/0/12.0, untagged, access  
                    ge-0/0/13.0, untagged, access
```

**Meaning** The output indicates that Q-in-Q tunneling is enabled and that the VLAN is tagged and shows the associated customer VLANs.

**Related Topics** ■ Configuring Q-in-Q Tunneling (CLI Procedure)

