

Example: Configuring Shared Interfaces (Ethernet)

In this configuration example, two Protected System Domains (PSDs) share a single interface on a Flexible PIC Controller (FPC) that is owned by the Root System Domain (RSD).

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Requirements

This configuration example requires the following hardware and software components:

- JUNOS Release 9.4 or later
- JCS 1200 platform with Routing Engines in slots 5, 6, and 7
- T640 router with FPCs in slots 1 through 7
- Two Tunnel PICs—one installed on the FPC in slot 1 and the other installed on the FPC in slot 7
- One Gigabit Ethernet PIC installed on the FPC in slot 6

Overview

With this example configuration, Protected System Domain 5 (PSD5) and PSD6 can both transport packets using a single Gigabit Ethernet PIC owned by Root System Domain 3 (RSD3).

As illustrated in Figure 1 on page 1, RSD3 owns the physical interface (**ge-6/0/0**). PSD5 owns the logical interfaces **ge-6/0/0.0**, **ge-6/0/0.1**, and **ge-6/0/0.2**. A cross-connect using the tunnel interface **ut-1/0/0** transports packets between the logical interfaces configured on the PSD and the physical Gigabit Ethernet interface on RSD3. Similarly, PSD6 owns logical interface **ge-6/0/0.3** and uses **ut-7/0/0** to transport packets between **ge-6/0/0.3** and the physical interface on RSD3.

Configuration

First, configure the Routing Engines on the JCS 1200 platform using the management module command-line interface (CLI). Then, configure each T-series routing platform using the JUNOS CLI.

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JCS 1200 Configuration

Step-by-Step Procedure To configure the parameters required for the Routing Engines in the JCS chassis:

1. Log in to the JCS management module.
2. Assign the Routing Engines in slots 5 (primary) and 6 (backup) to RSD3 and PSD1. Assign the Routing Engine in slot 7 to RSD3 and PSD2.

```
system> baydata -b 05 -data "V01-JCS01-SD03-PSD01-REP05-REB06-PRDT640"
```

```
system> baydata -b 06 -data "V01-JCS01-SD03-PSD01-REP05-REB06-PRDT640"
```

```
system> baydata -b 07 -data "V01-JCS01-SD03-PSD02-REP07-REB00-PRDT640"
```

Results Display the results of the configuration:

```
system> baydata
```

Bay	Status	Definition
1	No blade present	
2	No blade present	
3	No blade present	
4	No blade present	
5	Supported	V01-JCS01-SD03-PSD01-REP05-REB06-PRDT640
6	Supported	V01-JCS01-SD03-PSD01-REP05-REB06-PRDT640
7	Supported	V01-JCS01-SD03-PSD02-REP07-REB00-PRDT640
8	No blade present	
9	No blade present	
10	No blade present	
11	No blade present	
12	No blade present	

RSD Configuration

Step-by-Step Procedure To configure the RSD:

1. Log in to the T640 router.
2. At the [edit chassis system-domains] hierarchy level of the JUNOS CLI, include the root-domain-id 3 statement to identify the RSD.
3. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd1 statement to create PSD1.
4. At the [edit chassis system-domains protected-system-domains psd1] hierarchy level:

- a. Include the **fpcs 1 fpcs 2 fpcs 3** statement to assign the FPCs in slots 1, 2, and 3 to PSD1.
 - b. Include the **control-system-id 1** statement to identify the JCS 1200 platform.
 - c. Include the **control-slot-numbers 5 control-slot-numbers 6** statement to assign the Routing Engines in slot 5 and slot 6 in the JCS chassis to PSD1.
 - d. Include the **control-plane-bandwidth-percent 50** statement to allocate 50 percent of the bandwidth on the JCS switch modules and T-series control boards (T-CBs) to PSD1.
5. At the **[edit chassis system-domains]** hierarchy level, include the **protected-system-domains psd2** statement to create PSD2.
 6. At the **[edit chassis system-domains protected-system-domains psd2]** hierarchy level:
 - a. Include the **fpcs 4 fpcs 5 fpcs 6 fpcs 7** statement to assign the FPCs in slots 4, 5, 6, and 7 to PSD2.
 - b. Include the **control-system-id 1** statement to identify the JCS 1200 platform.
 - c. Include the **control-slot-numbers 3 control-slot-numbers 4** statement to assign the Routing Engines in slot 3 and slot 4 in the JCS chassis to PSD2.
 - d. Include the **control-plane-bandwidth-percent 50** statement to allocate 50 percent of the bandwidth on the JCS switch modules and T-CBs to PSD2.
 7. At the **[edit interfaces]** hierarchy level, include the **ge-6/0/0** statement to configure the physical Gigabit Ethernet interface.
 8. At the **[edit interfaces ge-6/0/0]** hierarchy level:
 - Include the **vlan-tagging** statement to enable the receiving and forwarding of routed or bridged Ethernet frames with 802.1Q VLAN tags.
 - Include the **unit 0**, **unit 1**, **unit 2**, and **unit 3** statements to configure the logical interfaces.
 9. At the **[edit interfaces ge-6/0/0 unit n]** hierarchy level, include the following statements:
 - **interface-shared-with psdn**—Assign the logical interface to a PSD:
 - For unit 0, the value is 5 (PSD5).
 - For unit 1, the value is 5 (PSD5).
 - For unit 2, the value is 5 (PSD5).
 - For unit 3, the value is 6 (PSD6).

- **vlan *vlan-id***—Configure the virtual LAN (VLAN) identifier to bind the 802.1Q VLAN tag ID to the logical interface:
 - For unit 0, the value is **16**.
 - For unit 1, the value is **17**.
 - For unit 2, the value is **18**.
 - For unit 3, the value is **100**.

Results Display the results of the configuration:

```

system-domains {
  root-domain-id 3;
  protected-system-domains {
    psd5 {
      description customerA;
      fpcs [ 1 2 3 ];
      control-system-id 1;
      control-slot-numbers [ 5 6 ];
      control-plane-bandwidth-percent 50;
    }
    psd6 {
      description customerB;
      fpcs [ 4 5 7 ];
      control-system-id 1;
      control-slot-numbers 7;
      control-plane-bandwidth-percent 50;
    }
  }
}
interfaces
  ge-6/0/0 {
    vlan-tagging;
    unit 0 {
      interface-shared-with psd5;
      vlan-id 16;
    }
    unit 1 {
      interface-shared-with psd5;
      vlan-id 17;
    }
    unit 2 {
      interface-shared-with psd5;
      vlan-id 18;
    }
    unit 3 {
      interface-shared-with psd6;
      vlan-id 100;
    }
  }
}

```

PSD5 Configuration

Step-by-Step Procedure To configure PSD5:

1. At the `[edit interfaces]` hierarchy level, include the `ut-1/0/0` statement to configure the physical tunnel interface.
2. At the `[edit interfaces ut-1/0/0]` hierarchy level, include the `unit 0`, `unit 1`, and `unit 2` statements to configure the logical tunnel interfaces.
3. At the `[edit interfaces ut-1/0/0 unit n]` hierarchy level, include the `peer-interface ge-6/0/0.logical-unit-number` statement to bind the tunnel and Gigabit Ethernet interfaces together. Use the following *logical-unit-number* values:
 - For unit 0, the value is 0.
 - For unit 1, the value is 1.
 - For unit 2, the value is 2.
4. At the `[edit interfaces ge-6/0/0]` hierarchy level, include the `vlan-tagging` statement to match the configuration on the RSD, and the `shared-interface` statement to identify the physical interface as the shared interface.
5. At the `[edit interfaces ge-6/0/0]` hierarchy level, include `unit 0`, `unit 1`, and `unit 2` statements to configure logical interfaces.
6. At the `[edit interfaces ge-6/0/0 unit n]` hierarchy level, include the following statements:
 - `peer-interface peer-interface`—Bind the Gigabit Ethernet and tunnel interface interfaces together. Use the following *peer-interface* values:
 - For unit 0, the value is `ut-1/0/0.0`.
 - For unit 1, the value is `ut-1/0/0.1`.
 - For unit 2, the value is `ut-1/0/0.2`.
 - `vlan vlan-id`—Bind the 802.1Q VLAN tag ID to the logical interface. Use the following *vlan-id* values:
 - For unit 0, the value is 16.
 - For unit 1, the value is 17.
 - For unit 2, the value is 18.
 - `family inet address address`—Configure the IP version 4 (IPv4) suite protocol family on the logical Gigabit Ethernet interface. Use the following *address* values:
 - For unit 0, the value is `10.70.0.1/30`.
 - For unit 1, the value is `17.17.17.1/30`.
 - For unit 2, the value is `18.18.18.1/30`.

Results Display the results of the configuration:

```

interfaces {
  ut-1/0/0 {
    unit 0 {
      peer-interface ge-6/0/0.0;
    }
    unit 1 {
      peer-interface ge-6/0/0.1;
    }
    unit 2 {
      peer-interface ge-6/0/0.2;
    }
  }
  ge-6/0/0 {
    vlan-tagging;
    shared-interface;
    unit 0 {
      peer-interface ut-1/0/0.0;
      vlan-id 16;
      family inet {
        address 10.70.0.1/30;
      }
    }
    unit 1 {
      peer-interface ut-1/0/0.1;
      vlan-id 17;
      family inet {
        address 17.17.17.1/30;
      }
    }
    unit 2 {
      peer-interface ut-1/0/0.2;
      vlan-id 18;
      family inet {
        address 18.18.18.1/30;
      }
    }
  }
}

```

PSD6

Step-by-Step Procedure To configure PSD6:

1. At the [edit interfaces] hierarchy level, include the **ut-7/0/0** statement to configure the physical tunnel interface.
2. At the [edit interfaces ut-7/0/0] hierarchy level, include the **unit 0** statement to configure the logical tunnel interface.
3. At the [edit interfaces ut-1/0/0 unit 0] hierarchy level, include the **peer-interface ge-6/0/0.logical-unit-number** statement to bind the tunnel and the Gigabit Ethernet interfaces together.
4. At the [edit interfaces ge-6/0/0] hierarchy level, include the **vlan-tagging** statement to match the configuration on the RSD, and the **shared-interface** statement to identify the Gigabit Ethernet interface as the shared physical interface.

5. At the [edit interfaces ge-6/0/0] hierarchy level, include the unit 3 statement to configure the logical interface.
6. At the [edit interfaces ge-6/0/0 unit 3] hierarchy level, include the following statements:
 - peer-interface ut-7/0/0.0—Bind the Gigabit Ethernet and tunnel interfaces together.
 - vlan-id 100—Bind the 802.1Q VLAN tag ID to the logical interface.
 - family inet address 10.10.10.1/24—Configure the IP version 4 (IPv4) suite protocol family.

Results Display the results of the configuration:

```

interfaces {
  ut-7/0/0 {
    unit 0 {
      peer-interface ge-6/0/0.3;
    }
  }
  ge-6/0/0 {
    vlan-tagging;
    unit 3 {
      peer-interface ut-7/0/0.0;
      vlan-id 100;
      family inet {
        address 10.10.10.1/24;
      }
    }
  }
}

```

Verification

- Verifying Shared Interfaces on RSD3 on page 7
- Verifying Shared Interfaces on PSD5 on page 8
- Verifying Shared Interfaces on PSD6 on page 9

Verifying Shared Interfaces on RSD3

Purpose From RSD3, display the status of shared interfaces.

Action Issue the show interfaces ge-6/0/0 command:

```

user@rsd3> show interfaces ge-6/0/0
Physical interface: ge-0/6/0, Enabled, Physical link is Up
Interface index: 143, SNMP ifIndex: 187
Link-level type: Ethernet, MTU: 1518, Speed: 10Gbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
Flow control: Enabled
Device flags   : Present Running

```

```

Interface flags: SNMP-Traps Internal: 0x4000
Shared-interface : Owner
CoS queues      : 8 supported, 8 maximum usable queues
Current address: 00:17:cb:25:48:7e, Hardware address: 00:17:cb:25:48:7e
Last flapped    : 2008-12-08 12:19:25 PST (01:17:11 ago)
Input rate      : 0 bps (0 pps)
Output rate     : 0 bps (0 pps)
Active alarms   : None
Active defects  : None

```

```

Logical interface ge-0/6/0.0 (Index 69) (SNMP ifIndex 236)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Shared with: psd5
  Tunnel token: Rx: 1.520, Tx: 2.530
Input packets : 0
Output packets: 0
Protocol multiservice, MTU: Unlimited
Flags: None

```

```

Logical interface ge-0/6/0.1 (Index 69) (SNMP ifIndex 236)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Shared with: psd5
  Tunnel token: Rx: 1.520, Tx: 2.530
Input packets : 0
Output packets: 0
Protocol multiservice, MTU: Unlimited
Flags: None

```

```

Logical interface ge-0/6/0.3 (Index 69) (SNMP ifIndex 236)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Shared with: psd6
  Tunnel token: Rx: 1.520, Tx: 2.530
Input packets : 0
Output packets: 0
Protocol multiservice, MTU: Unlimited
Flags: None

```

Meaning Under the Physical interface section of the output, the Shared-interface field displays the value Owner, meaning that RSD owns the physical shared interface ge-6/0/0. In the Shared interface fields for each logical interface, you see that ge-6/0/0.0, ge-6/0/0.1, and ge-6/0/0.2 are shared with PSD5, whereas logical interface ge-6/0/0.3 is shared with PSD6.

Verifying Shared Interfaces on PSD5

Purpose From PSD5, display the status of shared interfaces.

Action Issue the show interfaces ge-6/0/0 command:

```

user@psd5> show interfaces ge-6/0/0
Physical interface: ge-0/6/0, Enabled, Physical link is Up
Interface index: 143, SNMP ifIndex: 157
Link-level type: Ethernet, MTU: 1518, Speed: 10Gbps, BPDU Error: None,
MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
Flow control: Enabled

```



```

Device flags      : Present Running
Interface flags:  SNMP-Traps Internal: 0x4000
Shared-interface  : Non-Owner
CoS queues       : 8 supported, 8 maximum usable queues
Current address:  00:17:cb:25:48:7e, Hardware address: 00:17:cb:25:48:7e
Last flapped     : Never
Input rate       : 0 bps (0 pps)
Output rate      : 0 bps (0 pps)
Active alarms    : None
Active defects   : None

```

```

Logical interface ge-0/6/0.0 (Index 72) (SNMP ifIndex 158)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Peer interface: ut-1/0/0.0
  Tunnel token:  Rx: 2.530, Tx: 1.520
Input packets : 0
Output packets: 0
Protocol inet, MTU: 1500
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 16.16.0.0/30, Local: 16.16.0.1, Broadcast: 16.16.0.3
Protocol multiservice, MTU: Unlimited
Flags: None

```

```

Logical interface ge-0/6/0.1 (Index 72) (SNMP ifIndex 158)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Peer interface: ut-1/0/0.1      Tunnel token: Rx: 2.530, Tx: 1.520
Input packets : 0
Output packets: 0
Protocol inet, MTU: 1500
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 16.16.0.0/30, Local: 16.16.0.1, Broadcast: 16.16.0.3
Protocol multiservice, MTU: Unlimited
Flags: None

```

```

Logical interface ge-0/6/0.2 (Index 72) (SNMP ifIndex 158)
Flags: SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.10 ] Encapsulation: ENET2
Shared-interface:
  Peer interface: ut-1/0/0.2      Tunnel token: Rx: 2.530, Tx: 1.520
Input packets : 0
Output packets: 0
Protocol inet, MTU: 1500
  Addresses, Flags: Is-Preferred Is-Primary
    Destination: 16.16.0.0/30, Local: 16.16.0.1, Broadcast: 16.16.0.3
Protocol multiservice, MTU: Unlimited
Flags: None

```

Meaning Under the Physical interfaces section of the output, the **Shared-interface** field displays a value of **Non-owner**, indicating that the shared physical interface **ge-6/0/0** is not owned by PSD5. The **Shared interface** field for each logical interface provides the name of its peer uplink tunnel (ut-) interface. For example, for **ge-6/0/0.0**, the peer interface is **ut-1/0/0.0**.

Verifying Shared Interfaces on PSD6

Purpose From PSD6, display the status of shared interfaces.

Action Issue the **show interfaces ge-6/0/0** command:

```

user@psd6> show interfaces ge-6/0/0
Physical interface: ge-6/0/0, Enabled, Physical link is Down
  Interface index: 172, SNMP ifIndex: 152
  Link-level type: Ethernet, MTU: 1518, Speed: 1000Mbps, BPDU Error: None,
  MAC-REWRITE Error: None, Loopback: Disabled, Source filtering: Disabled,
  Flow control: Enabled, Auto-negotiation: Enabled, Remote fault: Online
  Device flags   : Present Running
  Interface flags: Hardware-Down SNMP-Traps Internal: 0x4000
  Shared-interface : Non-Owner
  CoS queues      : 8 supported, 8 maximum usable queues
  Current address: 00:17:cb:25:48:40, Hardware address: 00:17:cb:25:48:40
  Last flapped   : Never
  Input rate      : 0 bps (0 pps)
  Output rate     : 0 bps (0 pps)
  Active alarms   : None
  Active defects  : None

Logical interface ge-6/0/0.3 (Index 72) (SNMP ifIndex 1220)
  Flags: Link-Layer-Down Device-Down SNMP-Traps 0x4000 VLAN-Tag [ 0x8100.101 ]

  Encapsulation: ENET2
  Shared-interface:
    Peer interface: ut-7/0/0.3
    Tunnel token: Rx: 14.538
  Input packets : 13
  Output packets: 7774
  Output Filters: filter-safari
  Protocol inet, MTU: 1500
    Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
      Destination: 173.16.254.0/30, Local: 173.16.254.1, Broadcast: 173.16.254.3

  Protocol inet6, MTU: 1500
    Flags: None
    Addresses, Flags: Dest-route-down Is-Preferred Is-Primary
      Destination: 1000::173:16:0:0/96, Local: 1000::173:16:254:1
    Addresses, Flags: Dest-route-down Is-Preferred
      Destination: fe80::/64, Local: fe80::217:cb00:6525:4840
  Protocol multiservice, MTU: Unlimited
    Flags: None

```

Meaning Under the Physical interfaces section of the output, the Shared-interface field displays a value of Non-owner, indicating that the shared physical interface **ge-6/0/0** is not owned by PSD6. The Shared interface field for **ge-6/0/0.3** indicates that its peer interface is **ut-7/0/0.3**.

- Related Topics**
- Configuring Shared Interfaces on the RSD
 - Configuring Shared Interfaces on a PSD