

Chapter 20

Configure Tunnel Interfaces

If you have a Tunnel PIC installed in your router, you can configure unicast and multicast tunnels. The JUNOS software supports the following tunnel encapsulations:

Generic route encapsulation (GRE)

IP over IP (IP-IP)

PIM encapsulation

This chapter discusses the following tasks you can perform to configure tunnel interfaces:

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Configure Unicast Tunnels

To configure a unicast tunnel, you configure the `gr` interface (to use GRE encapsulation) or the `ip` interface (to use IP-IP encapsulation) and include the `tunnel` statement:

```
[edit interfaces]
gr-fpc/pic/port or ip-fpc/pic/port {
  unit logical-unit-number {
    tunnel {
      source address;
      destination address;
      ttl number;
    }
    family family {
      address address {
        destination address;
      }
    }
  }
}
```

You can configure multiple logical units for each GRE or IP-IP interface, and you can configure only one tunnel per unit.

Each tunnel interface must be a point-to-point interface. Point to point is the default interface connection type, so you do not need to include the point-to-point statement at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level.

You must specify the tunnel's destination and source addresses. The remaining statements are optional.

To set the TTL field that is included in the encapsulating header, include the ttl statement. If you explicitly configure a TTL value for the tunnel, you must configure it to be one larger than the number of hops in the tunnel. For example, if the tunnel has seven hops, you must configure a TTL value of 8.

You must configure at least one family on the logical interface.

Unicast tunnels are bidirectional.

Examples: Configure Unicast Tunnels

Configure two unnumbered IP-IP tunnels:

```
[edit]
interfaces
  ip-0/3/0 {
    unit 0 {
      tunnel {
        source 192.168.4.18;
        destination 192.168.4.253;
      }
      family inet;
      family iso;
    }
    unit 1 {
      tunnel {
        source 192.168.4.18;
        destination 192.168.4.254;
      }
      family inet;
      family iso;
    }
  }
}
```

To configure a numbered tunnel interface, include an address under family inet:

```
[edit]
interfaces
  ip-0/3/0 {
    unit 0 {
      tunnel {
        source 192.168.4.18;
        destination 192.168.4.253;
      }
      family inet {
        address 5.5.5.1/30;
      }
      family iso;
    }
    unit 1 {
      tunnel {
        source 192.168.4.18;
        destination 192.168.4.254;
      }
      family inet {
        address 6.6.6.100/30;
      }
      family iso;
    }
  }
}
```

Configure PIM Tunnels

PIM tunnels are enabled automatically on routers that have a tunnel PIC and on which you enable PIM sparse mode. You do not need to configure the tunnel interface.

PIM tunnels are unidirectional.

In PIM sparse mode, the first-hop router encapsulates packets destined for the Rendezvous Point (RP) router. The packets are encapsulated with a unicast header and are forwarded through a unicast tunnel to the RP. The RP then decapsulates the packets and transmits them through its multicast tree. To perform the encapsulation and decapsulation, the first-hop and RP routers, respectively, must contain Tunnel PICs.

The JUNOS software creates two interfaces to handle PIM tunnels:

pe—Encapsulates packets destined for the RP. This interface is present on the first-hop router.

pd—Decapsulates packets at the RP. This interface is present on the RP.

