

Chapter 6

Configure Logical Interface Properties

For a physical interface device to function, you must configure at least one logical interface on that device. For each logical interface, you must specify the protocol family that the interface supports. You can also configure other logical interface properties. These vary by PIC and encapsulation type, but include the IP address of the interface, whether or not the interface supports multicast traffic, DLCIs, VCIs and VPIs, and traffic shaping.

To configure logical interface properties, you include the following statements at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
accept-source-mac {  
  mac-address mac-address {  
    policer {  
      input policer-name;  
      output policer-name;  
    }  
  }  
}  
accounting-profile name;  
bandwidth rate;  
cell-bundle-size cells;  
disable;  
dlci dlci-identifier;  
description text;  
drop-timeout milliseconds;  
encapsulation type;  
epd-threshold cells;  
family {  
  protocol-family-statements;  
}  
fragment-threshold bytes;  
input-vlan-map {  
  pop;  
  push;  
  swap;  
  vlan-id number;  
  tag-protocol-id tpid;  
}  
interleave-fragments;  
inverse-arp;  
minimum-links number;  
mrru bytes;  
multicast-dlci dlci-identifier;  
multicast-vci vpi-identifier.vci-identifier;  
multipoint;
```

```

oam-liveness {
  up-count cells;
  down-count cells;
}
oam-period (disable | seconds);
output-vlan-map {
  pop;
  push;
  swap;
  vlan-id number;
  tag-protocol-id tpid;
}
passive-monitor-mode;
point-to-point;
shaping {
  (cbr rate | rtvbr peak rate sustained rate burst length |
   vbr peak rate sustained rate burst length);
  queue-length number;
}
short-sequence;
transmit-weight number;
(traps | no-traps);
tunnel {
  backup-destination address;
  source source-address;
  destination destination-address;
  routing-instance {
    destination routing-instance-name;
  }
  ttl number;
}
vci vpi-identifier.vci-identifier;
vlan-id number;
vlan-tag [ tpid.vlan-id ];

```

This chapter describes the configuration of the logical interface properties:

Specify the Logical Interface Number on page 71

Add a Logical Unit Description to the Configuration on page 71

Configure a Point-to-Point Connection on page 72

Configure a Multipoint Connection on page 72

Configure Accounting for the Logical Interface on page 72

Configure the Interface Bandwidth on page 74

Enable or Disable SNMP Notifications on Logical Interfaces on page 74

Configure Interface Encapsulation on page 74

Disable a Logical Interface on page 76

For information about interface-specific logical properties, see “Interface Types” on page 109.

Table 10 lists statements that you can use to configure logical interfaces.

Table 10: Statements for Logical Interface Properties

Statement	Interface Types	Usage Guidelines
accept-source-mac	Gigabit Ethernet QPP interfaces	“Configure Gigabit Ethernet QPP MAC Address Filtering” on page 270
accounting-profile <i>name</i>	All	“Configure Accounting for the Logical Interface” on page 72
backup-destination <i>address</i>	Encryption interfaces	“Configure IPSec Tunnel Redundancy” on page 260
bandwidth <i>rate</i>	All interface types except multilink and aggregated	“Configure the Interface Bandwidth” on page 74
cell-bundle-size <i>cells</i>	ATM 2 interfaces	“Configure the ATM 2 Layer 2 Circuit Cell-Relay Cell Maximum” on page 133
destination (<i>destination-address</i> <i>routing-instance-name</i>)	Encryption GRE tunnel, and IP tunnel interfaces	“Configure a Unicast Tunnel” on page 408, “Configure a Tunnel Interface for Routing Table Lookup” on page 409, and “Configure an Encryption Interface” on page 258
description	All	“Add a Logical Unit Description to the Configuration” on page 71
disable	All	“Disable a Logical Interface” on page 76
dlsi <i>dlsi-identifier</i>	Point-to-point interfaces with Frame Relay encapsulation	“Configure Frame Relay DLCIs” on page 309
drop-timeout <i>milliseconds</i>	Multilink interfaces	“Configure a Multilink and Link Services Drop Timeout Period” on page 323
encapsulation <i>type</i>	All interface types except aggregated SONET/SDH and loopback	“Configure the Encapsulation on a Logical Interface” on page 75
epd-threshold <i>cells</i>	ATM 2 interfaces	“Configure the ATM 2 EPD Threshold” on page 143
family	All	“Configure the Protocol Family” on page 79
fragment-threshold <i>bytes</i>	Multilink interfaces	“Configure a Multilink and Link Services Fragmentation Threshold” on page 325
input-vlan-map	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
inverse-arp	Interfaces with ATM and Frame Relay encapsulation	“Configure Inverse ATM 1 or ATM 2 ARP” on page 137 and “Configure Inverse Frame Relay ARP” on page 308
mac-address <i>mac-address</i>	Gigabit Ethernet QPP interfaces	“Configure Gigabit Ethernet QPP MAC Address Filtering” on page 270
minimum-links <i>number</i>	Multilink interfaces	“Configure Multilink and Link Services Minimum Links” on page 326
mrru <i>bytes</i>	Multilink interfaces	“Configure Multilink and Link Services MRRU” on page 326
multicast-dlsi <i>dlsi-identifier</i>	Point-to-multipoint Frame Relay interfaces	“Configure a Multicast-Capable Frame Relay Connection” on page 311
multicast-vci <i>vpi-identifier.vci-identifier</i>	Point-to-multipoint ATM 1 and ATM 2 interfaces	“Configure the ATM 1 and ATM 2 OAM F5 Loopback Cell Threshold” on page 145
multipoint	All	“Configure a Multipoint Connection” on page 72
oam-liveness	ATM 1 and ATM 2 interfaces	“Configure the ATM 1 and ATM 2 OAM F5 Loopback Cell Threshold” on page 145

Statement	Interface Types	Usage Guidelines
oam-period (disable <i>seconds</i>)	ATM 1 and ATM 2 interfaces	“Define the ATM 1 and ATM 2 OAM F5 Loopback Cell Period” on page 144
output-vlan-map	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
passive-monitor-mode	SONET interfaces	“Enable Passive Monitoring” on page 374
point-to-point	All	“Configure a Point-to-Point Connection” on page 72
policer	Gigabit Ethernet QPP interfaces	“Configure Gigabit Ethernet QPP MAC Address Filtering” on page 270
pop	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
push	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
queue-length <i>number</i>	ATM 1 interfaces	“Configure the ATM 1 Queue Length” on page 142
routing-instance	GRE tunnel and IP tunnel interfaces	“Configure a Unicast Tunnel” on page 408 and “Configure a Tunnel Interface for Routing Table Lookup” on page 409
shaping	ATM 1 and ATM 2 interfaces	“Define the ATM 1 and ATM 2 Traffic-Shaping Profile” on page 137
short-sequence	Multilink interfaces	“Configure Multilink and Link Services Sequence Format” on page 327
source <i>address</i>	Encryption, GRE tunnel, and IP tunnel interfaces	“Configure a Unicast Tunnel” on page 408, “Configure a Tunnel Interface for Routing Table Lookup” on page 409, and “Configure an Encryption Interface” on page 258
swap	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
tag-protocol-id <i>tpid</i>	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273
transmit-weight <i>number</i>	ATM 2 interfaces	“Configure the ATM 2 Transmission Weight” on page 144
(traps no-traps)	All	“Enable or Disable SNMP Notifications on Logical Interfaces” on page 74
ttl <i>number</i>	GRE tunnel and IP tunnel interfaces	“Configure a Unicast Tunnel” on page 408
tunnel	Encryption, GRE tunnel, and IP tunnel interfaces	“Configure a Unicast Tunnel” on page 408, “Configure a Tunnel Interface for Routing Table Lookup” on page 409, or “Configure an Encryption Interface” on page 258
vci <i>vpi-identifier.vci-identifier</i>	ATM 1 and ATM 2 point-to-point interfaces	“Configure a Point-to-Point ATM 1 or ATM 2 Connection” on page 136
vlan-id <i>number</i>	Fast Ethernet and Gigabit Ethernet interfaces	“Configure 802.1Q VLANs” on page 282
vlan-tag [<i>tpid.vlan-id</i>]	Gigabit Ethernet QPP interfaces	“Stack and Rewrite Gigabit Ethernet QPP VLAN Tags” on page 273

Specify the Logical Interface Number

Each logical interface must have a logical unit number. The logical unit number corresponds to the logical unit part of the interface name. For more information, see “Configure Aggregated Interfaces” on page 45.

PPP, Cisco HDLC, and Ethernet CCC encapsulations support only a single logical interface, whose logical unit number must be 0. Frame Relay and ATM encapsulations support multiple logical interfaces, so you can configure one or more logical unit numbers.

You specify the logical unit number in the unit statement at the [edit interfaces *interface-name*] hierarchy level:

```
[edit interfaces]
  interface-name {
    unit 0 {
      ...
    }
  }
  interface-name {
    unit logical-unit-number {
      ...
    }
  }
```

The logical unit number can range from 0 through 16384.

Add a Logical Unit Description to the Configuration

You can include a text description of each logical unit in the configuration file. Any descriptive text you include is displayed in the output of the show interfaces commands, and is also exposed in the ifAlias MIB object. It has no impact on the interface’s configuration. To add a text description, include the description statement at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]
  description text;
```

The description can be a single line of text. If the text contains spaces, enclose it in quotation marks.

For information about describing physical interfaces, see “Add an Interface Description to the Configuration” on page 46.

Configure a Point-to-Point Connection

By default, all interfaces are assumed to be point-to-point connections. You must ensure that the MTU sizes on both sides of the connection are the same.

For all interfaces except aggregated Ethernet, Fast Ethernet, and Gigabit Ethernet, you can explicitly configure an interface to be a point-to-point connection by including the point-to-point statement at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]
point-to-point;
```

Configure a Multipoint Connection

By default, all interfaces are assumed to be point-to-point connections. To configure an interface to be a multipoint connection, include the multipoint statement at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]
multipoint;
```

Configure Accounting for the Logical Interface

Juniper Networks routers can collect various kinds of data about traffic passing through the router. You can set up one or more *accounting profiles* that specify some common characteristics of this data, including the following:

- The fields used in the accounting records

- The number of files that the router retains before discarding, and the number of bytes per file

- The period that the system uses to record the data

You configure the profiles and define a unique name for each profile using statements at the [edit accounting-options] hierarchy level. There are two types of accounting profiles: interface profiles and filter profiles. You configure interface profiles by including the interface-profile statement at the [edit accounting-options] hierarchy level. You configure filter profiles by including the filter-profile statement at the [edit accounting-options] hierarchy level. For more information, see the *JUNOS Internet Software Configuration Guide: Network Management*.

You apply interface profiles by including the accounting-profile statement at the [edit interfaces *interface-name*] and [edit interfaces *interface-name* unit *number*] hierarchy levels. You apply filter profiles by including the accounting-profile statement at the [edit firewall filter *filter-name*] and [edit firewall family *family* filter *filter-name*] hierarchy levels.

Apply an Accounting Profile to the Logical Interface

To enable accounting on an interface, include the `accounting-profile` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]
accounting-profile name;
```

You can also reference profiles for the physical interface; for more information, see “Configure Accounting for the Physical Interface” on page 61. For information about configuring a firewall filter accounting profile, see the *JUNOS Internet Software Configuration Guide: Network Management*.

Example: Apply an Accounting Profile to the Logical Interface

Configure an accounting profile for an interface and apply it to a physical interface:

```
[edit]
accounting-options {
  file if_stats {
    size 4m files 10 transfer-interval 15;
    archive-sites {
      "ftp://login:password@host/path";
    }
  }
  interface-profile if_profile {
    interval 15;
    file if_stats {
      fields {
        input-bytes;
        output-bytes;
        input-packets;
        output-packets;
        input-errors;
        output-errors;
      }
    }
  }
}

[edit interfaces ge-1/0/1 unit 1]
accounting-profile if_profile;
```

To reference profiles by physical interface, see “Apply an Accounting Profile to the Physical Interface” on page 61. For information about configuring a firewall filter accounting profile, see the *JUNOS Internet Software Configuration Guide: Policy Framework*.

Configure the Interface Bandwidth

By default, the JUNOS software uses the physical interface's speed for the MIB-II object, `ifSpeed`. You can configure the logical unit to populate the `ifSpeed` variable by configuring a bandwidth value for the logical interface. The `bandwidth` statement sets an informational-only parameter; you cannot adjust the actual bandwidth of an interface with this statement.

To configure the bandwidth value for a logical interface, include the `bandwidth` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
bandwidth rate;
```

rate is the peak rate, in bps or cps. You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000). You can also specify a value in cells per second by entering a decimal number followed by the abbreviation c; values expressed in cells per second are converted to bits per second using the formula 1 cps = 384 bps. The range is not limited. The bandwidth statement is valid for all logical interfaces, except multilink and aggregated interfaces.

Enable or Disable SNMP Notifications on Logical Interfaces

By default, SNMP notifications are sent when the state of an interface or a connection changes. To explicitly enable these notifications on the logical interface, include the `traps` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level. To disable these notifications on the logical interface, include the `no-traps` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
(traps | no-traps);
```

Configure Interface Encapsulation

Point-to-Point Protocol (PPP) encapsulation is the default encapsulation type for physical interfaces. You need not configure encapsulation for any physical interfaces that support PPP encapsulation. If you do not configure encapsulation, PPP is used by default. For physical interfaces that do not support PPP encapsulation, you must configure an encapsulation to use for packets transmitted on the interface. For more information about physical interface encapsulation, see "Configure the Encapsulation on a Physical Interface" on page 51.

You can optionally configure an encapsulation on a logical interface, which is the encapsulation used within certain packet types.

Configure the Encapsulation on a Logical Interface

Generally, you configure an interface's encapsulation at the [edit interfaces *interface-name*] hierarchy level. However, for some encapsulation types, such as Frame Relay, ATM, and Ethernet VLAN encapsulations, you can also configure the encapsulation type that is used inside the Frame Relay, ATM, or VLAN circuit itself. To do this, include the encapsulation statement at the [edit interfaces *interface-name* unit *logical-unit-number*] hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]
encapsulation (atm-ccc-cell-relay | atm-ccc-vc-mux | atm-tcc-vc-mux | atm-cisco-nlpid |
atm-mlppp-llc | atm-nlpid | atm-ppp-llc | atm-ppp-vc-mux | atm-snap | atm-tcc-snap |
atm-vc-mux | ether-over-atm-llc | ether-vpls-over-atm-llc | frame-relay-ccc | frame-relay-tcc |
multilink-frame-relay-end-to-end | multilink-ppp | vlan-ccc | vlan-vpls);
```

Some of the ATM encapsulations are defined in RFC 1483, *Multiprotocol Encapsulation over ATM Adaptation Layer 5*.

The following restrictions apply to logical interface encapsulation:

With the atm-nlpid, atm-cisco-nlpid, and atm-vc-mux encapsulations, you can configure the family inet only.

With the circuit cross-connect (CCC) circuit encapsulations, you cannot configure a family on the logical interface.

A logical interface cannot have frame-relay-ccc encapsulation unless the physical device also has frame-relay-ccc encapsulation.

A logical interface cannot have frame-relay-tcc encapsulation unless the physical device also has frame-relay-tcc encapsulation. In addition, you must assign this logical interface a DLCI in the range 512 through 1022 and configure it as point-to-point.

For interfaces that carry IPv4 traffic, you can configure ether-over-atm-llc encapsulation.

When you use ether-over-atm-llc encapsulation, you cannot configure multipoint interfaces.

A logical interface cannot have vlan-ccc or vlan-vpls encapsulation unless the physical device also has vlan-ccc or vlan-vpls encapsulation, respectively. In addition, you must assign this logical interface a VLAN ID in the range 512 through 1023; if the VLAN ID is 511 or lower, it is subject to the normal destination filter lookups in addition to source address filtering. For more information, see "Configure VLAN CCC or VPLS Encapsulation" on page 284.

You can create an ATM cell-relay circuit by configuring an entire ATM physical device or an individual virtual circuit (VC). When you configure an entire device, only cell relay encapsulation is allowed on the logical interfaces. For more information, see "Configure an ATM 1 Cell-Relay Circuit" on page 148.

For more information about ATM encapsulations, see "Configure ATM 1 and ATM 2 Interface Encapsulation" on page 146.

For more information about Frame Relay encapsulations, see "Configure Frame Relay Interface Encapsulation" on page 304.

For more information about multilink encapsulations, see "Configure Multilink and Link Services Logical Interface Encapsulation" on page 324.

Disable a Logical Interface

You can unconfigure a logical interface, effectively disabling that interface, without removing the logical interface configuration statements from the configuration. To do this, include the `disable` statement at the `[edit interfaces interface-name unit logical-unit-number]` hierarchy level:

```
[edit interfaces interface-name unit logical-unit-number]  
  disable;
```