Binding VLAN IDs to Logical Interfaces

The following sections describe how to configure logical interfaces to receive and forward VLAN-tagged frames:

Binding VLAN IDs to Logical Interfaces Overview

To configure a logical interface to receive and forward VLAN-tagged frames, you must bind a VLAN ID, a range of VLAN IDs, or a list of VLAN IDs to the logical interface. Table 1 lists the configuration statements you use to bind VLAN IDs to logical interfaces, organized by scope of the VLAN IDs used to match incoming packets:

Table 1: Configuration Statements Used to Bind VLAN IDs to Logical Interfaces

Scope of VLAN ID Matching	Type of VLAN Framing Supported on the Logical Interface	
	Single-Tag Framing	**Dual-Tag Framing**
VLAN ID	vlan-id *vlan-id*;	vlan-tags outer *tpid*.<*vlan-id*> inner *tpidvlan-id*;
VLAN ID Range	vlan-id-range *vlan-id–vlan-id*;	vlan-tags outer <*tpid*.>*vlan-id* inner-range *tpid*.*vlan-id–vlan-id*;
VLAN ID List	vlan-id-list [*vlan-id vlan-id–vlan-id*];	vlan-tags outer <*tpid*.>*vlan-id* inner-list [*vlan-id vlan-id–vlan-id*];

You can include the statements at the following hierarchy levels:

- [edit interfaces *interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *interface-name* unit *logical-unit-number*]

NOTE: The inner-list option of the vlan-tags statement does not support Tag Protocol ID (TPID) values.

Binding a VLAN ID to a Logical Interface

A logical interface that you have associated (bound) to a particular VLAN ID will receive and forward incoming frames that contain a matching VLAN ID.

Binding a VLAN ID to a Single-Tag Logical Interface

To bind a VLAN ID to a single-tag logical interface, include the vlan-id statement:

vlan-id *vlan-id*;

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support single-tag logical interfaces, include the vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Binding a VLAN ID to a Dual-Tag Logical Interface

To bind a VLAN ID to a dual-tag logical interface, include the vlan-tags statement:

vlan-tags outer <*tpid*.>*vlan-id* inner <*tpid*.>*vlan-id*;

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support dual-tag logical interfaces, include the stacked-vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Binding a Range of VLAN IDs to a Logical Interface

. A VLAN range can be used by service providers to interconnect multiple VLANs belonging to a particular customer over multiple sites. Using a VLAN ID range conserves switch resources and simplifies configuration.

Binding a Range of VLAN IDs to a Single-Tag Logical Interface

To bind a range of VLAN IDs to a single-tag logical interface, include the vlan-id-range statement:

vlan-id-range *vlan-id-vlan-id*;

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support single-tag logical interfaces, include the vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Binding a Range of VLAN IDs to a Dual-Tag Logical Interface

To bind a range of VLAN IDs to a dual-tag logical interface, include the vlan-tags statement. Use the inner–list option to specify the VLAN IDs as an inclusive range by separating the starting VLAN ID and ending VLAN ID with a hyphen.

vlan-tags outer *vlan-id* inner–list *vlan-id–vlan-id*;

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support dual-tag logical interfaces, include the stacked-vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Example: Binding Ranges VLAN IDs to Logical Interfaces

The following example configures two different ranges of VLAN IDs on two different logical ports:

```
[edit interfaces]
ge-3/0/0 {
   unit 0 {
      encapsulation vlan-bridge;
      vlan-id-range 500-600;
   }
}
ge-3/0/1 {
   flexible-vlan-tagging;
      unit 0 {
         encapsulation vlan-bridge;
         vlan-id-range 200-300;
      }
      unit 1 {
         encapsulation vlan-bridge;
         vlan-tags outer 1000 inner-range 100-200;
      }
}
```

Binding a List of VLAN IDs to a Logical Interface

Beginning with JUNOS software Release 9.5, MX-series routers allow a list of VLAN IDs to be bound to a single logical interface. You no longer need to configure a separate logical interface for every VLAN or VLAN range. A logical interface that accepts packets tagged with any VLAN ID specified in a VLAN ID list is called a *VLAN-bundled* logical interface.

You can use VLAN-bundled logical interfaces to configure circuit cross-connects between Layer 2 VPN routing instances or Layer 2 circuits. Using VLAN-bundled logical interfaces simplifies configuration and reduces use of system resources such as logical interfaces, next hops, and circuits.

As an alternative to configuring multiple logical interfaces (one for each VLAN ID and one for each range of VLAN IDs), you can configure a single VLAN-bundled logical interface based on a list of VLAN IDs.

Binding a List of VLAN IDs to a Single-Tag Logical Interface

To bind a list of VLAN IDs to a single-tag logical interface, include the vlan-id-list statement. Specify the VLAN IDs in the list individually by using a space to separate each ID, as an inclusive list by separating the starting VLAN ID and ending VLAN ID with a hyphen, or as a combination of both.

vlan-id-list [*vlan-id vlan-id–vlan-id*];

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support single-tag logical interfaces, include the vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Binding a List of VLAN IDs to a Dual-Tag Logical Interface

To bind a list of VLAN IDs to a dual-tag logical interface, include the vlan-tags statement. Use the inner-list option to specify the VLAN IDs individually by using a space to separate each ID, as an inclusive list by separating the starting VLAN ID and ending VLAN ID with a hyphen, or as a combination of both:

vlan-tags outer <*tpid*.>*vlan-id* inner-list [*vlan-id vlan-id–vlan-id*];

NOTE: The inner-list option of the vlan-tags statement does not support Tag Protocol ID (TPID) values.

You can include the statement at the following hierarchy levels:

- [edit interfaces *ethernet-interface-name* unit *logical-unit-number*]
- [edit logical-systems *logical-system-name* interfaces *ethernet-interface-name* unit *logical-unit-number*]

To configure an Ethernet interface to support dual-tag logical interfaces, include the stacked-vlan-tagging statement at the [interfaces *ethernet-interface-name*] hierarchy level. To support mixed tagging, include the flexible-vlan-tagging statement instead.

Example: Binding Lists of VLAN IDs to Logical Interfaces

The following example configures two different lists of VLAN IDs on two different logical ports:

```
[edit interfaces]
ge-1/1/0 {
   vlan-tagging; # Only for single-tagging
   encapsulation flexible-ethernet-services;
   unit 10 {
      encapsulation vlan-ccc;
      vlan-id-list [20 30–40 45];
   }
}
ge-1/1/1 {
   flexible-vlan-tagging; # Only for mixed tagging
   encapsulation flexible-ethernet-services;
   unit 10 {
      encapsulation vlan-ccc;
      vlan-id-list [1 10 20 30–40];
   }
   unit 20 {
      encapsulation vlan-ccc;
      vlan-tags outer 200 inner-list [50–60 80 90–100];
   }
}
```

In the example configuration above, ge-1/1/0 supports single-tag logical interfaces, and ge-1/1/1 supports mixed tagging. The single-tag logical interfaces ge-1/1/0.10 and ge-1/1/1.20 each bundle lists of VLAN IDs. The dual-tag logical interface ge-1/1/1.20 bundles lists of inner VLAN IDs.