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Junos<sup>®</sup> OS

## Multiple VLAN Registration Protocol Feature Guide



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# About the Documentation

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## Documentation and Release Notes

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To obtain the most current version of all Juniper Networks<sup>®</sup> technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

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## Supported Platforms

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For the features described in this document, the following platforms are supported:

- MX Series

## Using the Examples in This Manual

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If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

## Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

## Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
  file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see [CLI Explorer](#).

## Documentation Conventions

[Table 1 on page xi](#) defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

[Table 2 on page xi](#) defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"><li>Introduces or emphasizes important new terms.</li><li>Identifies guide names.</li><li>Identifies RFC and Internet draft titles.</li></ul>	<ul style="list-style-type: none"><li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li><li><i>Junos OS CLI User Guide</i></li><li>RFC 1997, <i>BGP Communities Attribute</i></li></ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [</b> <i>community-ids</i> <b>]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
<b>GUI Conventions</b>		
<b>Bold text like this</b>	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/feedback/>.
- E-mail—Send your comments to [techpubs-comments@juniper.net](mailto:techpubs-comments@juniper.net). Include the document or topic name, URL or page number, and software version (if applicable).

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- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>

- Download the latest versions of software and review release notes:  
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:  
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:  
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

## CHAPTER 1

# Configuring Multiple VLAN Registration Protocol

- [Understanding Multiple VLAN Registration Protocol \(MVRP\) for Dynamic VLAN Registration on page 15](#)
- [Configuring Multiple VLAN Registration Protocol \(MVRP\) to Manage Dynamic VLAN Registration on page 18](#)
- [Controlling the Management State of a VLAN in MVRP Configurations on page 20](#)
- [Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23](#)
- [Verifying That MVRP Is Working Correctly on page 35](#)

## Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration

---

You can configure Multiple VLAN Registration Protocol (MVRP) on Juniper Networks MX Series routers and EX Series switches. The primary purpose of MVRP is to manage dynamic VLAN registration in Layer 2 networks. In managing dynamic VLAN registration, MVRP also prunes VLAN information.

MVRP is an Layer 2 application protocol of the Multiple Registration Protocol (MRP) and is defined in the IEEE 802.1ak standard. MRP and MVRP were designed by IEEE to perform the same functions as Generic Attribute Registration Protocol (GARP) and GARP VLAN Registration Protocol (GVRP) while overcoming some GARP and GVRP limitations, in particular, limitations involving bandwidth usage and convergence time in large networks with large numbers of VLANs.

MVRP was created by IEEE as a replacement application for GVRP. MVRP and GVRP cannot be run concurrently to share VLAN information in a Layer 2 network.

This topic describes:

- [How MVRP Works on page 16](#)
- [Basics of MVRP on page 16](#)
- [MVRP Registration Modes on page 16](#)
- [MRP Timers on page 17](#)

- [MRP VLAN Messages on page 17](#)
- [MVRP Limitations on page 17](#)

## How MVRP Works

The VLAN registration information sent by MVRP protocol data units (PDUs) includes the current VLANs membership—that is, which routers are members of which VLANs—and which router interfaces are in which VLAN. MVRP shares all information in the PDU with all routers participating in MVRP in the Layer 2 network.

MVRP stays synchronized using these PDUs. The routers in the network participating in MVRP receive these PDUs during state changes and update their MVRP states accordingly. MVRP timers dictate when PDUs can be sent and when routers receiving MVRP PDUs can update their MVRP information.

VLAN information is distributed as part of the MVRP message exchange process and can be used to dynamically create VLANs, which are VLANs created on one switch and propagated to other routers as part of the MVRP message exchange process. Dynamic VLAN creation using MVRP is enabled by default, but can be disabled.

As part of ensuring that VLAN membership information is current, MVRP removes routers and interfaces from the VLAN information when they become unavailable. Pruning VLAN information has these benefits:

- Limits the network VLAN configuration to active participants only, reducing network overhead.
- Targets the scope of broadcast, unknown unicast, and multicast (BUM) traffic to interested devices only.

## Basics of MVRP

MVRP is disabled by default. You can configure MVRP router interfaces to participate in MVRP for the Layer 2 network. MVRP can only be enabled on trunk interfaces, and dynamic VLAN configuration through MVRP is enabled by default when MVRP is enabled.

## MVRP Registration Modes

The MVRP registration mode defines whether an interface does or does not participate in MVRP.

The following MVRP registration modes are configurable:

- **forbidden**—The interface does not register or declare VLANs (except statically configured VLANs).
- **normal**—The interface accepts MVRP messages and participates in MVRP. This is the default registration mode setting.
- **restricted**—The interface ignores all MVRP JOIN messages received for VLANs that are not statically configured on the interface.



## MRP Timers

MVRP registration and updates are controlled by timers that are part of the MRP protocol. These timers are set on a per-interface basis and define when MVRP PDUs can be sent and when MVRP information can be updated on a switch.

The following timers are used to control the operation of MVRP:

- Join timer—Controls the interval for the next MVRP PDU transmit opportunity.
- Leave timer—Controls the period of time that an interface on the switch waits in the Leave state before changing to the unregistered state.
- LeaveAll timer—Controls the frequency with which the interface generates LeaveAll messages.



**BEST PRACTICE:** Maintain default timer settings unless there is a compelling reason to change the settings. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.

## MRP VLAN Messages

MVRP uses MRP messages to register and declare MVRP states for a switch and to inform the Layer 2 network that a switch is leaving MVRP. These messages are communicated as part of the PDU to communicate the state of a particular switch interface on the Layer 2 network to the other switches in the network.

The following messages are communicated for MVRP:

- Empty—VLAN information is not being declared and is not registered.
- In—VLAN information is not being declared but is registered.
- JoinEmpty—VLAN information is being declared but not registered.
- JoinIn—VLAN information is being declared and is registered.
- Leave—VLAN information that was previously registered is being withdrawn.
- LeaveAll—All registrations will be de-registered. Participants that want to participate in MVRP will need to re-register.
- New—VLAN information is new and possibly not previously registered.

## MVRP Limitations

The following limitations apply when configuring MVRP:

- MVRP works with Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP), but not with VLAN Spanning Tree Protocol (VSTP).
- MVRP is allowed only on single tagged trunk ports.

- MVRP is not allowed if a physical interface has more than one logical interface.
- MVRP is only allowed if a logical has one trunk interface (unit 0).

**Related Documentation**

- [Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23](#)
- [Configuring Multiple VLAN Registration Protocol \(MVRP\) to Manage Dynamic VLAN Registration on page 18](#)
- [Controlling the Management State of a VLAN in MVRP Configurations on page 20](#)
- [Verifying That MVRP Is Working Correctly on page 35](#)
- Deploying MVRP Learning Byte at <https://www.youtube.com/watch?v=C-JkzYbGPBk>

## Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration

---

Multiple VLAN Registration Protocol (MVRP) is used to manage dynamic VLAN registration in a Layer 2 network. You can use MVRP on MX Series routers or on EX Series switches.

MVRP is disabled by default on MX Series routers and EX Series switches.

To enable MVRP or set MVRP options, follow these instructions:

- [Enabling MVRP on page 18](#)
- [Disabling MVRP on page 18](#)
- [Changing the Registration Mode to Disable Dynamic VLANs on page 19](#)
- [Configuring Timer Values on page 19](#)
- [Configuring the Multicast MAC Address for MVRP on page 20](#)
- [Configuring an MVRP Interface as a Point-to-Point Interface on page 20](#)
- [Configuring MVRP Tracing Options on page 20](#)

### Enabling MVRP

MVRP can only be enabled on trunk interfaces.

To enable MVRP on a specific trunk interface (here, interface **ge-3/0/5**):

```
[edit protocols mvrp]  
user@host# set interface ge-3/0/5
```

### Disabling MVRP

MVRP is disabled by default. You only need to perform this procedure if you have previously enabled MVRP.

To disable MVRP on all trunk interfaces, use one of the following:

```
[edit]  
user@host# deactivate protocols mvrp
```

```
user@host# delete protocols mvrp
```

## Changing the Registration Mode to Disable Dynamic VLANs

When the registration mode for an interface is set to **normal** (the default), dynamic VLANs are created on interfaces participating in MVRP. The dynamic VLANs created on one router or switch are then propagated by means of MVRP to other routers or switches in a topology.

However, dynamic VLAN creation through MVRP can be disabled for all trunk interfaces or for individual trunk interfaces.

For information about disabling dynamic VLAN creation on an interface so that the interface does not register and does not participate in MVRP, see [“Controlling the Management State of a VLAN in MVRP Configurations”](#) on page 20.

## Configuring Timer Values

The timers in MVRP define the amount of time an interface waits to join or leave MVRP or to send or process the MVRP information for the router or switch after receiving an MVRP PDU:

- The join timer controls the amount of time the router or switch waits to accept a registration request.
- The leave timer controls the period of time that the router or switch waits in the Leave state before changing to the unregistered state.
- The leaveall timer controls the frequency with which the LeaveAll messages are communicated.

The default MVRP timer values are 200 ms for the join timer, 1000 ms for the leave timer, and 10000 ms for the leaveall timer.



**BEST PRACTICE:** Maintain default timer settings unless there is a compelling reason to change the settings. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.

To set the join timer for a specific interface:

```
[edit protocols mvrp]
user@host# set interface ge-3/0/5 join-timer 300
```

To set the leave timer for a specific interface:

```
[edit protocols mvrp]
user@host# set interface ge-3/0/5 leave-timer 1200
```

To set the leaveall timer for a specific interface:

```
[edit protocols mvrp]
user@host# set interface ge-3/0/5 leaveall-timer 12000
```

## Configuring the Multicast MAC Address for MVRP

MVRP uses the customer MVRP multicast MAC address when MVRP is enabled. However, you can configure MVRP to instead use the provider MVRP multicast MAC address.

To configure MVRP to use the provider MVRP multicast MAC address:

```
[edit protocols mvrp]
user@host# set bpd-destination-mac-address provider-bridge-group;
```

## Configuring an MVRP Interface as a Point-to-Point Interface

Specify that a configured interface is connected point-to-point. If specified, a point-to-point subset of the MRP state machine provides a simpler and more efficient method to accelerate convergence on the network.

To specify that an MVRP interface is point-to-point (here, interface **ge-3/0/5**):

```
[edit protocols mvrp]
user@host# set interface ge-3/0/5 point-to-point;
```

## Configuring MVRP Tracing Options

Set MVRP protocol-level tracing options.

To specify MVRP protocol tracing (here, the file is **/var/log/mvrp-log**, size is **2m**, number of files is **28**, the option **world-readable** indicates the log can be read by user, and MVRP is flagging **events**):

```
[edit protocols mvrp]
user@host# edit traceoptions file /var/log/mvrp-log size 2m files 28 world-readable flag
events
```

- Related Documentation**
- [Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23](#)

---

## Controlling the Management State of a VLAN in MVRP Configurations

MX Series routers use Multiple VLAN Registration Protocol (MVRP) to manage dynamic virtual LAN (VLAN) registration in Layer 2 networks. Enabling MVRP on trunk interfaces in Layer 2 networks reduces network overhead by limiting the scope of broadcast, unknown unicast, and multicast (BUM) traffic to interested devices only.

Dynamic VLAN registration through MVRP is enabled by default when you enable MVRP on a trunk interface. The trunk interface automatically uses the **normal** registration mode, accepts MVRP messages, and participates in MVRP. The management state in this case is also known as **normal**. However, it can be useful to configure VLAN IDs to bypass the dynamic VLAN registration process for security reasons or when MVRP is not supported on a peer switch. You can change the management state of a VLAN independently to either exclude it entirely from the MVRP registration process and remain in an unregistered state (**forbidden** state), or to force a VLAN to always stay in a registered state and to be declared on all other forwarding ports (**fixed** state).

Three parameters are used to control the management state of a VLAN in an MVRP configuration:

- The VLAN is a member in the interface VLAN ID list (configured at the **[edit interfaces interface-name family bridge vlan-id-list]** hierarchy level).
- The VLAN is a member in the bridge domain VLAN ID list (configured at the **[edit bridge-domain bridge-domain-name vlan-id-list]** hierarchy level).
- The MVRP registration mode is configured for MVRP (configured at the **[edit protocols mvrp interface interface-name registration (normal | restricted | forbidden)]** hierarchy level).

When these three parameters are combined, a VLAN operates with the following MVRP management states:

- If a VLAN ID is present in both the interface and bridge domain VLAN ID list, the VLAN is in a **fixed** management state, irrespective of the MVRP registration mode.
- If a VLAN ID is present in the interface VLAN ID list but not in the bridge domain VLAN ID list and the MVRP registration mode is **forbidden**, the VLAN ID is in a **forbidden** management state. If the MVRP registration mode is not **forbidden**, the VLAN ID is in a **normal** registration state.
- If a VLAN ID is not present in the interface VLAN ID list and the MVRP registration mode is **forbidden** or **restricted**, the VLAN ID is in a **forbidden** management state. Otherwise, it is in a **normal** management state.

[Table 3 on page 21](#) defines in more detail the MVRP management state for a VLAN when the interface and bridge domain VLAN ID lists and the MVRP registration mode are configured.

[Table 3 on page 21](#) contains the service configured for BEB2, as well as the correlating S-VLAN, I-SID, and B-VLAN.

**Table 3: MVRP Management States**

VLAN ID Present in Interface VLAN ID List?	VLAN ID Present in Bridge Domain VLAN ID List?	Interface Uses MVRP Normal Registration Mode	Interface Uses MVRP Restricted Registration Mode	Interface Uses Forbidden Registration Mode
yes	yes	<b>fixed state</b>	<b>fixed state</b>	<b>fixed state</b>
yes	no	<b>normal state</b>	<b>normal state</b>	<b>forbidden state</b>

Table 3: MVRP Management States (*continued*)

VLAN ID Present in Interface VLAN ID List?	VLAN ID Present in Bridge Domain VLAN ID List?	Interface Uses MVRP Normal Registration Mode	Interface Uses MVRP Restricted Registration Mode	Interface Uses Forbidden Registration Mode
yes	yes/no	normal state	forbidden state	forbidden state

This topic describes how to configure the management state for VLANs in an MVRP configuration:

- [Configure All VLANs to Operate in Normal State on page 22](#)
- [Configure VLANs to Operate with Mixed States \(Fixed and Normal\) on page 22](#)
- [Configure VLANs to Operate with Mixed States \(Fixed, Normal, and Forbidden\) on page 22](#)

### Configure All VLANs to Operate in Normal State

To configure an interface to operate in the normal state, configure the registration state as **normal**:

```
[edit protocols]
user@host# set mvrp interface interface-name registration normal
```

For example, to configure all VLANs on trunk interface **ge-1/0/0** to operate in **normal** state:

```
[edit]
user@host# set interface ge-1/0/0 family bridge trunk
user@host# set protocols mvrp interface ge-1/0/0 registration normal
```

### Configure VLANs to Operate with Mixed States (Fixed and Normal)

To configure an interface to operate in a fixed state, add the VLANs that should operate in a fixed state to the interface VLAN ID list:

```
[edit]
user@host# set interface interface-name family bridge vlan-id-list vlan-ids
user@host# set bridge-domains bridge-domain-name vlan-id-list vlan-ids
```

For example, to configure the first 1024 VLANs on trunk interface **ge-1/0/0.0** to operate in **fixed** state, and the other VLANs to operate in **normal** state:

```
[edit]
user@host# set interface ge-1/0/0.0 family bridge trunk
user@host# set interface ge-1/0/0.0 family bridge vlan-id-list 1-1024
user@host# set bridge-domains bd vlan-id-list 1-1024
user@host# set protocols mvrp interface ge-1/0/0 registration normal
```

### Configure VLANs to Operate with Mixed States (Fixed, Normal, and Forbidden)

To configure an interface to operate in the forbidden state, configure the registration state as **restricted**:

```
[edit protocols]
user@host# set protocols mvrp interface interface-name registration restricted
```

For example, to configure the first 1024 VLANs on trunk interface **ge-1/0/0.0** to operate in **fixed** state, VLAN IDs 1024 to 2048 to operate in **normal** state, and the remaining VLANs to operate in **forbidden** state:

```
[edit]
user@host# set interface ge-1/0/0.0 family bridge trunk
user@host# set interface ge-1/0/0.0 family bridge vlan-id-list 1-2048
user@host# set bridge-domains bd vlan-id-list 1-1024
user@host# set protocols mvrp interface ge-1/0/0 registration restricted
```

#### Related Documentation

- [Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23](#)
- [Configuring Multiple VLAN Registration Protocol \(MVRP\) to Manage Dynamic VLAN Registration on page 18](#)
- [Verifying That MVRP Is Working Correctly on page 35](#)
- [Understanding Multiple VLAN Registration Protocol \(MVRP\) for Dynamic VLAN Registration on page 15](#)

## Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers

Multiple VLAN Registration Protocol (MVRP) is used in Layer 2 networks to dynamically share virtual LAN (VLAN) information and to automatically configure necessary VLAN information. Automatically configuring VLANs on ports based on the current network configuration ensures that a router does not send traffic to an interface on the network with an inactive VLAN. In this way, MVRP reduces network overhead by limiting the scope of broadcast, unknown unicast, and multicast (BUM) traffic to interested devices only. MVRP also provides for rapid healing of network failures without interrupting services to unaffected VLANs and improves convergence times.

MVRP is a Layer 2 network protocol based on the IEEE standard 802.1ak amendment to 802.1Q-2005, *Standard for Local and Metropolitan Area Networks Virtual Bridged Local Area Networks - Amendment 07: Multiple Registration Protocol*.

This example describes how to use MVRP to automate administration of VLAN membership changes within your network and to dynamically create VLANs:

- [Requirements on page 23](#)
- [Overview and Topology on page 24](#)
- [Configuration on page 26](#)
- [Verification on page 31](#)

### Requirements

This example uses the following hardware and software components:

- Two MX Series routers acting as edge switches
- One MX Series router acting as an aggregation switch

- Junos OS Release 10.1 or later for MX Series routers

## Overview and Topology

VLANs are statically configured on access interfaces on MX Series routers acting as edge switches. The VLAN membership information is propagated to the MX Series router acting as an aggregation switch at the core by enabling MVRP on two trunk interfaces: one connecting edge switch 1 (ES1) to aggregation switch 1 (AS1), and the other connecting ES2 to AS1. Enabling MVRP on the trunk interface of each MX Series router in your network ensures that the active VLAN information for the routers in the network is propagated to each router through the trunk interfaces (the default registration mode for MVRP).

MVRP ensures that the VLAN membership information on the trunk interface is updated as the edge switch's access interfaces become active or inactive.

You do not need to explicitly bind a VLAN to the trunk interface. When MVRP is enabled, the trunk interface advertises all the VLANs that are active (bound to access interfaces) on that switch. An MVRP-enabled trunk interface does not advertise VLANs that have been configured on the switch but are not currently bound to an access interface. For example, ES1 in the topology does not forward traffic to inactive VLAN 300 on ES2.

Rapid Spanning Tree Protocol (RSTP) is also configured on the trunk interfaces to promote a loop-free topology.

This example shows a network with two customer sites, **site-1** and **site-2**, using VLANs **100**, **200**, and **300**.

ES1 supports all three VLANs, and all three VLANs are active and bound to interfaces that are connected to three customers at **site-1**:

- **ge-11/2/6**—Access port connecting customer3-site1, VLAN ID 100.
- **ge-11/2/7**—Access port connecting customer2-site1, VLAN ID 200.
- **ge-11/2/8**—Access port connecting customer1-site1, VLAN ID 300.
- **ge-11/3/0**—Trunk port connecting ES1 to AS1.

ES2 has been configured to support two VLANs, and both VLANs are active and bound to interfaces that are connected to two customers at **site-2**:

- **ge-0/1/1**—Access port connecting customer1-site2, VLAN ID 100.
- **ge-0/2/0**—Access port connecting customer2-site2, VLAN ID 200.
- **ge-0/0/5**—Trunk port connecting ES2 to AS1.

AS1 learns the VLANs dynamically using MVRP through the connection to the edge switches. AS1 has two trunk interfaces:

- **ge-3/3/0**—Connects the router to edge switch ES1 on interface **ge-11/3/0**.
- **ge-3/0/5**—Connects the router to edge switch ES2 on interface **ge-0/0/5**.



The default MVRP interface registration mode is **normal** and is used in this example. An interface in normal registration mode participates in MVRP when MVRP is enabled on the router. For information about changing the MVRP registration mode, see [“Controlling the Management State of a VLAN in MVRP Configurations” on page 20](#).

Figure 1 shows MVRP configured on three MX Series routers: two routers operating as edge switches and one router operating as an aggregation switch.

Figure 1: MVRP Configured on Three MX Series Routers for Automatic VLAN Administration

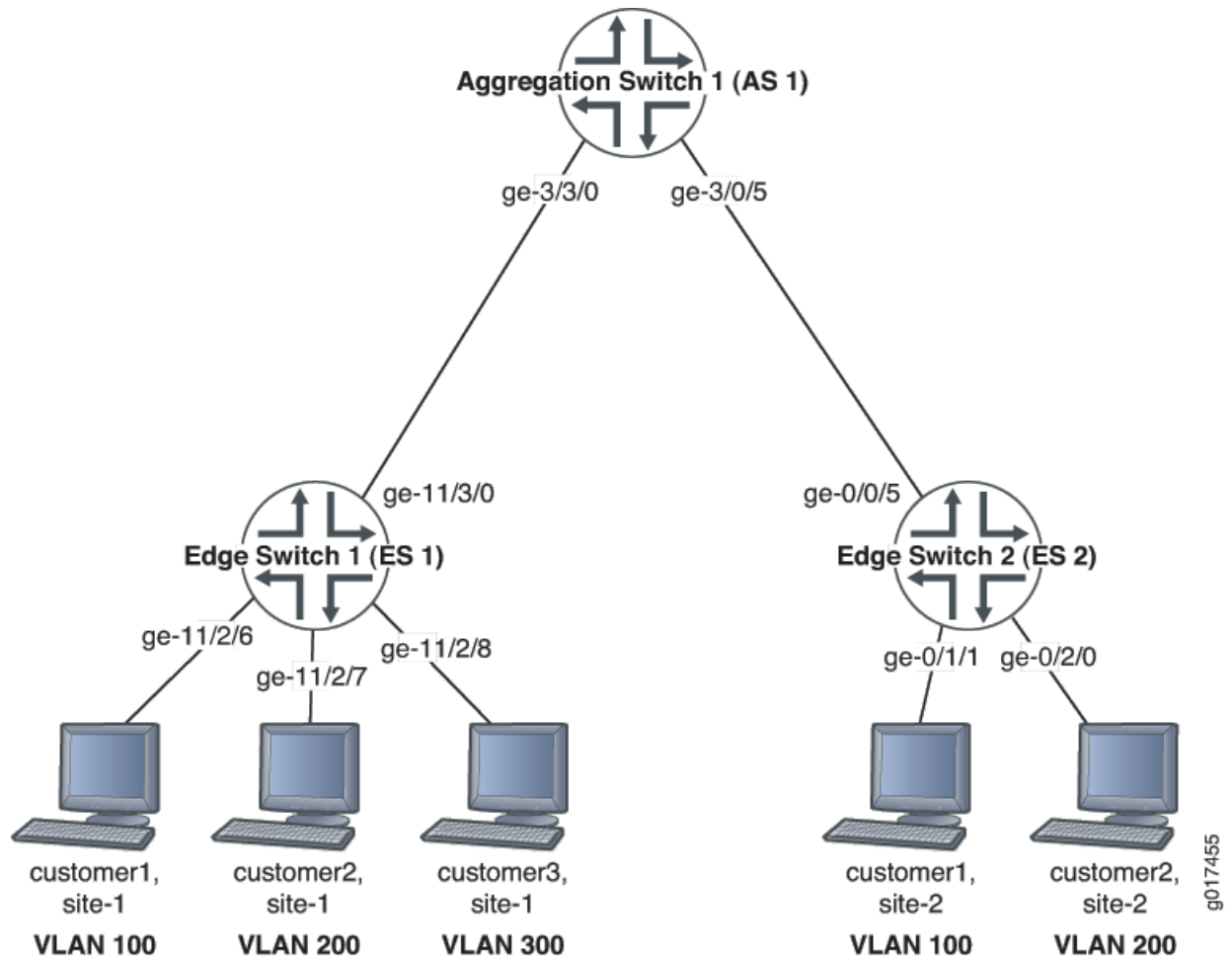


Table 4 on page 25 explains the components of the example topology.

Table 4: Components of the Network Topology

Property	Settings
MX Series routers	<ul style="list-style-type: none"> <li>• ES1</li> <li>• ES2</li> <li>• AS1</li> </ul>
VLAN tag IDs associated with bridge domain bd	100, 200, and 300

Table 4: Components of the Network Topology (*continued*)

Property	Settings
ES1 interfaces	<p>ES1 interfaces:</p> <ul style="list-style-type: none"> <li>• <b>ge-11/2/6</b>—Access port connecting customer3—site1, VLAN ID 100.</li> <li>• <b>ge-11/2/7</b>—Access port connecting customer2—site1, VLAN ID 200.</li> <li>• <b>ge-11/2/8</b>—Access port connecting customer1—site1, VLAN ID 300.</li> <li>• <b>ge-11/3/0</b>—Trunk port connecting ES1 to AS1.</li> </ul>
ES2 interfaces	<p>ES2 interfaces:</p> <ul style="list-style-type: none"> <li>• <b>ge-0/1/1</b>—Access port connecting customer3—site2, VLAN ID 100.</li> <li>• <b>ge-0/2/0</b>—Access port connecting customer3—site2, VLAN ID 200.</li> <li>• <b>ge-0/0/5</b>—Trunk port connecting ES2 to AS1.</li> </ul>
AS1 interfaces	<p>AS1 interfaces:</p> <ul style="list-style-type: none"> <li>• <b>ge-3/3/0</b>—Trunk port connected to ES1.</li> <li>• <b>ge-3/0/5</b>—Trunk port connected to ES2.</li> </ul>

## Configuration

To enable MVRP and RSTP on the trunk interface, as well as configure ES1 access interfaces and the bridge domain, perform these tasks:

- [Configuring MVRP on ES1 on page 26](#)
- [Configuring MVRP on ES2 on page 28](#)
- [Configuring MVRP on AS1 on page 30](#)

### Configuring MVRP on ES1

#### CLI Quick Configuration

To quickly configure ES1 for MVRP, copy the following commands and paste them into the switch terminal window of ES1:

```
[edit]
set interfaces ge-11/2/6 description "connected to customer3-site-1"
set interfaces ge-11/2/6 unit 0 family bridge interface-mode access
set interfaces ge-11/2/6 unit 0 family bridge vlan-id 300
set interfaces ge-11/2/7 description "connected to customer2-site-1"
set interfaces ge-11/2/7 unit 0 family bridge interface-mode access
set interfaces ge-11/2/7 unit 0 family bridge vlan-id 200
set interfaces ge-11/2/8 description "connected to customer1-site-1"
set interfaces ge-11/2/8 unit 0 family bridge interface-mode access
set interfaces ge-11/2/8 unit 0 family bridge vlan-id 100
set interfaces ge-11/3/0 description "connected to AS1 interface ge-3/3/0"
set interfaces ge-11/3/0 unit 0 family bridge interface-mode trunk
set bridge-domains bd vlan-id-list [100 200 300]
set protocols mvrp interface ge-11/3/0
set protocols rstp interface ge-11/3/0
```



**NOTE:** As we recommend as a best practice, default MVRP timers are used in this example. The default values associated with each MVRP timer are 200 ms for the join timer, 1000 ms for the leave timer, and 10000 ms for the leaveall timer. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.

### Step-by-Step Procedure

To configure MVRP on ES1:

1. Configure the access interfaces for customers at customer-site 1 and the trunk interface connecting ES1 to AS1:
 

```
[edit interfaces]
user@es1# set ge-11/2/6 description "connected to customer3-site-1"
user@es1# set ge-11/2/6 unit 0 family bridge interface-mode access
user@es1# set ge-11/2/6 unit 0 family bridge vlan-id 300
user@es1# set ge-11/2/7 description "connected to customer2-site-1"
user@es1# set ge-11/2/7 unit 0 family bridge interface-mode access
user@es1# set ge-11/2/7 unit 0 family bridge vlan-id 200
user@es1# set ge-11/2/8 description "connected to customer1-site-1"
user@es1# set ge-11/2/8 unit 0 family bridge interface-mode access
user@es1# set ge-11/2/8 unit 0 family bridge vlan-id 100
user@es1# set ge-11/3/0 description "connected to AS1 interface ge-3/3/0"
user@es1# set ge-11/3/0 unit 0 family bridge interface-mode trunk
```
2. Configure the bridge domain **bd** and the VLAN IDs associated with the bridge domain:
 

```
[edit bridge-domains]
user@es1# set bd vlan-id-list [100 200 300]
```
3. Enable MVRP on the trunk interface:
 

```
[edit protocols]
user@es1# set mvrp interface ge-11/3/0
```
4. Enable RSTP on the trunk interface:
 

```
[edit protocols]
user@es1# set rstp interface ge-11/3/0
```

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

```
user@es1> show configuration
interfaces {
  ge-11/2/6 {
    description "connected to customer3-site-1";
    unit 0 {
      family bridge {
        interface-mode access;
        vlan-id 300;
      }
    }
  }
  ge-11/2/7 {
    description "connected to customer2-site-1";
    unit 0 {
      family bridge {
        interface-mode access;
```

```
        vlan-id 200;
    }
}
ge-11/2/8 {
    description "connected to customer1-site-1";
    unit 0 {
        family bridge {
            interface-mode access;
            vlan-id 100;
        }
    }
}
ge-11/3/0 {
    description "connected to AS1 interface ge-3/3/0";
    unit 0 {
        family bridge {
            interface-mode trunk;
        }
    }
}
bridge-domains {
    bd {
        vlan-id-list [ 100 200 300 ];
    }
}
protocols {
    mvrp {
        interface ge-11/3/0;
    }
    rstp {
        interface ge-11/3/0;
    }
}
```

---

### Configuring MVRP on ES2

#### CLI Quick Configuration

To quickly configure ES2 for MVRP, copy the following commands and paste them into the switch terminal window of ES2:

```
[edit]
set interfaces ge-0/0/5 description "connected to AS1 interface ge-3/0/5"
set interfaces ge-0/0/5 unit 0 family bridge interface-mode trunk
set interfaces ge-0/1/1 description "connected to customer1-site-2"
set interfaces ge-0/1/1 unit 0 family bridge interface-mode access
set interfaces ge-0/1/1 unit 0 family bridge vlan-id 100
set interfaces ge-0/2/0 description "connected to customer2-site-2"
set interfaces ge-0/2/0 unit 0 family bridge interface-mode access
set interfaces ge-0/2/0 unit 0 family bridge vlan-id 200
set bridge-domains bd vlan-id-list [100 200]
set protocols mvrp interface ge-0/0/5
set protocols rstp interface ge-0/0/5
```



**NOTE:** As we recommend as a best practice, default MVRP timers are used in this example. The default values associated with each MVRP timer are 200 ms for the join timer, 1000 ms for the leave timer, and 10000 ms for the leaveall timer. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.

- Step-by-Step Procedure** To enable MVRP and RSTP on the trunk interface, as well as configure ES2 access interfaces and the bridge domain:
1. Configure the access interfaces for customers at customer site **site-2** and the trunk interface connecting ES2 to AS1:
 

```
[edit interfaces]
user@es2# set ge-0/0/5 description "connected to AS1 interface ge-3/0/5"
user@es2# set ge-0/0/5 unit 0 family bridge interface-mode trunk
user@es2# set ge-0/1/1 description "connected to customer1-site-2"
user@es2# set ge-0/1/1 unit 0 family bridge interface-mode access
user@es2# set ge-0/1/1 unit 0 family bridge vlan-id 100
user@es2# set ge-0/2/0 description "connected to customer2-site-2"
user@es2# set ge-0/2/0 unit 0 family bridge interface-mode access
user@es2# set ge-0/2/0 unit 0 family bridge vlan-id 200
```
  2. Configure the bridge domain **bd** and the VLAN IDs associated with the bridge domain:
 

```
[edit bridge-domains]
user@es2# set bd vlan-id-list [100 200]
```
  3. Enable MVRP on the trunk interface:
 

```
[edit protocols]
user@es2# set mvrp interface ge-0/0/5
```
  4. Enable RSTP on the trunk interface:
 

```
[edit protocols]
user@es2# set rstp interface ge-0/0/5
```

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

```
user@es2> show configuration
interfaces {
  ge-0/0/5 {
    description "connected to AS1 interface ge-3/0/5";
    unit 0 {
      family bridge {
        interface-mode trunk;
      }
    }
  }
  ge-0/1/1 {
    description "connected to customer1-site-2";
    unit 0 {
      family bridge {
        interface-mode access;
        vlan-id 100;
      }
    }
  }
}
```

```

}
ge-0/2/0 {
  description "connected to customer2-site-2";
  unit 0 {
    family bridge {
      interface-mode access;
      vlan-id 200;
    }
  }
}
}
bridge-domains {
  bd {
    vlan-id-list [ 100 200 ];
  }
}
protocols {
  mvrp {
    interface ge-0/0/5;
  }
  rstp {
    interface ge-0/0/5;
  }
}
}

```

### Configuring MVRP on AS1

#### CLI Quick Configuration

To quickly configure AS1 for MVRP, copy the following commands and paste them into the switch terminal window of AS1:

```

[edit]
set interfaces ge-3/0/5 description "connected to ES2 interface ge-0/0/5"
set interfaces ge-3/0/5 unit 0 family bridge interface-mode trunk
set interfaces ge-3/3/0 description "connected to ES1 interface ge-11/3/0"
set interfaces ge-3/3/0 unit 0 family bridge interface-mode trunk
set protocols mvrp interface ge-3/0/5
set protocols mvrp interface ge-3/3/0
set protocols rstp bridge-priority 0
set protocols rstp interface ge-3/0/5
set protocols rstp interface ge-3/3/0

```



**NOTE:** As we recommend as a best practice, default MVRP timers are used in this example. The default values associated with each MVRP timer are 200 ms for the join timer, 1000 ms for the leave timer, and 10000 ms for the leaveall timer. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.

#### Step-by-Step Procedure

To enable MVRP and RSTP on the trunk interfaces on AS1:

1. Configure the trunk interfaces connecting AS1 to ES1 and ES2:

```

[edit interfaces]
user@as1# set ge-3/0/5 description "connected to ES2 interface ge-0/0/5"

```

```

user@as1# set ge-3/0/5 unit 0 family bridge interface-mode trunk
user@as1# set ge-ge-3/3/0 description "connected to ES1 interface ge-11/3/0"
user@as1# set ge-3/3/0 unit 0 family bridge interface-mode trunk
2. Enable MVRP on the trunk interfaces:

[edit protocols]
user@as1# set mvrp interface ge-3/0/5
user@as1# set mvrp interface ge-3/3/0
3. Enable RSTP on the trunk interfaces:

[edit protocols]
user@as1# set rstp bridge-priority 0
user@as1# set rstp interface ge-3/0/5
user@as1# set rstp interface ge-3/3/0

```

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

```

user@as1> show configuration
interfaces {
  ge-3/0/5 {
    description "connected to ES2 interface ge-0/0/5";
    unit 0 {
      family bridge {
        interface-mode trunk;
      }
    }
  }
  ge-3/3/0 {
    description "connected to ES1 interface ge-11/3/0";
    unit 0 {
      family bridge {
        interface-mode trunk;
      }
    }
  }
}
protocols {
  mvrp {
    interface ge-3/0/5;
    interface ge-3/3/0;
  }
  rstp {
    bridge-priority 0;
    interface ge-3/0/5;
    interface ge-3/3/0;
  }
}

```

## Verification

To confirm that the configuration is updating VLAN membership, perform these tasks:

- [Verifying That MVRP Is Enabled on ES1 on page 32](#)
- [Verifying the MVRP Registration on ES1 on page 32](#)
- [Verifying Dynamic VLAN Members on ES1 on page 32](#)

- [Verifying That MVRP Is Enabled on ES2 on page 33](#)
- [Verifying the MVRP Registration on ES2 on page 33](#)
- [Verifying Dynamic VLAN Members on ES2 on page 34](#)
- [Verifying That MVRP Is Enabled on AS1 on page 34](#)
- [Verifying the MVRP Registration on AS1 on page 34](#)
- [Verifying That MVRP Is Updating VLAN Membership on AS1 on page 35](#)

---

### Verifying That MVRP Is Enabled on ES1

---

**Purpose** Verify that MVRP is enabled on ES1.

**Action** Show the MVRP applicant state:

```
user@es1> show mvrp applicant-state
MVRP applicant state for routing instance 'default-switch'
(V0) Very anxious observer, (VP) Very anxious passive, (VA) Very anxious new,
(AN) Anxious new, (AA) Anxious active, (QA) Quiet active, (LA) Leaving active,
(AO) Anxious observer, (QO) Quiet observer, (LO) Leaving observer,
(AP) Anxious passive, (QP) Quiet passive
```

VLAN Id	Interface	State
100	ge-11/3/0	Declaring (QA)
200	ge-11/3/0	Declaring (QA)
300	ge-11/3/0	Declaring (QA)

**Meaning** The output displayed shows that trunk interface **ge-11/3/0** on ES1 is declaring (sending out) interest in VLAN IDs **100**, **200**, and **300**.

---

### Verifying the MVRP Registration on ES1

---

**Purpose** Verify the VLANs that are registering on ES1.

**Action** List VLANs in the registered state:

```
user@es1> show mvrp registration-state
MVRP registration state for routing instance 'default-switch'
```

VLAN Id	Interface	Registrar State	Forced State	Managed State	STP State
100	ge-11/3/0	Registered	Registered	Normal	Forwarding
200	ge-11/3/0	Registered	Registered	Normal	Forwarding
300	ge-11/3/0	Empty	Empty	Normal	Forwarding

**Meaning** The output displayed shows the registrar state for VLANs **100** and **200** is **Registered**, indicating that these VLANs are receiving traffic from customer site site-2. VLAN **300** is in an **Empty** state and is not receiving traffic from site-2.

---

### Verifying Dynamic VLAN Members on ES1

---

**Purpose** Verify that flooding is not occurring on unregistered VLANs.



**Action** List dynamic VLAN membership:

```
user@es1> show mvrp dynamic-vlan-memberships
MVRP dynamic vlans for routing instance 'default-switch'
(s) static vlan, (f) fixed registration

VLAN Id      Interfaces
  100 (s)    ge-11/3/0
  200 (s)    ge-11/3/0
  300 (s)
```

**Meaning** The output displayed shows that VLAN **300** is not associated with the trunk interface **ge-11/3/0** connected to AS1. No unnecessary traffic is flooding the interface for VLAN **300** towards ES2 site-2.

### Verifying That MVRP Is Enabled on ES2

**Purpose** Verify that MVRP is enabled on ES2.

**Action** Show the MVRP applicant state:

```
user@es2> show mvrp applicant-state
MVRP applicant state for routing instance 'default-switch'
(V0) Very anxious observer, (VP) Very anxious passive, (VA) Very anxious new,
(AN) Anxious new, (AA) Anxious active, (QA) Quiet active, (LA) Leaving active,
(AO) Anxious observer, (QO) Quiet observer, (LO) Leaving observer,
(AP) Anxious passive, (QP) Quiet passive

VLAN Id      Interface      State
  100      ge-0/0/5      Declaring (QA)
  200      ge-0/0/5      Declaring (QA)
  300      ge-0/0/5      Idle (V0)
```

**Meaning** The output displayed shows that trunk interface **ge-0/0/5** on ES2 is declaring (sending out) interest in VLAN IDs **100** and **200** but is not declaring interest for VLAN **300**. The state displayed for VLAN **300** is **Idle**.

### Verifying the MVRP Registration on ES2

**Purpose** Verify the VLANs that are registering on ES2.

**Action** List VLANs in the registered state:

```
user@es2> show mvrp registration-state
MVRP registration state for routing instance 'default-switch'

VLAN Id      Interface      Registrar      Forced      Managed      STP
              State          State          State          State          State
  100      ge-0/0/5      Registered      Registered      Normal      Forwarding
  200      ge-0/0/5      Registered      Registered      Normal      Forwarding
  300      ge-0/0/5      Registered      Registered      Normal      Forwarding
```

**Meaning** The output displayed shows that the registrar state for VLANs **100**, **200**, and **300** is **Registered** indicating that these VLANs are receiving traffic from customer site site-1.

### Verifying Dynamic VLAN Members on ES2

**Purpose** Verify dynamic VLAN membership.

**Action** List dynamic VLAN membership:

```
user@es2> show mvrp dynamic-vlan-memberships
MVRP dynamic vlans for routing instance 'default-switch'
(s) static vlan, (f) fixed registration
```

VLAN Id	Interfaces
100 (s)	ge-0/0/5
200 (s)	ge-0/0/5
300	ge-0/0/5

**Meaning** The output displayed shows that VLAN 300 is not a static VLAN. A static VLAN is indicated by the **s** beside the VLAN ID. VLAN 300 added to ES2 shows the VLAN membership is being updated.

### Verifying That MVRP Is Enabled on AS1

**Purpose** Verify that MVRP is enabled on AS1.

**Action** Show the MVRP applicant state:

```
user@es2> show mvrp applicant-state
MVRP applicant state for routing instance 'default-switch'
(V0) Very anxious observer, (VP) Very anxious passive, (VA) Very anxious new,
(AN) Anxious new, (AA) Anxious active, (QA) Quiet active, (LA) Leaving active,
(AO) Anxious observer, (QO) Quiet observer, (LO) Leaving observer,
(AP) Anxious passive, (QP) Quiet passive
```

VLAN Id	Interface	State
100	ge-3/3/0	Declaring (QA)
	ge-3/0/5	Declaring (QA)
200	ge-3/3/0	Declaring (QA)
	ge-3/0/5	Declaring (QA)
300	ge-3/3/0	Idle (V0)
	ge-3/0/5	Declaring (QA)

**Meaning** The output displayed shows that trunk interfaces **ge-3/3/0** (connected to ES1) and **ge-3/0/5** (connected to ES2) are declaring (sending out) interest in the VLAN IDs 100 and 200. Interface **ge-3/0/5** is declaring interest for VLAN 300 (toward ES2) but not declaring interest for VLAN 300 on interface **ge-3/3/0** (toward ES1).

### Verifying the MVRP Registration on AS1

**Purpose** Verify the VLANs that are registering on AS1.

**Action** List VLANs in the registered state:

```
user@as1> show mvrp registration-state
MVRP registration state for routing instance 'default-switch'
```

VLAN Id	Interface	Registrar	Forced	Managed	STP
---------	-----------	-----------	--------	---------	-----

		State	State	State	State
100	ge-3/3/0	Registered	Registered	Normal	Forwarding
	ge-3/0/5	Registered	Registered	Normal	Forwarding
200	ge-3/3/0	Registered	Registered	Normal	Forwarding
	ge-3/0/5	Registered	Registered	Normal	Forwarding
300	ge-3/3/0	Registered	Registered	Normal	Forwarding
	ge-3/0/5	Empty	Empty	Normal	Forwarding

**Meaning** The output displayed shows that the registrar state for VLANs **100** and **200** is **Registered** on both sides of AS1 (ES1 and ES2), indicating that traffic is being transmitted and received through these VLANs between customer site site-1 and site-2. The registrar state for VLAN **300** is **Registered** on interface **ge-3/3/0** (connected to ES1), but not on interface **ge-3/0/5** (connected to ES2).

### Verifying That MVRP Is Updating VLAN Membership on AS1

**Purpose** Verify that MVRP is updating VLAN membership on AS1 by displaying the dynamic VLAN membership on AS1.

**Action** List the VLANs on AS1 that were created dynamically using MVRP:

```
user@as1> show mvrp dynamic-vlan-memberships
MVRP dynamic vlans for routing instance 'default-switch'
(s) static vlan, (f) fixed registration
```

VLAN Id	Interfaces
100	ge-3/3/0
	ge-3/0/5
200	ge-3/3/0
	ge-3/0/5
300	ge-3/3/0

**Meaning** VLANs are only configured statically on the edge switches. The output displayed shows that all VLANs were learned dynamically. No **(s)** is added beside the VLAN IDs, indicating that they were created dynamically and not added statically.

- Related Documentation**
- [Configuring Multiple VLAN Registration Protocol \(MVRP\) to Manage Dynamic VLAN Registration on page 18](#)
  - [Controlling the Management State of a VLAN in MVRP Configurations on page 20](#)
  - [Verifying That MVRP Is Working Correctly on page 35](#)
  - [Understanding Multiple VLAN Registration Protocol \(MVRP\) for Dynamic VLAN Registration on page 15](#)

### Verifying That MVRP Is Working Correctly

**Purpose** After configuring your MX Series router or EX Series switch to participate in Multiple VLAN Registration Protocol (MVRP), verify that the configuration is properly set and that MVRP messages are being sent and received on your switch.

**Action** 1. Confirm that the router is declaring VLANs.

Show that MVRP is enabled:

```
user@host> show mvrp
MVRP configuration for routing instance 'default-switch'
MVRP dynamic VLAN creation : Enabled
MVRP BPDU MAC address      : Customer bridge group (01-80-C2-00-00-21)
MVRP timers (ms)
  Interface    Join    Leave  LeaveAll
  ge-11/3/0    200    800    10000
```

Show the MVRP applicant state:

```
user@host> show mvrp applicant-state
MVRP applicant state for routing instance 'default-switch'
(V0) Very anxious observer, (VP) Very anxious passive, (VA) Very anxious new,
(AN) Anxious new, (AA) Anxious active, (QA) Quiet active, (LA) Leaving active,
(AO) Anxious observer, (QO) Quiet observer, (LO) Leaving observer,
(AP) Anxious passive, (QP) Quiet passive
```

VLAN Id	Interface	State
100	ge-11/3/0	Declaring (QA)
200	ge-11/3/0	Declaring (QA)
300	ge-11/3/0	Declaring (QA)

## 2. Confirm that VLANs are registered on interfaces.

List VLANs in the registered state:

```
user@host> show mvrp registration-state
MVRP registration state for routing instance 'default-switch'
```

VLAN Id	Interface	Registrar State	Forced State	Managed State	STP State
100	ge-11/3/0	Registered	Registered	Normal	Forwarding
200	ge-11/3/0	Registered	Registered	Normal	Forwarding
300	ge-11/3/0	Empty	Empty	Normal	Forwarding

## 3. Display a list of VLANs created dynamically.

List dynamic VLAN membership:

```
user@host> show mvrp dynamic-vlan-memberships
MVRP dynamic vlans for routing instance 'default-switch'
(s) static vlan, (f) fixed registration
```

VLAN Id	Interfaces
100	ge-3/3/0 ge-3/0/5
200	ge-3/3/0 ge-3/0/5

**Meaning** The output of `show mvrp applicant-state` shows that trunk interface `ge-11/3/0` is declaring (sending out) interest in the VLAN IDs `100`, `200`, and `300`, and MVRP is operating properly.

The output of `show mvrp registrant-state` shows the registrar state for VLANs `100` and `200` as **Registered**, indicating that these VLANs are receiving traffic from a customer site. VLAN `300` is in an **Empty** state and is not receiving traffic from a customer site.

The output of the **show mvrp dynamic-vlan-membership** shows that VLANs 100 and 200 are created dynamically (here, on an MX Series router operating as an aggregation switch between MX Series routers operating as edge switches). VLANs created statically are marked with an (s) (which is not indicated in this output).

**Related  
Documentation**

- [Controlling the Management State of a VLAN in MVRP Configurations on page 20](#)



## CHAPTER 2

# Configuration Statements

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## bpdu-destination-mac-address

---

<b>Syntax</b>	bpdu-destination-mac-address provider-bridge-group;
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type), [edit protocols <a href="#">mvrp</a> ], [edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type)
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	For Multiple VLAN Registration Protocol (MVRP) configurations, specifies the multicast address for MVRP. If configured, the provider MVRP multicast MAC address is used; otherwise, the Junos OS uses the customer MVRP multicast MAC address.
<b>Default</b>	By default, the provider MVRP multicast MAC address is used (if configured). Otherwise, the customer MVRP MAC address is used.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li></ul>



## bridge-domains

<b>Syntax</b>	<pre> bridge-domains {   bridge-domain-name {     bridge-options {       ...bridge-options-configuration...     }     domain-type bridge;     interface <i>interface-name</i>;     no-irb-layer-2-copy;     routing-interface <i>routing-interface-name</i>;     vlan-id (all   none   <i>number</i>);     <b>vlan-id-list</b> [ <i>vlan-id-numbers</i> ];     vlan-tags outer <i>number</i> inner <i>number</i>;     bridge-options {       interface <i>interface-name</i> {         mac-pinning         static-mac <i>mac-address</i>;       }       interface-mac-limit <i>limit</i>;       mac-statistics;       mac-table-size <i>limit</i>;       no-mac-learning;     }   } } </pre>
<b>Hierarchy Level</b>	[edit], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> ], [edit routing-instances <i>routing-instance-name</i> ]
<b>Release Information</b>	Statement introduced in Junos OS Release 8.4. Support for logical systems added in Junos OS Release 9.6. Support for the <b>no-irb-layer-2-copy</b> statement added in Junos OS Release 10.2.
<b>Description</b>	(MX Series routers only) Configure a domain that includes a set of logical ports that share the same flooding or broadcast characteristics in order to perform Layer 2 bridging.
<b>Options</b>	<b>bridge-domain-name</b> —Name of the bridge domain.
<div style="text-align: center;">  <b>NOTE:</b> You cannot use the slash (/) character as part of the bridge domain name. If you do, the configuration will not commit. </div>	
The remaining statements are explained separately.	
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring a Bridge Domain*
  - *Configuring a Layer 2 Virtual Switch*
  - *Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers*

---

## bridge-priority

---

<b>Syntax</b>	<code>bridge-priority <i>priority</i>;</code>
<b>Hierarchy Level</b>	<code>[edit logical-systems <i>logical-system-name</i> protocols (mstp   <b>rstp</b>)],</code> <code>[edit logical-systems <i>logical-system-name</i> protocols mstp msti <i>msti-id</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> protocols vstp vlan <i>vlan-id</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    (mstp   <b>rstp</b>)],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i></code> <code>    protocols mstp msti <i>msti-id</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    vstp vlan <i>vlan-id</i>],</code> <code>[edit protocols (mstp   <b>rstp</b>)],</code> <code>[edit protocols mstp msti <i>msti-id</i>],</code> <code>[edit protocols vstp vlan <i>vlan-id</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols (mstp   <b>rstp</b>)],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols mstp msti <i>msti-id</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols vstp vlan <i>vlan-id</i>]</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 8.4. Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches. Support for logical systems added in Junos OS Release 9.6.
<b>Description</b>	Determine which bridge is elected as the root bridge. If two bridges have the same path cost to the root bridge, the bridge priority determines which bridge becomes the designated bridge for a LAN segment.
<b>Options</b>	<b>priority</b> —The bridge priority can be set only in increments of 4096. <b>Range:</b> 0 through 61,440 <b>Default:</b> 32,768
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Bridge Priority for Election of Root Bridge and Designated Bridge</i></li><li>• <i>Example: Configuring Network Regions for VLANs with MSTP</i></li><li>• <i>Understanding MSTP for EX Series and QFX Series Switches</i></li><li>• <i>Understanding VSTP for EX Series Switches and QFX Series Switches</i></li></ul>

## family

```

Syntax  family family {
        accounting {
            destination-class-usage;
            source-class-usage {
                (input | output | input output);
            }
        }
        access-concentrator name;
        address address {
            ... the address subhierarchy appears after the main [edit interfaces interface-name unit
                logical-unit-number family family-name] hierarchy ...
        }
        bundle interface-name;
        core-facing;
        demux-destination {
            destination-prefix;
        }
        demux-source {
            source-prefix;
        }
        direct-connect;
        duplicate-protection;
        bsimmons profile-name;
        filter {
            group filter-group-number;
            input filter-name;
            input-list [ filter-names ];
            output filter-name;
            output-list [ filter-names ];
        }
        interface-mode (access | trunk);
        ipsec-sa sa-name;
        keep-address-and-control;
        mac-validate (loose | strict);
        max-sessions number;
        max-sessions-vsa-ignore;
        mtu bytes;
        multicast-only;
        negotiate-address;
        no-redirects;
        policer {
            arp policer-template-name;
            input policer-template-name;
            output policer-template-name;
        }
        primary;
        protocols [inet iso mpls];
        proxy inet-address address;
        receive-options-packets;
        receive-ttl-exceeded;
        remote (inet-address address | mac-address address);
        rpf-check {

```

```

    fail-filter filter-name
    mode loose;
}
sampling {
    input;
    output;
}
service {
    input {
        post-service-filter filter-name;
        service-set service-set-name <service-filter filter-name>;
    }
    output {
        service-set service-set-name <service-filter filter-name>;
    }
}
service-name-table table-name;
short-cycle-protection <lockout-time-min minimum-seconds lockout-time-max
    maximum-seconds> <filter [aci]>;
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
translate-plp-control-word-de;
unnumbered-address interface-name destination address destination-profile profile-name;
vlan-id number;
vlan-id-list [number number-number];
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
    broadcast address;
    destination address;
    destination-profile name;
    eui-64;
    master-only;
    multipoint-destination address dlci dlci-identifier;
    multipoint-destination address {
        epd-threshold cells;
        inverse-arp;
        oam-liveness {
            up-count cells;
            down-count cells;
        }
        oam-period (disable | seconds);
        shaping {
            (cbr rate | rtvbr burst length peak rate sustained rate | vbr burst length peak rate
                sustained rate);
            queue-length number;
        }
        vci vpi-identifier.vci-identifier;
    }
    preferred;
    primary;
    vrrp-group group-id {
        (accept-data | no-accept-data);
        advertise-interval seconds;
        authentication-key key;
        authentication-type authentication;
        fast-interval milliseconds;
    }
}

```

```

    (preempt | no-preempt) {
        hold-time seconds;
    }
    priority number;
    track {
        interface interface-name {
            bandwidth-threshold bits-per-second priority-cost priority;
            priority-cost priority;
        }
        priority-hold-time seconds;
        route prefix routing-instance instance-name priority-cost priority;
    }
    }
    virtual-address [ addresses ];
    }
    virtual-link-local-address ipv6-address;
    }
}

```

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

**Release Information** Statement introduced before Junos OS Release 7.4.  
Option **max-sessions-vs-a-ignore** introduced in Junos OS Release 11.4.

**Description** Configure protocol family information for the logical interface.



**NOTE:** Not all subordinate statements are available to every protocol family.

**Options** *family*—Protocol family:

- **any**—Protocol-independent family used for Layer 2 packet filtering



**NOTE:** This option is not supported on T4000 Type 5 FPCs.

---

- **bridge**—(M Series and T Series routers only) Configure only when the physical interface is configured with **ethernet-bridge** type encapsulation or when the logical interface is configured with **vlan-bridge** type encapsulation. You can optionally configure this protocol family for the logical interface on which you configure VPLS.
- **ethernet-switching**—(M Series and T Series routers only) Configure only when the physical interface is configured with **ethernet-bridge** type encapsulation or when the logical interface is configured with **vlan-bridge** type encapsulation
- **ccc**—Circuit cross-connect protocol suite. You can configure this protocol family for the logical interface of CCC physical interfaces. When you use this encapsulation type, you can configure the **ccc** family only.
- **inet**—Internet Protocol version 4 suite. You must configure this protocol family for the logical interface to support IP protocol traffic, including Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Internet Control Message Protocol (ICMP), and Internet Protocol Control Protocol (IPCP).
- **inet6**—Internet Protocol version 6 suite. You must configure this protocol family for the logical interface to support IPv6 protocol traffic, including Routing Information Protocol for IPv6 (RIPng), Intermediate System-to-Intermediate System (IS-IS), BGP, and Virtual Router Redundancy Protocol for IPv6 (VRRP).
- **iso**—International Organization for Standardization Open Systems Interconnection (ISO OSI) protocol suite. You must configure this protocol family for the logical interface to support IS-IS traffic.
- **mlfr-end-to-end**—Multilink Frame Relay FRF.15. You must configure this protocol or multilink Point-to-Point Protocol (MLPPP) for the logical interface to support multilink bundling.
- **mlfr-uni-nni**—Multilink Frame Relay FRF.16. You must configure this protocol or **mlfr-end-to-end** for the logical interface to support link services and voice services bundling.
- **multilink-ppp**—Multilink Point-to-Point Protocol. You must configure this protocol (or **mlfr-end-to-end**) for the logical interface to support multilink bundling.
- **mpls**—Multiprotocol Label Switching (MPLS). You must configure this protocol family for the logical interface to participate in an MPLS path.
- **pppoe**—Point-to-Point Protocol over Ethernet
- **tcc**—Translational cross-connect protocol suite. You can configure this protocol family for the logical interface of TCC physical interfaces.

- **tnp**—Trivial Network Protocol. This protocol is used to communicate between the Routing Engine and the router's packet forwarding components. The Junos OS automatically configures this protocol family on the router's internal interfaces only, as discussed in *Understanding Internal Ethernet Interfaces*.
- **vpls**—(M Series and T Series routers only) Virtual private LAN service. You can optionally configure this protocol family for the logical interface on which you configure VPLS. VPLS provides an Ethernet-based point-to-multipoint Layer 2 VPN to connect customer edge (CE) routers across an MPLS backbone. When you configure a VPLS encapsulation type, the **family vpls** statement is assumed by default.

MX Series routers support dynamic profiles for VPLS pseudowires, VLAN identifier translation, and automatic bridge domain configuration.

For more information about VPLS, see the *Junos OS VPNs Library for Routing Devices*.

The remaining statements are explained separately.

<b>Required Privilege Level</b>	interface—To view this statement in the configuration.
	interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring the Protocol Family</i></li></ul>

## interface (MVRP)

---



<b>Syntax</b>	<pre>interface (all   <i>interface-name</i>) {   join-timer <i>milliseconds</i>;   leave-timer <i>milliseconds</i>;   leaveall-timer <i>milliseconds</i>;   point-to-point;   registration (forbidden   normal   restricted); }</pre>
<b>Hierarchy Level</b>	<pre>[edit logical-systems <i>logical-system-name</i> protocols <b>mvrp</b>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols   <b>mvrp</b>] (for virtual switch instance type), [edit protocols <b>mvrp</b>], [edit routing-instances <i>routing-instance-name</i> protocols <b>mvrp</b>] (for virtual switch instance   type)</pre>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	Specify interfaces on which to configure Multiple VLAN Registration Protocol (MVRP).
<b>Default</b>	By default, MVRP is disabled.
<b>Options</b>	<p><b>all</b>—All interfaces on the router or switch.</p> <p><b><i>interface-name</i></b>—Names of interface to be configured for MVRP.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li></ul>



## interface (Spanning Tree)

<b>Syntax</b>	<pre> interface <i>interface-name</i> {     bpd timeout-action {         alarm;         block;     }     cost <i>cost</i>;     edge;     mode (p2p   shared);     no-root-port;     priority <i>interface-priority</i>; } </pre>
<b>Hierarchy Level</b>	<pre> [edit logical-systems <i>logical-system-name</i> protocols (mstp   <b>rstp</b>   vstp)], [edit logical-systems <i>logical-system-name</i> protocols vstp vlan <i>vlan-id</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols (<i>mstp</i>   <b>rstp</b>   vstp)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols vstp vlan <i>vlan-id</i>], [edit protocols (mstp   <b>rstp</b>   vstp)], [edit protocols vstp vlan <i>vlan-id</i>], [edit routing-instances <i>routing-instance-name</i> protocols (mstp   <b>rstp</b>   vstp)], [edit routing-instances <i>routing-instance-name</i> protocols vstp vlan <i>vlan-id</i>] </pre>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 8.4.</p> <p>Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches.</p> <p>Support for logical systems added in Junos OS Release 9.6.</p>
<b>Description</b>	Configure the interface to participate in the RSTP, MSTP, or VSTP instance.
<b>Options</b>	<p><b><i>interface-name</i></b>—Name of a Gigabit Ethernet or 10-Gigabit Ethernet interface.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>Spanning-Tree Instance Interface</i></li> <li>• <i>show spanning-tree interface</i></li> <li>• <i>Understanding RSTP for EX Series and QFX Series Switches</i></li> <li>• <i>Understanding MSTP for EX Series and QFX Series Switches</i></li> <li>• <i>Understanding VSTP for EX Series Switches and QFX Series Switches</i></li> </ul>

## interface-mode

<b>Syntax</b>	<code>interface-mode (access   trunk &lt;inter-switch-link&gt;);</code>
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> <b>unit</b> <i>logical-unit-number</i> family bridge], [edit interfaces <i>interface-name</i> <b>unit</b> <i>logical-unit-number</i> family ethernet-switching], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> <b>unit</b> <i>logical-unit-number</i> family bridge]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.2. Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches. Statement introduced in Junos OS Release 13.2 for the QFX Series. Statement introduced in Junos OS Release 15.1. <b>inter-switch-link</b> option introduced in Junos OS Release 14.2 for MX240, MX480, and MX960 routers in enhanced LAN mode.
<b>Description</b>	 <b>NOTE:</b> This statement supports the Enhanced Layer 2 Software (ELS) configuration style. If your switch runs software that does not support ELS, see <i>port-mode</i> . For ELS details, see <i>Getting Started with Enhanced Layer 2 Software</i> . <p>(QFX3500 and QFX3600 standalone switches)—Determine whether the logical interface accepts or discards packets based on VLAN tags. Specify the <b>trunk</b> option to accept packets with a VLAN ID that matches the list of VLAN IDs specified in the <b>vlan-id</b> or <b>vlan-id-list</b> statement, then forward the packet within the bridge domain or VLAN configured with the matching VLAN ID. Specify the <b>access</b> option to accept packets with no VLAN ID, then forward the packet within the bridge domain or VLAN configured with the VLAN ID that matches the VLAN ID specified in the <b>vlan-id</b> statement.</p>  <b>NOTE:</b> On MX Series routers, if you want IGMP snooping to be functional for a bridge domain, then you should not configure <b>interface-mode</b> and <b>irb</b> for that bridge. Such a configuration commit succeeds, but IGMP snooping is not functional, and a message informing the same is displayed. For more information, see <i>Configuring a Trunk Interface on a Bridge Network</i> .
<b>Options</b>	<p><b>access</b>—Configure a logical interface to accept untagged packets. Specify the VLAN to which this interface belongs using the <b>vlan-id</b> statement.</p> <p><b>trunk</b>—Configure a single logical interface to accept packets tagged with any VLAN ID specified with the <b>vlan-id</b> or <b>vlan-id-list</b> statement.</p> <p><b>trunk inter-switch-link</b>—For a private VLAN, configure the InterSwitch Link protocol (ISL) on a trunk port of the primary VLAN in order to connect the switches composing the PVLAN to each other. You do not need to configure an ISL when a PVLAN is configured</p>

on a single switch. This configuration specifies whether the particular interface assumes the role of interswitch link for the PVLAN domains of which it is a member. This option is supported only on MX240, MX480, and MX960 routers in enhanced LAN mode.

<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Access Mode on a Logical Interface</i></li><li>• <i>Configuring a Logical Interface for Trunk Mode</i></li><li>• <i>Example: Connecting Access Switches to a Distribution Switch</i></li><li>• <i>Tunnel Services Overview</i></li><li>• <i>Tunnel Interface Configuration on MX Series Routers Overview</i></li></ul>

## join-timer (MVRP)

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<b>Syntax</b>	<code>join-timer <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<code>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    <a href="#">mvrp</a> interface (all   <i>interface-name</i>)] (for virtual switch instance type),</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    <a href="#">mvrp</a>] (for virtual switch instance type),</code> <code>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</code> <code>[edit protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a>] (for virtual switch instance</code> <code>    type),</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)]</code> <code>    (for virtual switch instance type)</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	For Multiple VLAN Registration Protocol (MVRP), configure the maximum interval interfaces must wait before sending MVRP protocol data units (PDUs).
<b>Default</b>	200 milliseconds
<b>Options</b>	<i>milliseconds</i> —Interval that the interface must wait before sending MVRP PDUs. Maintain default timer settings unless there is a compelling reason to change the settings. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li><li>• <a href="#">leaveall-timer on page 53</a></li><li>• <a href="#">leave-timer on page 54</a></li><li>• <a href="#">point-to-point on page 57</a></li><li>• <a href="#">registration on page 58</a></li></ul>

## leaveall-timer (MVRP)

<b>Syntax</b>	<code>leaveall-timer <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)] (for virtual switch instance type),</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a>] (for virtual switch instance type),</p> <p>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</p> <p>[edit protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a>] (for virtual switch instance type),</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)] (for virtual switch instance type)</p>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	For Multiple VLAN Registration Protocol (MVRP), configure the interval at which the LeaveAll state operates on the interface.
<b>Default</b>	10000 milliseconds
<b>Options</b>	<i>milliseconds</i> —Interval between the sending of Leave All messages. Maintain default timer settings unless there is a compelling reason to change the settings. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li> <li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li> <li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li> <li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li> <li>• <a href="#">join-timer on page 52</a></li> <li>• <a href="#">leave-timer on page 54</a></li> <li>• <a href="#">point-to-point on page 57</a></li> <li>• <a href="#">registration on page 58</a></li> </ul>

## leave-timer (MVRP)

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<b>Syntax</b>	<code>leave-timer <i>milliseconds</i>;</code>
<b>Hierarchy Level</b>	<code>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    <a href="#">mvrp</a> interface (all   <i>interface-name</i>)] (for virtual switch instance type),</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>    <a href="#">mvrp</a>] (for virtual switch instance type),</code> <code>[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</code> <code>[edit protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a>] (for virtual switch instance</code> <code>    type),</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> interface (all   <i>interface-name</i>)]</code> <code>    (for virtual switch instance type)</code>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	For Multiple VLAN Registration Protocol (MVRP), configure the number of milliseconds the switch retains a VLAN in the Leave state before the VLAN is unregistered. If the interface receives a join message before this timer expires, the VLAN remains registered.
<b>Default</b>	1000 milliseconds
<b>Options</b>	<i>milliseconds</i> —Interval that the switch retains a VLAN in the Leave state before the VLAN is unregistered. At a minimum, set the leave-timer interval at twice the join-timer interval. Maintain default timer settings unless there is a compelling reason to change the settings. Modifying timers to inappropriate values might cause an imbalance in the operation of MVRP.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li><li>• <a href="#">join-timer on page 52</a></li><li>• <a href="#">leaveall-timer on page 53</a></li><li>• <a href="#">point-to-point on page 57</a></li><li>• <a href="#">registration on page 58</a></li></ul>

## mvrp

<b>Syntax</b>	<pre> mvrp {   bpd-destination-mac-address provider-bridge-group;   join-timer milliseconds;   leave-timer milliseconds;   leaveall-timer milliseconds;   interface (all   interface-name) {     join-timer milliseconds;     leave-timer milliseconds;     leaveall-timer milliseconds;     point-to-point;     registration (forbidden   normal   restricted);   }   no-dynamic-vlan;   traceoptions {     file filename &lt;files number &gt; &lt;size size&gt; &lt;no-stamp   world-readable         no-world-readable&gt;;     flag flag;   } } </pre>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> protocols],  [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols]  (for virtual switch instance type),  [edit protocols],  [edit routing-instances <i>routing-instance-name</i> protocols] (for virtual switch instance type),</p>
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	<p>For Layer 2 networks, configure Multiple VLAN Registration Protocol (MVRP) to dynamically share VLAN information and dynamically configure needed VLANs. Maintaining VLAN configurations based on active VLANs reduces the amount of traffic traveling in the network, saving network resources. MVRP is configured on trunk interfaces.</p> <p>The remaining statements are explained separately.</p>
<b>Default</b>	MVRP is disabled by default.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li> <li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li> <li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li> <li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li> </ul>

## no-dynamic-vlan

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<b>Syntax</b>	no-dynamic-vlan;
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type), [edit protocols <a href="#">mvrp</a> ], [edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type)
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	<p>Disable the dynamic creation of VLANs using Multiple VLAN Registration Protocol (MVRP) for interfaces participating in MVRP.</p> <p>Dynamic VLAN configuration can be enabled on an interface independent of MVRP. The MVRP dynamic VLAN configuration setting does not override the interface configuration dynamic VLAN configuration setting. If dynamic VLAN creation is disabled on the interface in the interface configuration, no dynamic VLANs are created on the interface, including dynamic VLANs created using MVRP.</p> <p>This option can only be applied globally; it cannot be applied per interface.</p>
<b>Default</b>	If MVRP is enabled, the dynamic creation of VLANs as a result of MVRP protocol exchange messages is enabled.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Controlling the Management State of a VLAN in MVRP Configurations on page 20</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li></ul>



## point-to-point (MVRP)

<b>Syntax</b>	point-to-point;
<b>Hierarchy Level</b>	[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )] (for virtual switch instance type), [edit protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )], [edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )] (for virtual switch instance type)
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers. Statement introduced in Junos OS Release 12.3R2 for EX Series switches.
<b>Description</b>	(Optional) For Multiple VLAN Registration Protocol (MVRP) configurations, configure an interface to be recognized as a point-to-point connection. If specified, a point-to-point subset of the MRP state machine is used to provide a simpler and more efficient method to accelerate convergence on the network. Point-to-point must be enabled after enabling MVRP for the interface to be recognized as a point-to-point connection.
<b>Default</b>	MVRP is disabled by default.  point-to-point is disabled by default.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li> <li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li> <li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li> <li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li> <li>• <a href="#">join-timer on page 52</a></li> <li>• <a href="#">leaveall-timer on page 53</a></li> <li>• <a href="#">leave-timer on page 54</a></li> <li>• <a href="#">registration on page 58</a></li> </ul>

## registration

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<b>Syntax</b>	registration (forbidden   normal   restricted);
<b>Hierarchy Level</b>	[edit protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )], [edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )] (for virtual switch instance type), [edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp interface</a> (all   <i>interface-name</i> )] (for virtual switch instance type)
<b>Release Information</b>	Statement introduced in Junos OS Release 10.1 for MX Series routers.
<b>Description</b>	For Multiple VLAN Registration Protocol (MVRP) configurations, configure the registration mode for the interface.
<b>Default</b>	normal
<b>Options</b>	<b>forbidden</b> —The interface or interfaces do not register and do not participate in MVRP.  <b>normal</b> —The interface or interfaces accept MVRP messages and participate in MVRP.  <b>restricted</b> —The interface or interfaces ignore all MVRP JOIN messages received for VLANs that are not statically configured for MVRP on the interface.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a></li><li>• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a></li><li>• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a></li><li>• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a></li><li>• <a href="#">join-timer on page 52</a></li><li>• <a href="#">leaveall-timer on page 53</a></li><li>• <a href="#">leave-timer on page 54</a></li><li>• <a href="#">point-to-point on page 57</a></li></ul>

## rstp

<b>Syntax</b>	<pre> rstp {   bpdv-block-on-edge;   bpdv-destination-mac-address provider-bridge-group;   bridge-priority priority;   extended-system-id;   force-version stp;   forward-delay seconds;   hello-time seconds;   max-age seconds;   interface interface-name {     bpdv-timeout-action {       alarm;       block;     }     cost cost;     edge;     mode (p2p   shared);     no-root-port;     priority interface-priority;   }   priority-hold-time seconds;   traceoptions {     file filename &lt;files number&gt; &lt;size size&gt; &lt;world-readable   no-world-readable&gt;;     flag flag &lt;flag-modifier&gt; &lt;disable&gt;;   } } </pre>
<b>Hierarchy Level</b>	<p>[edit logical-systems <i>logical-system-name</i> protocols],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols],</p> <p>[edit protocols],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 8.4.</p> <p><b>bpdv-block-on-edge</b> statement added in Junos OS Release 9.4.</p> <p><b>bpdv-timeout-action</b> statement added in Junos OS Release 9.4.</p> <p>Support for logic systems added in Junos OS Release 9.6.</p>
<b>Description</b>	Configure RSTP parameters.
<b>Options</b>	The statements are explained separately.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>Configuring Rapid Spanning Tree Protocol</li> </ul>

## traceoptions (MVRP)

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Syntax	<pre>traceoptions {     file <i>name</i> &lt;size <i>size</i>&gt; &lt;files <i>number</i>&gt; &lt;(world-readable   no-world-readable)&gt;;     flag <i>flag</i> &lt;flag-modifier&gt; &lt;disable&gt;; }</pre>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols <a href="#">mvrp</a> ], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type), [edit protocols <a href="#">mvrp</a> ], [edit routing-instances <i>routing-instance-name</i> protocols <a href="#">mvrp</a> ] (for virtual switch instance type)
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	For Multiple VLAN Registration Protocol (MVRP), configure tracing options.
Default	Traceoptions is disabled.
Options	<p><b>disable</b> —(Optional) Disable the tracing operation. One use of this option is to disable a single operation when you have defined a broad group of tracing operations, such as <b>all</b>.</p> <p><b>file <i>filename</i></b>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. To include the <b>file</b> statement, you must specify a filename. Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks. We recommend that you place MVRP tracing output in the file <code>/var/log/mvrp-log</code>.</p> <p><b>files <i>number</i></b>—(Optional) Maximum number of trace files, in the range from 2 through 1000. The default is 1 trace file. When a trace file named <b>trace-file</b> reaches its maximum size, it is renamed <b>trace-file.0</b>, then <b>trace-file.1</b>, and so on, until the maximum number of trace files is reached. Then the oldest trace file is overwritten. If you specify a maximum number of files, you also must specify a maximum file size with the <b>size</b> option.</p> <p><b>flag <i>flag</i></b>—Specify which tracing operation to perform. To specify more than one tracing operation, include multiple <b>flag</b> statements. You can include the following flags:</p> <ul style="list-style-type: none"><li>• <b>all</b>—Enable all trace options flags.</li><li>• <b>error</b>—Trace all failure conditions.</li><li>• <b>events</b>—Trace process state change and cleanup events.</li><li>• <b>pdu</b>—Trace RAPS PDU reception and transmission.</li><li>• <b>socket</b>—Trace socket activity.</li><li>• <b>state-machine</b>—Trace information about the state machine.</li><li>• <b>timers</b>—Trace protocol timers.</li></ul>

**no-world-readable**—(Optional) Prevent any user from reading the log file.

**size *size***—(Optional) Maximum size of each trace file, in kilobytes (KB) or megabytes (MB). When a trace file named ***trace-file*** reaches this size, it is renamed ***trace-file.0***. When the ***trace-file*** again reaches its maximum size, ***trace-file.0*** is renamed ***trace-file.1*** and ***trace-file*** is renamed ***trace-file.0***. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten. The file size range is from 10240 through 4294967295. The default file size is 1 MB.

**world-readable**—(Optional) Allow any user to read the log file.

<b>Required Privilege Level</b>	routing—To view this statement in the configuration.
	routing-control—To add this statement to the configuration.

<b>Related Documentation</b>	• <a href="#">Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 23</a>
	• <a href="#">Configuring Multiple VLAN Registration Protocol (MVRP) to Manage Dynamic VLAN Registration on page 18</a>
	• <a href="#">Verifying That MVRP Is Working Correctly on page 35</a>
	• <a href="#">Understanding Multiple VLAN Registration Protocol (MVRP) for Dynamic VLAN Registration on page 15</a>

## unit

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```
Syntax  unit logical-unit-number {  
        accept-source-mac {  
            mac-address mac-address {  
                policer {  
                    input cos-policer-name;  
                    output cos-policer-name;  
                }  
            }  
        }  
        accounting-profile name;  
        advisory-options {  
            downstream-rate rate;  
            upstream-rate rate;  
        }  
        allow-any-vci;  
        atm-scheduler-map (map-name | default);  
        auto-configure {  
            agent-circuit-identifier {  
                dynamic-profile profile-name;  
            }  
            line-identity {  
                include {  
                    accept-no-ids;  
                    circuit-id;  
                    remote-id;  
                }  
                dynamic-profile profile-name;  
            }  
        }  
        backup-options {  
            interface interface-name;  
        }  
        bandwidth rate;  
        cell-bundle-size cells;  
        clear-dont-fragment-bit;  
        compression {  
            rtp {  
                maximum-contexts number <force>;  
                f-max-period number;  
                queues [queue-numbers];  
                port {  
                    minimum port-number;  
                    maximum port-number;  
                }  
            }  
        }  
        compression-device interface-name;  
        copy-tos-to-outer-ip-header;  
        demux-destination family;  
        demux-source family;  
        demux-options {  
            underlying-interface interface-name;  
        }
```

```

}
description text;
interface {
    l2tp-interface-id name;
    (dedicated | shared);
}
dialer-options {
    activation-delay seconds;
    callback;
    callback-wait-period time;
    deactivation-delay seconds;
    dial-string [dial-string-numbers];
    idle-timeout seconds;
    incoming-map {
        caller caller-id | accept-all;
        initial-route-check seconds;
        load-interval seconds;
        load-threshold percent;
        pool pool-name;
        redial-delay time;
        watch-list {
            [routes];
        }
    }
}
disable;
disable-mlppp-inner-ppp-pfc;
dlci dlci-identifier;
drop-timeout milliseconds;
dynamic-call-admission-control {
    activation-priority priority;
    bearer-bandwidth-limit kilobits-per-second;
}
encapsulation type;
epd-threshold cells plp1 cells;
family family-name {
    ... the family subhierarchy appears after the main [edit interfaces interface-name unit
        logical-unit-number] hierarchy ...
}
fragment-threshold bytes;
inner-vlan-id-range start start-id end end-id;
input-vlan-map {
    (pop | pop-pop | pop-swap | push | push-push | swap |
    swap-push | swap-swap);
    inner-tag-protocol-id tpid;
    inner-vlan-id number;
    tag-protocol-id tpid;
    vlan-id number;
}
interleave-fragments;
inverse-arp;
layer2-policer {
    input-policer policer-name;
    input-three-color policer-name;
    output-policer policer-name;
    output-three-color policer-name;
}

```

```
}
link-layer-overhead percent;
minimum-links number;
mrru bytes;
multicast-dlci dlci-identifier;
multicast-vci vpi-identifier.vci-identifier;
multilink-max-classes number;
multipoint;
oam-liveness {
    up-count cells;
    down-count cells;
}
oam-period (disable | seconds);
output-vlan-map {
    (pop | pop-pop | pop-swap | push | push-push | swap |
    swap-push | swap-swap);
    inner-tag-protocol-id tpid;
    inner-vlan-id number;
    tag-protocol-id tpid;
    vlan-id number;
}
passive-monitor-mode;
peer-unit unit-number;
plp-to-clp;
point-to-point;
ppp-options {
    mru size;
    mtu (size | use-lower-layer);
    chap {
        access-profile name;
        default-chap-secret name;
        local-name name;
        passive;
    }
    compression {
        acfc;
        pfc;
    }
    dynamic-profile profile-name;
    ipcp-suggest-dns-option;
    lcp-restart-timer milliseconds;
    loopback-clear-timer seconds;
    ncp-restart-timer milliseconds;
    pap {
        access-profile name;
        default-pap-password password;
        local-name name;
        local-password password;
        passive;
    }
}
}
pppoe-options {
    access-concentrator name;
    auto-reconnect seconds;
    (client | server);
    service-name name;
```



```

    underlying-interface interface-name;
}
pppoe-underlying-options {
    access-concentrator name;
    direct-connect;
    bsimmons profile-name;
    max-sessions number;
}
proxy-arp;
service-domain (inside | outside);
shaping {
    (cbr rate | rtvbr peak rate sustained rate burst length | vbr peak rate sustained rate burst
    length);
    queue-length number;
}
short-sequence;
targeted-distribution;
transmit-weight number;
(traps | no-traps);
trunk-bandwidth rate;
trunk-id number;
tunnel {
    backup-destination address;
    destination address;
    key number;
    routing-instance {
        destination routing-instance-name;
    }
    source source-address;
    ttl number;
}
vci vpi-identifier.vci-identifier;
vci-range start start-vci end end-vci;
vpi vpi-identifier;
vlan-id number;
vlan-id-range number-number;
vlan-tags inner tpid.vlan-id outer tpid.vlan-id;
family family {
    accounting {
        destination-class-usage;
        source-class-usage {
            (input | output | input output);
        }
    }
}
access-concentrator name;
address address {
    ... the address subhierarchy appears after the main [edit interfaces interface-name unit
    logical-unit-number family family-name] hierarchy ...
}
bundle interface-name;
core-facing;
demux-destination {
    destination-prefix;
}
demux-source {
    source-prefix;
}

```

```
}
direct-connect;
duplicate-protection;
bsimmons profile-name;
filter {
    group filter-group-number;
    input filter-name;
    input-list [filter-names];
    output filter-name;
    output-list [filter-names];
}
interface-mode (access | trunk);
ipsec-sa sa-name;
keep-address-and-control;
mac-validate (loose | strict);
max-sessions number;
mtu bytes;
multicast-only;
no-redirects;
policer {
    arp policer-template-name;
    input policer-template-name;
    output policer-template-name;
}
primary;
protocols [inet iso mpls];
proxy inet-address address;
receive-options-packets;
receive-ttl-exceeded;
remote (inet-address address | mac-address address);
rpf-check {
    fail-filter filter-name
    mode loose;
}
sampling {
    input;
    output;
}
service {
    input {
        post-service-filter filter-name;
        service-set service-set-name <service-filter filter-name>;
    }
    output {
        service-set service-set-name <service-filter filter-name>;
    }
}
service-name-table table-name
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
translate-plp-control-word-de;
unnumbered-address interface-name destination address destination-profile profile-name;
vlan-id number;
vlan-id-list [number number-number];
address address {
    arp ip-address (mac | multicast-mac) mac-address <publish>;
```

```

broadcast address;
destination address;
destination-profile name;
eui-64;
master-only;
multipoint-destination address {
    dlci dlci-identifier;
    epd-threshold cells <plp1 cells>;
    inverse-arp;
    oam-liveness {
        up-count cells;
        down-count cells;
    }
    oam-period (disable | seconds);
    shaping {
        (cbr rate | rtvbr burst length peak rate sustained rate | vbr burst length peak rate
        sustained rate);
        queue-length number;
    }
    vci vpi-identifier.vci-identifier;
}
preferred;
primary;
(vrrp-group | vrrp-inet6-group) group-number {
    (accept-data | no-accept-data);
    advertise-interval seconds;
    authentication-type authentication;
    authentication-key key;
    fast-interval milliseconds;
    (preempt | no-preempt) {
        hold-time seconds;
    }
    priority number;
    track {
        interface interface-name {
            bandwidth-threshold bits-per-second priority-cost number;
        }
        priority-hold-time seconds;
        route ip-address/prefix-length routing-instance instance-name priority-cost cost;
    }
    virtual-address [addresses];
    virtual-link-local-address ipv6-address;
    vrrp-inherit-from {
        active-interface interface-name;
        active-group group-number;
    }
}
}
}
}

```

**Hierarchy Level** [edit interfaces *interface-name*],  
[edit logical-systems *logical-system-name* interfaces *interface-name*],  
[edit interfaces interface-set *interface-set-name* interface *interface-name*]

<b>Release Information</b>	Statement introduced before Junos OS Release 7.4.
<b>Description</b>	Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.
<b>Options</b>	<p><b>logical-unit-number</b>—Number of the logical unit.</p> <p><b>Range:</b> 0 through 1,073,741,823 for demux and PPPoE static interfaces. 0 through 16,385 for all other static interface types.</p> <p>The remaining statements are explained separately.</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Logical Interface Properties</i></li><li>• <i>Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers</i></li><li>• <i>Junos OS Services Interfaces Library for Routing Devices</i></li></ul>



---

## vlan-id (Logical Port in Bridge Domain)

---

<b>Syntax</b>	vlan-id <i>number</i> ;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family bridge]
<b>Release Information</b>	Statement introduced in Junos OS Release 9.2. Statement introduced in Junos OS Release 15.1.
<b>Description</b>	The VLAN ID configured on the logical port. Received packets with no VLAN tags are forwarded within the bridge domain with the matching VLAN ID.
<b>Options</b>	<p><b>number</b>—The VLAN ID.</p> <p><b>Range:</b> 1 through 4095</p>
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>Configuring Access Mode on a Logical Interface</i></li><li>• <i>Tunnel Services Overview</i></li><li>• <i>Tunnel Interface Configuration on MX Series Routers Overview</i></li></ul>

## vlan-id-list

<b>Syntax</b>	<code>vlan-id-list [ <i>vlan-id-numbers</i> ];</code>
<b>Hierarchy Level</b>	<p>[edit <b>bridge-domains</b> <i>bridge-domain-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> <b>bridge-domains</b> <i>bridge-domain-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> <b>bridge-domains</b> <i>bridge-domain-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> <b>bridge-domains</b> <i>bridge-domain-name</i>],</p> <p>[edit interfaces <i>interface-name</i> unit 0],</p> <p>[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i>],</p> <p>[edit vlans <i>vlan-name</i>]</p>
<b>Release Information</b>	<p>Statement introduced in Junos OS Release 9.4.</p> <p>Support for logical systems added in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.3R2 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 13.2 for the QFX Series.</p>
<b>Description</b>	<p>Specify a VLAN identifier list to use for a bridge domain or VLAN in trunk mode.</p> <p>Specify the <b>trunk</b> option in the <b>interface-mode</b> statement to accept packets with a VLAN ID that matches the list of VLAN IDs specified in the <b>vlan-id-list</b> statement to forward the packet within the bridge domain or VLAN configured with the matching VLAN ID. Specify the <b>access</b> option to accept packets with no VLAN ID to forward the packet within the bridge domain or VLAN configured with the VLAN ID that matches the VLAN ID specified in the <b>vlan-id</b> statement.</p> <p>This statement also enables you to bind a logical interface to a list of VLAN IDs, thereby configuring the logical interface to receive and forward a frame with a tag that matches the specified VLAN ID list.</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p><b>WARNING:</b> On some EX and QFX Series switches, you can apply no more than eight VLAN identifier lists to a physical interface.</p> </div> </div>	
<b>Options</b>	<p><b><i>vlan-id-numbers</i></b>—Valid VLAN identifiers. You can combine individual numbers with range lists by including a hyphen.</p> <p><b>Range:</b> 0 through 4095</p>
<div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p><b>NOTE:</b> On EX Series switches and the QFX Series, the range is 0 through 4094.</p> </div> </div>	
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

- Related Documentation**
- *Configuring a Bridge Domain*
  - *Configuring a VLAN*
  - *Configuring VLAN Identifiers for Bridge Domains and VPLS Routing Instances*
  - *Configuring VLAN Identifiers for VLANs and VPLS Routing Instances*

## CHAPTER 3

# Operational Mode Commands

- `show mvrp`
- `show mvrp applicant-state`
- `show mvrp dynamic-vlan-memberships`
- `show mvrp interface`
- `show mvrp registration-state`
- `show mvrp statistics`

## show mvrp

<b>Syntax</b>	show mvrp
<b>Release Information</b>	Command introduced in Junos OS Release 10.1. Command introduced in Junos OS Release 13.2X50-D10 for EX Series switches.
<b>Description</b>	Display Multiple VLAN Registration Protocol (MVRP) configuration information.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp applicant-state on page 74</a></li> <li>• <a href="#">show mvrp dynamic-vlan-memberships on page 76</a></li> <li>• <a href="#">show mvrp interface on page 77</a></li> <li>• <a href="#">show mvrp registration-state on page 78</a></li> <li>• <a href="#">show mvrp statistics on page 80</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp on page 72</a>
<b>Output Fields</b>	<a href="#">Table 5 on page 72</a> lists the output fields for the <b>show mvrp</b> command. Output fields are listed in the approximate order in which they appear.

**Table 5: show mvrp Output Fields**

Field Name	Field Description
MVRP dynamic VLAN creation	Displays whether global MVRP dynamic VLAN creation is <b>Enabled</b> or <b>Disabled</b> .
MVRP BPDU MAC address	Displays the multicast media access control (MAC) address for MVRP. If configured, the provider MVRP multicast MAC address is used; otherwise, the customer MVRP multicast MAC address is used.
MVRP timers (ms)	Displays MVRP timer information: <ul style="list-style-type: none"> <li>• <b>Interface</b>—The interface on which MVRP is configured.</li> <li>• <b>Join</b>—The maximum number of milliseconds the interfaces must wait before sending VLAN advertisements.</li> <li>• <b>Leave</b>—The number of milliseconds an interface must wait after receiving a Leave message to remove the interface from the VLAN specified in the message.</li> <li>• <b>LeaveAll</b>—The interval at which LeaveAll messages are sent on interfaces. LeaveAll messages maintain current MVRP VLAN membership information in the network.</li> </ul>

## Sample Output

### show mvrp

```
user@host> show mvrp
```



```
MVRP configuration for routing instance 'default-switch'
MVRP dynamic VLAN creation : Enabled
MVRP BPDU MAC address      : Customer bridge group (01-80-C2-00-00-21)
MVRP timers (ms)
  Interface      Join   Leave  LeaveAll
  ge-11/2/8      200    800    10000
  ge-11/0/9      200    800    10000
  ge-11/3/0      200    800    10000
```

## show mvrp applicant-state

<b>Syntax</b>	show mvrp applicant-state
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	For MX Series routers and EX Series switches, display Multiple VLAN Registration Protocol (MVRP) applicant state information.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp on page 72</a></li> <li>• <a href="#">show mvrp interface on page 77</a></li> <li>• <a href="#">show mvrp registration-state on page 78</a></li> <li>• <a href="#">show mvrp statistics on page 80</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp applicant-state on page 75</a>
<b>Output Fields</b>	Table 6 on page 74 lists the output fields for the <b>show mvrp applicant-state</b> command. Output fields are listed in the approximate order in which they appear.

**Table 6: show mvrp applicant-state Output Fields**

Field Name	Field Description
<b>VLAN Id</b>	Displays the VLAN ID number.
<b>Interface</b>	Displays the interface number associated with the VLAN ID.
<b>State</b>	Displays one of the following MVRP registrar states: <ul style="list-style-type: none"> <li>• <b>VO</b>—Very anxious observer.</li> <li>• <b>VP</b>—Very anxious passive.</li> <li>• <b>VA</b>—Very anxious new.</li> <li>• <b>AN</b>—Anxious new.</li> <li>• <b>AA</b>—Anxious active.</li> <li>• <b>QA</b>—Quiet active.</li> <li>• <b>LA</b>—Leaving active.</li> <li>• <b>AO</b>—Anxious observer.</li> <li>• <b>QO</b>—Quiet observer.</li> <li>• <b>LO</b>—Leaving observer.</li> <li>• <b>AP</b>—Anxious passive.</li> <li>• <b>QA</b>—Quiet passive.</li> </ul>

## Sample Output

### show mvrp applicant-state

```
user@host> show mvrp applicant-state
MVRP applicant state for routing instance 'default-switch'
(V0) Very anxious observer, (VP) Very anxious passive, (VA) Very anxious new,
(AN) Anxious new, (AA) Anxious active, (QA) Quiet active, (LA) Leaving active,
(A0) Anxious observer, (Q0) Quiet observer, (L0) Leaving observer,
(AP) Anxious passive, (QP) Quiet passive
```

VLAN Id	Interface	State
100	ge-11/3/0	Declaring (QA)
200	ge-11/3/0	Declaring (QA)
300	ge-11/3/0	Declaring (QA)

## show mvrp dynamic-vlan-memberships

<b>Syntax</b>	show mvrp dynamic-vlan-memberships
<b>Release Information</b>	Command introduced in Junos OS Release 10.1. Command introduced in Junos OS Release 13.2X50-D10 for EX Series switches.
<b>Description</b>	Display all VLANs that have been created dynamically using Multiple VLAN Registration Protocol (MVRP) on the router or switch.
<b>Required Privilege Level</b>	clear
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp on page 72</a></li> <li>• <a href="#">show mvrp applicant-state on page 74</a></li> <li>• <a href="#">show mvrp interface on page 77</a></li> <li>• <a href="#">show mvrp registration-state on page 78</a></li> <li>• <a href="#">show mvrp statistics on page 80</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp dynamic-vlan-memberships on page 76</a>
<b>Output Fields</b>	<a href="#">Table 7 on page 76</a> lists the output fields for the <b>show mvrp dynamic-vlan-memberships</b> command. Output fields are listed in the approximate order in which they appear.

**Table 7: show mvrp dynamic-vlan-memberships Output Fields**

Field Name	Field Description
VLAN Id	The VLAN ID of the dynamically created VLAN.
Interfaces	The interface or interfaces that are bound to the dynamically created VLAN.

## Sample Output

### show mvrp dynamic-vlan-memberships

```

user@host> show mvrp dynamic-vlan-memberships
MVRP dynamic vlans for routing instance 'default-switch'
(s) static vlan, (f) fixed registration

VLAN Id      Interfaces
  100 (s)    ge-11/3/0
  200 (s)    ge-11/3/0
  300 (s)

```

## show mvrp interface

<b>Syntax</b>	show mvrp interface
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	For MX Series routers and EX Series switches, display Multiple VLAN Registration Protocol (MVRP) interface-specific information.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp on page 72</a></li> <li>• <a href="#">show mvrp applicant-state on page 74</a></li> <li>• <a href="#">show mvrp dynamic-vlan-memberships on page 76</a></li> <li>• <a href="#">show mvrp registration-state on page 78</a></li> <li>• <a href="#">show mvrp statistics on page 80</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp interface on page 77</a>
<b>Output Fields</b>	<a href="#">Table 8 on page 77</a> lists the output fields for the <b>show mvrp interface</b> command. Output fields are listed in the approximate order in which they appear.

**Table 8: show mvrp interface Output Fields**

Field Name	Field Description
Interface	Interface on which MVRP is configured.
Status	Status of the MVRP: <b>Enabled</b> or <b>Disabled</b> .
Registration Mode	Registration for the interface: <b>Fixed</b> , <b>Forbidden</b> , or <b>Normal</b> .
Applicant Mode	Applicant mode.

## Sample Output

### show mvrp interface

```

user@host> show mvrp interface
MVRP interface information for routing instance 'default-switch'

Interface      Status      Registration Mode      Applicant
Mode
ge-11/2/8      Enabled     Normal                 Normal
ge-11/0/9      Enabled     Normal                 Normal
ge-11/3/0      Enabled     Normal                 Normal

```

## show mvrp registration-state

<b>Syntax</b>	show mvrp registration-state
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	For MX Series routers and EX Series switches, display Multiple VLAN Registration Protocol (MVRP) registration state information.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp on page 72</a></li> <li>• <a href="#">show mvrp dynamic-vlan-memberships on page 76</a></li> <li>• <a href="#">show mvrp interface on page 77</a></li> <li>• <a href="#">show mvrp statistics on page 80</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp registration-state on page 78</a>
<b>Output Fields</b>	Table 9 on page 78 lists the output fields for the <b>show mvrp registration-state</b> command. Output fields are listed in the approximate order in which they appear.

Table 9: show mvrp registration-state Output Fields

Field Name	Field Description
<b>VLAN Id</b>	Displays the VLAN ID number.
<b>Interface</b>	Displays the interface number associated with the VLAN ID.
<b>Registrar State</b>	Displays whether the registrar state is <b>Registered</b> or <b>Empty</b> .
<b>Forced State</b>	Displays whether the forced state is <b>Registered</b> or <b>Empty</b> .
<b>Managed State</b>	Displays one of the following states: <ul style="list-style-type: none"> <li>• <b>Fixed</b>—VLANs always stay in a registered state and are declared as such on all other forwarding ports.</li> <li>• <b>Normal</b>—VLANs participate in the MVRP protocol and honor incoming join requests normally.</li> <li>• <b>Forbidden</b>—VLANs ignore the incoming join requests and always stay in an unregistered state.</li> </ul>
<b>STP State</b>	Displays whether the Spanning Tree Protocol (STP) is <b>Blocking</b> or <b>Forwarding</b> .

## Sample Output

### show mvrp registration-state

```
user@host> show mvrp registration-state
MVRP registration state for routing instance 'default-switch'
```

VLAN Id	Interface	Registrar State	Forced State	Managed State	STP State
100	ge-11/2/8	Empty	Registered	Fixed	Forwarding
	ge-11/0/9	Empty	Empty	Normal	Forwarding
	ge-11/3/0	Registered	Registered	Normal	Forwarding
101	ge-11/2/8	Empty	Registered	Fixed	Forwarding
	ge-11/0/9	Empty	Empty	Normal	Forwarding
	ge-11/3/0	Registered	Registered	Normal	Forwarding

## show mvrp statistics

<b>Syntax</b>	show mvrp statistics
<b>Release Information</b>	Command introduced in Junos OS Release 10.1.
<b>Description</b>	For MX Series routers and EX Series switches, display Multiple VLAN Registration Protocol (MVRP) statistics in the form of Multiple Registration Protocol data unit (MRPDU) messages.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">show mvrp on page 72</a></li> <li>• <a href="#">show mvrp applicant-state on page 74</a></li> <li>• <a href="#">show mvrp dynamic-vlan-memberships on page 76</a></li> <li>• <a href="#">show mvrp interface on page 77</a></li> <li>• <a href="#">show mvrp registration-state on page 78</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show mvrp statistics on page 80</a>
<b>Output Fields</b>	<a href="#">Table 10 on page 80</a> lists the output fields for the <b>show mvrp statistics</b> command. Output fields are listed in the approximate order in which they appear.

Table 10: show mvrp statistics Output Fields

Field Name	Field Description
interface name	Interface for which MVRP statistics are displayed.
VLAN IDs registered	Number of VLAN IDs registered.
Sent MVRP PDUs	Number of MRPDU messages transmitted from the router.
Received MVRP PDUs without error	Number of MRPDU messages received on the router.
Received MVRP PDUs with error	Number of invalid MRPDU messages received on the router.

## Sample Output

### show mvrp statistics

```

user@host> show mvrp statistics
MVRP statistics for routing instance 'default-switch'

Interface name           : ge-11/2/8
VLAN IDs registered      : 0
Sent MVRP PDUs           : 1467

```



Received MVRP PDUs without error: 0  
Received MVRP PDUs with error : 0

Interface name : ge-11/0/9  
VLAN IDs registered : 0  
Sent MVRP PDUs : 1418  
Received MVRP PDUs without error: 702  
Received MVRP PDUs with error : 0

Interface name : ge-11/3/0  
VLAN IDs registered : 2  
Sent MVRP PDUs : 1524  
Received MVRP PDUs without error: 1366  
Received MVRP PDUs with error : 0

