



Junos[®] OS

Multiple VLAN Registration Protocol on MX Series Routers

Release
11.2



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PART 1

Overview

- [Multiple VLAN Registration Protocol Overview on page 3](#)

CHAPTER 1

Multiple VLAN Registration Protocol Overview

- Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers

You can configure Multiple VLAN Registration Protocol (MVRP) on Juniper Networks MX Series routers. The primary purpose of MVRP is to manage dynamic VLAN registration in switching 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 switching network.

This topic describes:

- How MVRP Works on MX Series Routers on page 3
- Basics of MVRP on MX Series Routers on page 4
- MVRP Registration Modes on page 4
- MRP Timers on page 4
- MRP VLAN Messages on page 5
- MVRP Limitations on page 5

How MVRP Works on MX Series Routers

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 switching 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 on MX Series Routers

MVRP is disabled by default on all MX Series routers. You can configure MVRP on MX Series router interfaces to participate in MVRP for the switching 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.

MVRP Timers

MVRP registration and updates are controlled by timers that are part of the MVRP 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 switching 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 switching 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 9
- Configuring Multiple VLAN Registration Protocol (MVRP) on page 23
- Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers (CLI Procedure) on page 25
- Verifying That MVRP Is Working Correctly on page 57

PART 2

Configuration

- [Multiple VLAN Registration Protocol Example on page 9](#)
- [Multiple VLAN Registration Protocol Configuration Tasks on page 23](#)
- [Multiple VLAN Registration Protocol Configuration Statements on page 29](#)

CHAPTER 2

Multiple VLAN Registration Protocol Example

- Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9

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

Multiple VLAN Registration Protocol (MVRP) is used in carrier Ethernet 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 9
- Overview and Topology on page 10
- Configuration on page 12
- Verification on page 18

Requirements

This example uses the following hardware and software components:

- Two MX Series routers acting as edge switches
- One MX Series router acting as 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 that 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 connect 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, refer to “Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers (CLI Procedure)” on page 25.

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

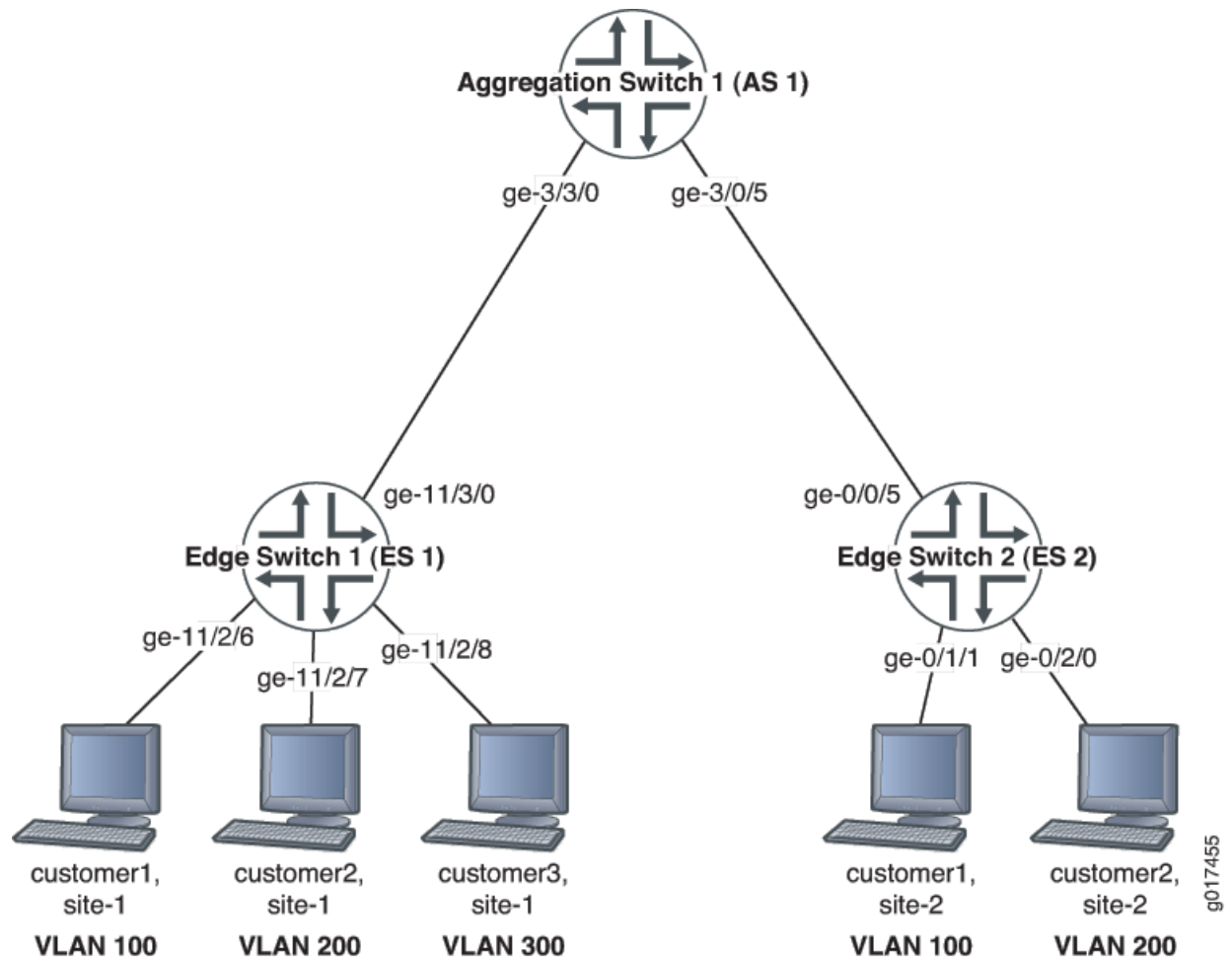


Table 1 on page 11 explains the components of the example topology.

Table 1: Components of the Network Topology

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

Table 1: Components of the Network Topology (*continued*)

Property	Settings
ES1 interfaces	<p>ES1 interfaces:</p> <ul style="list-style-type: none"> • 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 interfaces	<p>ES2 interfaces:</p> <ul style="list-style-type: none"> • ge-0/1/1—Access port connecting customer3–site2, VLAN ID 100. • ge-0/2/0—Access port connecting customer3–site2, VLAN ID 200. • ge-0/0/5—Trunk port connecting ES2 to AS1.
AS1 interfaces	<p>AS1 interfaces:</p> <ul style="list-style-type: none"> • ge-3/3/0—Trunk port connected to ES1. • ge-3/0/5—Trunk port connected to ES2.

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 12
- Configuring MVRP on ES2 on page 14
- Configuring MVRP on AS1 on page 16

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 ge-11/3/0 description "connected to AS1 interface ge-3/3/0"
set 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, perform these tasks:

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, perform these tasks:

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-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 18
- Verifying the MVRP Registration on ES1 on page 18
- Verifying Dynamic VLAN Members on ES1 on page 19
- Verifying That MVRP Is Enabled on ES2 on page 19
- Verifying the MVRP Registration on ES2 on page 19
- Verifying Dynamic VLAN Members on ES2 on page 20
- Verifying That MVRP Is Enabled on AS1 on page 20
- Verifying the MVRP Registration on AS1 on page 20
- Verifying That MVRP Is Updating VLAN Membership on AS1 on page 21

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,
(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)

Meaning The output displayed shows that trunk interface **ge-11/3/0** on ES1 is declaring (sending out) interest in the 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
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,
(A0) Anxious observer, (Q0) Quiet observer, (L0) 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** (towards ES2) but not declaring interest for VLAN **300** on interface **ge-3/3/0** (towards 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 State	Forced State	Managed State	STP 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) on page 23
- Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers (CLI Procedure) on page 25
- Verifying That MVRP Is Working Correctly on page 57
- Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

CHAPTER 3

Multiple VLAN Registration Protocol Configuration Tasks

- [Configuring Multiple VLAN Registration Protocol \(MVRP\) on page 23](#)
- [Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers \(CLI Procedure\) on page 25](#)

Configuring Multiple VLAN Registration Protocol (MVRP)

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

For information about using MVRP on EX Series switches, see [Example: Configuring Automatic VLAN Administration Using MVRP on EX Series Switches](#).

MVRP is disabled by default on MX Series routers.

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

- [Enabling MVRP on page 23](#)
- [Disabling MVRP on page 24](#)
- [Changing the Registration Mode to Disable Dynamic VLANs on page 24](#)
- [Configuring Timer Values on page 24](#)
- [Configuring the Multicast MAC address for MVRP on page 25](#)
- [Configuring an MVRP Interface as a Point-to-Point Interface on page 25](#)
- [Configuring MVRP Tracing Options on page 25](#)

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 interfaces 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 on the router, use one of the following:

```
[edit protocols mvrp]
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 are then propagated by means of MVRP to other routers in a topology.

However, Dynamic VLAN creation through MVRP can be disabled for all trunk interfaces on a router 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 MX Series Routers (CLI Procedure)” on page 25.

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 after receiving an MVRP PDU:

- The join timer controls the amount of time the router waits to accept a registration request.
- The leave timer controls the period of time that the router 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 interfaces ge-3/0/5 join-timer 300
```

To set the leave timer for a specific interface:

```
[edit protocols mvrp]
user@host# set interfaces 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 bpdu-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 interfaces 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 protocols mvrp 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 9
- Verifying That MVRP Is Working Correctly

Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers (CLI Procedure)

MX Series routers use Multiple VLAN Registration Protocol (MVRP) to manage dynamic virtual LAN (VLAN) registration in switching networks. Enabling MVRP on trunk interfaces in Carrier Ethernet 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 1 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 2 on page 26 contains the service configured for BEB2 as well as the correlating S-VLAN, I-SID, and B-VLAN.

Table 2: 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	fixed state	fixed state	fixed state
yes	no	normal state	normal state	forbidden state

Table 2: 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 27
- Configure VLANs to Operate With Mixed States (Fixed and Normal) on page 27
- Configure VLANs to Operate With Mixed States (Fixed, Normal, and Forbidden) on page 27

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 1024-2048 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 9
- Configuring Multiple VLAN Registration Protocol (MVRP) on page 23
- Verifying That MVRP Is Working Correctly on page 57
- Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

Multiple VLAN Registration Protocol Configuration Statements

bpdudestinationmacaddress

Syntax	bpdudestinationmacaddress providerbridgegroup;
Hierarchy Level	[edit logicalsystems <i>logicalsystemname</i> protocols mvrp], [edit logicalsystems <i>logicalsystemname</i> routinginstances <i>routinginstancename</i> protocols mvrp] (for virtual switch instance type), [edit protocols mvrp], [edit routinginstances <i>routinginstancename</i> protocols mvrp] (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) 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.
Default	By default, the provider MVRP multicast MAC address is used (if configured). Otherwise, the customer MVRP MAC address is used.
Required Privilege Level	routing—To view this statement in the configuration. routingcontrol—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9 • Configuring Multiple VLAN Registration Protocol (MVRP) on page 23 • Verifying That MVRP Is Working Correctly on page 57 • Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

bridge-domains

Syntax	<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>); vlan-id-list [<i>vlan-id-numbers</i>]; vlan-tags outer <i>number</i> inner <i>number</i>; bridge-options { interface <i>interface-name</i> { static-mac <i>mac-address</i>; } interface-mac-limit <i>limit</i>; mac-statistics; mac-table-size <i>limit</i>; no-mac-learning; } } } </pre>
Hierarchy Level	<p>[edit],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 8.4.</p> <p>Support for logical systems added in Junos OS Release 9.6.</p> <p>Support for the no-irb-layer-2-copy statement added in Junos OS Release 10.2.</p>
Description	(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.
Options	<i>bridge-domain-name</i> —Name of the bridge domain.
<div>  <p>NOTE: You cannot use the slash (/) character as part of the bridge domain name. If you do, the configuration will not commit.</p> </div>	
The remaining statements are explained separately.	
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> 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

Syntax	<code>bridge-priority <i>priority</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols (mstp rstp)], [edit logical-systems <i>logical-system-name</i> protocols mstp msti <i>msti-id</i>], [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 (mstp rstp)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mstp msti <i>msti-id</i>], [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 rstp)], [edit protocols mstp msti <i>msti-id</i>], [edit protocols vstp vlan <i>vlan-id</i>], [edit routing-instances <i>routing-instance-name</i> protocols (mstp rstp)], [edit routing-instances <i>routing-instance-name</i> protocols mstp msti <i>msti-id</i>], [edit routing-instances <i>routing-instance-name</i> protocols vstp vlan <i>vlan-id</i>]</pre>
Release Information	<p>Statement introduced in Junos OS Release 8.4.</p> <p>Support for logical systems added in Junos OS Release 9.6.</p>
Description	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.
Options	<p><i>priority</i>—The bridge priority can be set only in increments of 4096.</p> <p>Range: 0 through 61,440</p> <p>Default: 32,768</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Bridge Priority for Election of Root Bridge and Designated Bridge

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 ...
        }
        bridge-domain-type (bvlan | svlan);
        bundle interface-name;
        core-facing;
        demux-destination {
            destination-prefix;
        }
        demux-source {
            source-prefix;
        }
        duplicate-protection;
        dynamic-profile 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;
        isid-list all-service-groups;
        keep-address-and-control;
        mac-validate (loose | strict);
        max-sessions number;
        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
(translate-discard-eligible | no-translate-discard-eligible);
(translate-fecn-and-becn | no-translate-fecn-and-becn);
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 | 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* 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.

Description Configure protocol family information for the logical interface.



NOTE: Not all subordinate stanzas are available to every protocol family. See the *Junos OS Configuration Statements and Commands* for details about each protocol family.

Options *family*—Protocol family:

- **any**—Protocol-independent family used for Layer 2 packet filtering
- **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
- **ccc**—Circuit cross-connect protocol suite
- **inet**—Internet Protocol version 4 suite
- **inet6**—Internet Protocol version 6 suite
- **iso**—International Organization for Standardization Open Systems Interconnection (ISO OSI) protocol suite
- **mlfr-end-to-end**—Multilink Frame Relay FRF.15
- **mlfr-uni-nni**—Multilink Frame Relay FRF.16
- **multilink-ppp**—Multilink Point-to-Point Protocol
- **mpls**—Multiprotocol Label Switching (MPLS)
- **pppoe**—Point-to-Point Protocol over Ethernet
- **tcc**—Translational cross-connect protocol suite
- **tnp**—Trivial Network Protocol
- **vpls**—(M Series and T Series routers only) Virtual private LAN service

The remaining statements are explained separately.

Required Privilege Level interface—To view this statement in the configuration.
 interface-control—To add this statement to the configuration.

Related Documentation

- Configuring the Protocol Family
- Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers
- [Junos OS Services Interfaces Configuration Guide](#)


interface (MVRP)

Syntax	<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>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols mvrp], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit protocols mvrp], [edit routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type)</pre>
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	Specify interfaces on which to configure Multiple VLAN Registration Protocol (MVRP).
Default	By default, MVRP is disabled.
Options	<p>all—All interfaces on the router.</p> <p><i>interface-name</i>—Names of interface to be configured for MVRP.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9• Configuring Multiple VLAN Registration Protocol (MVRP) on page 23• Verifying That MVRP Is Working Correctly on page 57• Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

interface (Spanning Tree)

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

interface-mode

Syntax	interface-mode (access trunk);
Hierarchy Level	[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]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	Determines whether the logical interface accepts or discards packets based on VLAN tags. Specify the trunk option to accept packets with a VLAN ID that matches the list of VLAN IDs specified in the vlan-id-list statement, then forward the packet within the bridge domain configured with the matching VLAN ID. Specify the access option to accept packets with no VLAN ID, then forward the packet within the bridge domain configured with the VLAN ID that matches the VLAN ID specified in the vlan-id statement.
<div style="display: flex; align-items: center;">  <p>NOTE: On MX Series routers, if you want IGMP snooping to be functional for a bridge domain, then you should not configure interface-mode and irb 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 Configuring a Trunk Interface on a Bridge Network.</p> </div>	
Options	<p>access—Configure a logical interface to accept untagged packets. Specify the VLAN to which this interface belongs using the vlan-id statement. This option is not valid for Trio MPCs or MICs.</p> <p>trunk—Configure a single logical interface to accept packets tagged with any VLAN ID specified with the vlan-id-list statement.</p>
Required Privilege Level	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring a Logical Interface for Access Mode Configuring a Logical Interface for Trunk Mode

join-timer (MVRP)

Syntax	<code>join-timer <i>milliseconds</i>;</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols mvrp], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type), [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit logical-systems <i>logical-system-name</i> protocols mvrp interface (all <i>interface-name</i>)], [edit protocols mvrp interface (all <i>interface-name</i>)], [edit routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type)</p>
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	For Multiple VLAN Registration Protocol (MVRP), configure the maximum interval interfaces must wait before sending MVRP protocol data units (PDUs).
Default	200 milliseconds
Options	<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.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9 • Configuring Multiple VLAN Registration Protocol (MVRP) on page 23 • Verifying That MVRP Is Working Correctly on page 57 • Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3 • leaveall-timer on page 40 • leave-timer on page 41 • point-to-point on page 43 • registration on page 44

leaveall-timer (MVRP)

Syntax	<code>leaveall-timer <i>milliseconds</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols mvrp],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code> mvrp interface (all <i>interface-name</i>)]</code> (for virtual switch instance type), <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code> mvrp]</code> (for virtual switch instance type), <code>[edit logical-systems <i>logical-system-name</i> protocols mvrp interface (all <i>interface-name</i>)],</code> <code>[edit protocols mvrp interface (all <i>interface-name</i>)],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols mvrp]</code> (for virtual switch instance type), <code>[edit routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)]</code> (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 the interval at which the LeaveAll state operates on the interface.
Default	10000 milliseconds
Options	<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.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9• Configuring Multiple VLAN Registration Protocol (MVRP) on page 23• Verifying That MVRP Is Working Correctly on page 57• Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3• <code>join-timer</code> on page 39• <code>leave-timer</code> on page 41• <code>point-to-point</code> on page 43• <code>registration</code> on page 44

leave-timer (MVRP)

Syntax	<code>leave-timer <i>milliseconds</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols mvrp], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type), [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit logical-systems <i>logical-system-name</i> protocols mvrp interface (all <i>interface-name</i>)], [edit protocols mvrp interface (all <i>interface-name</i>)], [edit routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type)</pre>
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	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.
Default	1000 milliseconds
Options	<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.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9 • Configuring Multiple VLAN Registration Protocol (MVRP) on page 23 • Verifying That MVRP Is Working Correctly on page 57 • Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3 • join-timer on page 39 • leaveall-timer on page 40 • point-to-point on page 43 • registration on page 44

mvrp

Syntax	<pre> mvrp { bpd-destination-mac-address provider-bridge-group; join-timer <i>milliseconds</i>; leave-timer <i>milliseconds</i>; leaveall-timer <i>milliseconds</i>; 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); } no-dynamic-vlan; traceoptions { file <i>filename</i> <files <i>number</i> > <size <i>size</i> > <no-stamp world-readable no-world-readable>; flag <i>flag</i>; } } </pre>
Hierarchy Level	<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>
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	<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>
Default	MVRP is disabled by default.
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9 • Configuring Multiple VLAN Registration Protocol (MVRP) on page 23 • Verifying That MVRP Is Working Correctly on page 57 • Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3

point-to-point (MVRP)

Syntax	point-to-point;
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols mvrp interface (all <i>interface-name</i>)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type), [edit protocols mvrp interface (all <i>interface-name</i>)], [edit routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type)
Release Information	Statement introduced in Junos OS Release 10.1 for MX Series routers.
Description	(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.
Default	By default, MVRP is disabled.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9 • Configuring Multiple VLAN Registration Protocol (MVRP) on page 23 • Verifying That MVRP Is Working Correctly on page 57 • Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3 • join-timer on page 39 • leaveall-timer on page 40 • leave-timer on page 41 • registration on page 44

registration

Syntax	registration (forbidden normal restricted);
Hierarchy Level	[edit protocols mvrp interface (all <i>interface-name</i>)]; [edit routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (for virtual switch instance type); [edit logical-systems <i>logical-system-name</i> protocols mvrp interface (all <i>interface-name</i>)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp interface (all <i>interface-name</i>)] (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) configurations, configure the registration mode for the interface.
Default	normal
Options	forbidden —The interface or interfaces do not register and do not participate in MVRP. normal —The interface or interfaces accept MVRP messages and participate in MVRP. restricted —The interface or interfaces ignore all MVRP JOIN messages received for VLANs that are not statically configured for MVRP on the interface.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9• Configuring Multiple VLAN Registration Protocol (MVRP) on page 23• Verifying That MVRP Is Working Correctly on page 57• Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3• join-timer on page 39• leaveall-timer on page 40• leave-timer on page 41• point-to-point on page 43

rstp

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

traceoptions (MVRP)

Syntax	<pre>traceoptions { file <i>name</i> <size <i>size</i>> <files <i>number</i>> <(world-readable no-world-readable)>; flag <i>flag</i> <flag-modifier> <disable>; }</pre>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols mvrp], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type), [edit protocols mvrp], [edit routing-instances <i>routing-instance-name</i> protocols mvrp] (for virtual switch instance type)</pre>
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>disable —(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 all.</p> <p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. To include the file 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 /var/log/mvrp-log.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files, in the range from 2 through 1000. The default is 1 trace file. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, 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 size option.</p> <p>flag <i>flag</i>—Specify which tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none">• all—Enable all trace options flags.• error—Trace all failure conditions.• events—Trace process state change and cleanup events.• pdu—Trace RAPS PDU reception and transmission.• socket—Trace socket activity.• state-machine—Trace information about the state machine.• timers—Trace protocol timers.

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 1MB.

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

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

Related Documentation	<ul style="list-style-type: none">• Example: Configuring Automatic VLAN Administration Using MVRP on MX Series Routers on page 9• Configuring Multiple VLAN Registration Protocol (MVRP) on page 23• Verifying That MVRP Is Working Correctly on page 57• Understanding Multiple VLAN Registration Protocol (MVRP) on MX Series Routers on page 3
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unit

```

Syntax  unit logical-unit-number {
        accept-source-mac {
            mac-address mac-address {
                policer {
                    input cos-policer-name;
                    output cos-policer-name;
                }
            }
        }
        accounting-profile name;
        allow-any-vci;
        atm-scheduler-map (map-name | default);
        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;
        dial-options {
            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 {  
    chap {  
      access-profile name;  
      default-chap-secret name;  
      local-name name;  
      passive;  
    }  
    compression {  
      acfc;  
      pfc;  
    }  
    dynamic-profile profile-name;  
    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;  
    dynamic-profile 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 ...
    }
    bridge-domain-type (bvlan | svlan);
    bundle interface-name;
    core-facing;
    demux-destination {
        destination-prefix;
    }
    demux-source {
        source-prefix;
    }
    duplicate-protection;
    dynamic-profile 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;
    isid-list all-service-groups;
    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);
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 <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> interfaces <i>interface-name</i>], [edit interfaces interface-set <i>interface-set-name</i> interface <i>interface-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.
Options	<p>logical-unit-number—Number of the logical unit.</p> <p>Range: 0 through 1,073,741,823 for demux and PPPoE static interfaces only. 0 through 16,385 for all other static interface types.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring Logical Interface Properties Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers Junos OS Services Interfaces Configuration Guide

vlan-id (Logical Port in Bridge Domain)

Syntax	<code>vlan-id <i>number</i>;</code>
Hierarchy Level	[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]
Release Information	Statement introduced in Junos OS Release 9.2.
Description	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.
Options	number —The VLAN ID. Range: 1 through 4095
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring a Logical Interface for Access Mode

vlan-id-list

Syntax	<code>vlan-id-list [<i>vlan-id-numbers</i>];</code>
Hierarchy Level	[edit bridge-domains <i>bridge-domain-name</i>], [edit logical-systems <i>logical-system-name</i> bridge-domains <i>bridge-domain-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> bridge-domains <i>bridge-domain-name</i>], [edit routing-instances <i>routing-instance-name</i> bridge-domains <i>bridge-domain-name</i>]
Release Information	Statement introduced in Junos OS Release 9.4. Support for logical systems added in Junos OS Release 9.6.
Description	(MX Series routers only) Specify a VLAN identifier list to use for a bridge domain in trunk mode.
Options	<i>vlan-id-numbers</i> —Valid VLAN identifiers. You can combine individual numbers with range lists including a hyphen. Range: 0 through 4095
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">Configuring a Bridge DomainConfiguring VLAN Identifiers for Bridge Domains and VPLS Routing Instances

PART 3

Administration

- Multiple VLAN Registration Protocol Monitoring on page 57
- Multiple VLAN Registration Protocol Monitoring Commands on page 59

CHAPTER 5

Multiple VLAN Registration Protocol Monitoring

- Verifying That MVRP Is Working Correctly on page 57

Verifying That MVRP Is Working Correctly

Purpose After configuring your MX Series router 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 Virtual LANs (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'
(VO) 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

- Example: Configuring Automatic VLAN Administration Using MVRP on EX Series Switches
- Configuring Multiple VLAN Registration Protocol (MVRP) (CLI Procedure)
- Controlling the Management State of a VLAN in MVRP Configurations on MX Series Routers (CLI Procedure) on page 25

CHAPTER 6

Multiple VLAN Registration Protocol Monitoring Commands

show mvrp

Syntax	show mvrp
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display Multiple VLAN Registration Protocol (MVRP) configuration information.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show mvrp applicant-state on page 62 • show mvrp dynamic-vlan-memberships on page 64 • show mvrp interface on page 65 • show mvrp registration-state on page 66 • show mvrp statistics on page 68
List of Sample Output	show mvrp on page 60
Output Fields	Table 3 on page 60 lists the output fields for the show mvrp command. Output fields are listed in the approximate order in which they appear.

Table 3: show mvrp Output Fields

Field Name	Field Description
MVRP dynamic VLAN creation	Displays whether global MVRP dynamic Virtual LAN (VLAN) creation is Enabled or Disabled .
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"> • Interface—The interface on which MVRP is configured. • Join—The maximum number of milliseconds the interfaces must wait before sending VLAN advertisements. • Leave—The number of milliseconds an interface must wait after receiving a Leave message to remove the interface from the VLAN specified in the message. • LeaveAll—The interval at which LeaveAll messages are sent on interfaces. LeaveAll messages maintain current MVRP VLAN membership information in the network.

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

Syntax	show mvrp applicant-state
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display Multiple VLAN Registration Protocol (MVRP) applicant state information.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show mvrp on page 60 • show mvrp interface on page 65 • show mvrp registration-state on page 66 • show mvrp statistics on page 68
List of Sample Output	show mvrp applicant-state on page 63
Output Fields	Table 4 on page 62 lists the output fields for the show mvrp applicant-state command. Output fields are listed in the approximate order in which they appear.

Table 4: show mvrp applicant-state Output Fields

Field Name	Field Description
VLAN Id	Displays the Virtual LAN (VLAN) ID number.
Interface	Displays the interface number associated with the VLAN ID.
State	Displays one of the following MVRP registrar states: <ul style="list-style-type: none"> • VO—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. • QA—Quiet passive.

Sample Output

```
show mvrp      user@host> show mvrp applicant-state
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)
```

show mvrp dynamic-vlan-memberships

Syntax	show mvrp dynamic-vlan-memberships
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display all Virtual LANs (VLANs) that have been created dynamically using Multiple VLAN Registration Protocol (MVRP) on the router.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • show mvrp on page 60 • show mvrp applicant-state on page 62 • show mvrp interface on page 65 • show mvrp registration-state on page 66 • show mvrp statistics on page 68
List of Sample Output	show mvrp dynamic-vlan-memberships on page 64
Output Fields	Table 5 on page 64 lists the output fields for the show mvrp dynamic-vlan-memberships command. Output fields are listed in the approximate order in which they appear.

Table 5: 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

```

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

Syntax	show mvrp interface
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display Multiple VLAN Registration Protocol (MVRP) interface-specific information.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show mvrp on page 60 • show mvrp applicant-state on page 62 • show mvrp dynamic-vlan-memberships on page 64 • show mvrp registration-state on page 66 • show mvrp statistics on page 68
List of Sample Output	show mvrp interface on page 65
Output Fields	Table 6 on page 65 lists the output fields for the show mvrp interface command. Output fields are listed in the approximate order in which they appear.

Table 6: show mvrp interface Output Fields

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

Syntax	show mvrp registration-state
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display Multiple VLAN Registration Protocol (MVRP) registration state information.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show mvrp on page 60 • show mvrp dynamic-vlan-memberships on page 64 • show mvrp interface on page 65 • show mvrp statistics on page 68
List of Sample Output	show mvrp registration-state on page 66
Output Fields	Table 7 on page 66 lists the output fields for the show mvrp registration-state command. Output fields are listed in the approximate order in which they appear.

Table 7: show mvrp registration-state Output Fields

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

Sample Output

```

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

VLAN Id   Interface   Registrar   Forced   Managed   STP
State     State      State      State   State     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

Syntax	show mvrp statistics
Release Information	Command introduced in Junos OS Release 10.1.
Description	For MX Series routers, display Multiple VLAN Registration Protocol (MVRP) statistics in the form of Multiple Registration Protocol data unit (MRPDU) messages.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show mvrp on page 60 • show mvrp applicant-state on page 62 • show mvrp dynamic-vlan-memberships on page 64 • show mvrp interface on page 65 • show mvrp registration-state on page 66
List of Sample Output	show mvrp statistics on page 68
Output Fields	Table 8 on page 68 lists the output fields for the show mvrp statistics command. Output fields are listed in the approximate order in which they appear.

Table 8: show mvrp statistics Output Fields

Field Name	Field Description
interface name	Interface for which MVRP statistics are displayed.
VLAN IDs registered	Number of Virtual LAN (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

PART 4

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