



## Configuring IGMP Snooping

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This chapter describes IGMP Snooping and procedures to configure IGMP Snooping.

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## Understanding IGMP Snooping

As networks increase in size, multicast routing becomes critically important as a means to determine which segments require multicast traffic and which do not. IP multicasting enables IP traffic to be propagated from one source to a number of destinations, or from many sources to many destinations. Rather than sending one packet to each destination, one packet is sent to the multicast group identified by a single IP destination group address.

Internet Group Management Protocol (IGMP) snooping restricts flooding of multicast traffic by sending multicast traffic only to the interfaces that are subscribed to a particular multicast group.

The Carrier Packet Transport (CPT) system can use IGMP snooping to constrain the flooding of multicast traffic by dynamically configuring Layer 2 interfaces so that multicast traffic is forwarded to only those interfaces associated with IP multicast devices. As the name implies, IGMP snooping requires the CPT system to snoop on the IGMP transmissions between the host and the router and to keep track of multicast groups

and member ports. When the CPT system receives an IGMP report from a host for a particular multicast group, the CPT system adds the host port number to the forwarding table entry; when it receives an IGMP Leave Group message from a host, it removes the host port from the table entry. It also periodically deletes entries if it does not receive IGMP membership reports from the multicast clients.

**Note**

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For more information on IP multicast and IGMP, see RFC 1112, RFC 2236, and RFC 3376.

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The CPT system forwards periodic general queries received from the multicast router in the bridge domain where IGMP snooping is enabled. All hosts interested in this multicast group send join requests and are added to the forwarding table entry. The CPT system creates one entry per bridge domain in the IGMP snooping IP multicast forwarding table for each group from which it receives an IGMP join request.

The IP multicast groups learned through IGMP snooping are dynamic.

If a port interface, EFP, and bridge domain state changes, the IGMP snooping-learned multicast groups from this port, EFP, and bridge domain in the bridge domain are deleted.

**IGMP Versions**

The CPT system supports IGMP version 1, IGMP version 2, and IGMP version 3 on a bridge domain level. The CPT system does snooping using L2 multicast address and not L3 IP address.

**Note**

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The CPT system supports IGMPv3 snooping based only on the destination multicast MAC address and not on the the source IP address or on proxy reports.

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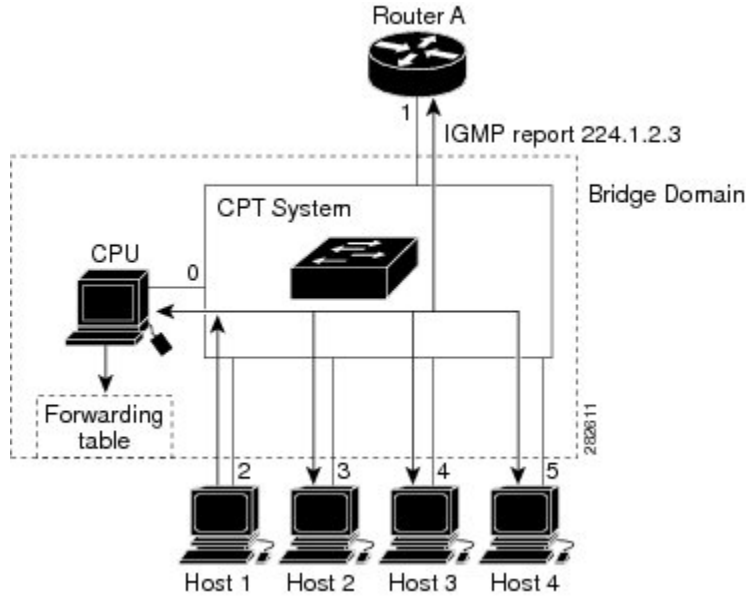
An IGMPv3 CPT system provides Basic IGMPv3 Snooping Support (BISS), which includes support for the snooping features on IGMPv1 and IGMPv2 switches and for IGMPv3 membership report messages. BISS constrains the flooding of multicast traffic when the network includes IGMPv3 hosts. It constrains traffic to approximately the same set of ports as the IGMP snooping feature on IGMPv1 or IGMPv2 hosts.

## Joining a Multicast Group

When a host connected to the CPT system wants to join an IP multicast group and it is an IGMP version 2 or version 3 client, it sends an unsolicited IGMP join message, specifying the IP multicast group to join. Alternatively, when the CPT system receives a general query from the router, it forwards the query to all the EFPs in the bridge domain. IGMP hosts wanting to join the multicast group respond by sending a join message to the CPT system. The CPT system CPU creates a multicast forwarding-table entry for the group if it is not already present. The CPU also adds the interface where the join message was received to the forwarding-table

entry. The host associated with that interface receives multicast traffic for that multicast group. See [Figure 1: Initial IGMP Join Message](#), on page 3.

**Figure 1: Initial IGMP Join Message**



Router A sends a general query to the CPT system, which forwards the query to ports 2 through 5, which have EFPs configured in the same bridge domain. Host 1 wants to join multicast group 224.1.2.3 and multicasts an IGMP membership report (IGMP join message) to the group. The CPT system CPU uses the information in the IGMP report to set up a forwarding-table entry as shown in [Table 1: IGMP Snooping Forwarding Table](#), on page 3, which includes the port numbers connected to Host 1 and the router.

**Table 1: IGMP Snooping Forwarding Table**

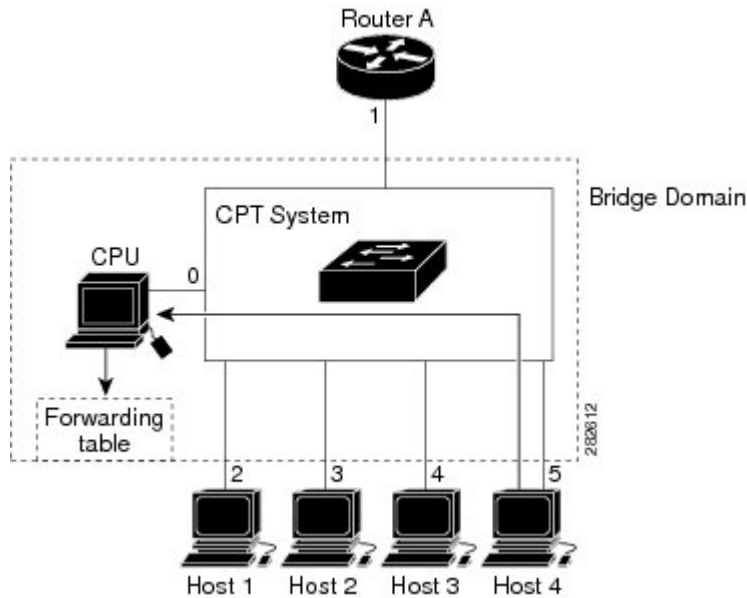
Destination Address	Type of Packet	Ports
224.1.2.3	IGMP	1, 2

The CPT system hardware can distinguish IGMP information packets from other packets for the multicast group. The information in the table enables the switching engine to send frames addressed to the 224.1.2.3 multicast IP address, which are not IGMP packets, to the router and to the host that has joined the group.

If another host (for example, Host 4) sends an unsolicited IGMP join message for the same group ([Figure 2: Second Host Joining a Multicast Group](#), on page 4) the CPU receives that message and adds the port number of Host 4 to the forwarding table as shown in [Table 2: Updated IGMP Snooping Forwarding Table](#), on page

4. Note that because the forwarding table directs IGMP messages only to the CPU, the message is not flooded to other ports on the CPT system. Any known multicast traffic is forwarded to the group and not to the CPU.

**Figure 2: Second Host Joining a Multicast Group**



**Table 2: Updated IGMP Snooping Forwarding Table**

Destination Address	Type of Packet	Ports
224.1.2.3	IGMP	1, 2, 5

### IGMP Snooping Configuration Guidelines and Restrictions

- On a CPT system, IGMP snooping can be configured at the bridge domain level.
- **IGMP immediate-leave** and **IGMP report-suppression** commands can be configured at the bridge domain level.
- Static multicast router can be configured at the EFP level.
- It is mandatory to untag the packets before they enter the bridge domain. This is achieved using the **rewrite pop** configuration at the EFP level.
- Following configuration restrictions are applicable while configuring the IGMP snooping on the CPT system:
  - For a single tagged packet, the tag is removed using the **rewrite ingress tag pop 1 symmetric** command at the EFP level.
  - For a double tagged packet, the tag is removed using the **rewrite ingress tag pop 2 symmetric** command at the EFP level.
  - For an untagged packet, a rewrite operation is not required.

# NTP-J64 Configuring IGMP Snooping Using Cisco IOS Commands

<b>Purpose</b>	This procedure configures IGMP snooping using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

## Procedure

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- Step 1** Complete [DLP-J217 Enabling or Disabling IGMP Snooping Using Cisco IOS Commands](#), on page 5.
- Step 2** Complete the following tasks as necessary:
- [DLP-J218 Enabling or Disabling IGMP Immediate Leave Using Cisco IOS Commands](#), on page 8
  - [DLP-J219 Disabling IGMP Report Suppression Using Cisco IOS Commands](#), on page 10
  - [DLP-J220 Configuring a Static Multicast Router Port Using Cisco IOS Commands](#), on page 11
- Step 3** (Optional) Complete the [DLP-J230 Viewing IGMP Configuration Using Cisco IOS Commands](#), on page 14.  
**Stop. You have completed this procedure.**
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## DLP-J217 Enabling or Disabling IGMP Snooping Using Cisco IOS Commands

<b>Purpose</b>	This procedure enables or disables IGMP snooping using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

**Procedure**

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>bridge domain</b> <i>bridge-domain value</i>  <b>Example:</b> Router(config)# bridge-domain 22	Enters the bridge-domain.  • Enter the value of the bridge-domain.
<b>Step 4</b>	<b>[no] ip igmp snooping</b>  <b>Example:</b> Router(config-bdomain)# ip igmp snooping	Enables IGMP snooping on the bridge-domain. The <b>no</b> form of the command disables IGMP snooping.
<b>Step 5</b>	<b>end</b>  <b>Example:</b> Router(config-bdomain)# end	Returns to the privileged EXEC mode.
<b>Step 6</b>	<b>copy running-config startup-config</b>  <b>Example:</b> copy running-config startup-config	(Optional) Saves your entries in the configuration file.

**Examples:**

The following example shows how to enable IGMP snooping on untagged Ethernet traffic on the bridge domain and how to configure the source and host ports:

```
! Configuration on the bridge-domain
Router(config)# bridge-domain 30
Router(config-bdomain)# ip igmp snooping

! Configuration on port 1
Router(config)# interface gi 36/1
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation untagged
Router(config-if-srv)# bridge-domain 30

! Configuration on port 2
Router(config)# interface gi 36/5
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation untagged
Router(config-if-srv)# bridge-domain 30
```

```

! Configuration on port 3
Router(config)# interface gi 36/10
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation untagged
Router(config-if-srv)# bridge-domain

```

The following example shows how to enable IGMP snooping on single and double tagged Ethernet traffic on the bridge domain and how to configure the source and host ports:

```

! Configuration on the bridge-domain
Router(config)# bridge-domain 30
Router(config-bdmain)# ip igmp snooping

! Configuration on port 1
Router(config)# interface gi 36/1
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 50 second-dot1q 10
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

! Configuration on port 2
Router(config)# interface gi 36/2
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 200
Router(config-if-srv)# rewrite ingress pop 1 symmetric
Router(config-if-srv)# bridge-domain 30

! Configuration on port 3
Router(config)# interface gi 36/5
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 100
Router(config-if-srv)# rewrite ingress pop 1 symmetric
Router(config-if-srv)# bridge-domain 30

```

The following example shows how to enable IGMP snooping on double tagged Ethernet traffic on the bridge domain and how to configure the source and host ports::

```

! Configuration on the bridge-domain
Router(config)# bridge-domain 30
Router(config-bdmain)# ip igmp snooping

! Configuration on port 1
Router(config)# interface gi 36/1
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 10 second-dot1q 20
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

! Configuration on port 2
Router(config)# interface gi 36/5
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 100 second-dot1q 20
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

! Configuration on port 3
Router(config)# interface gi 36/6
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 101 second-dot1q 20
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

```

## Leaving a Multicast Group

The router sends periodic multicast general queries, and the CPT system forwards these queries through all ports in the bridge domain. Interested hosts respond to the queries. If at least one host in the bridge domain wants to receive multicast traffic, the router continues forwarding the multicast traffic to the bridge domain. The CPT system forwards multicast group traffic only to those hosts listed in the forwarding table for that IP multicast group maintained by IGMP snooping.

When hosts want to leave a multicast group, they can leave without sending a message, or they can send a leave message. When the CPT system receives a leave message from a host, it sends a group-specific query to learn if any other devices connected to that interface are interested in traffic for the specific multicast group. The CPT system then updates the forwarding table for that MAC group so that only those hosts interested in receiving multicast traffic for the group are listed in the forwarding table. If the router receives no reports from a bridge domain, it removes the group for the bridge domain from its IGMP cache.

### Immediate Leave

The Immediate Leave feature is only supported on IGMP version 2 hosts. The CPT system uses IGMP Snooping Immediate Leave feature to remove an interface from the forwarding table, which sends a leave message without the CPT system sending group-specific queries to the interface. The VLAN interface is pruned from the multicast tree for the multicast group specified in the original leave message. The Immediate Leave feature ensures optimal bandwidth management for all hosts on a switched network, even when multiple multicast groups are simultaneously in use.



#### Note

You should only use the Immediate Leave feature on bridge domains where a single host is connected to each port. If this feature is enabled on bridge domains where more than one host is connected to a port, some hosts might get dropped.

## DLP-J218 Enabling or Disabling IGMP Immediate Leave Using Cisco IOS Commands

When you enable the IGMP Immediate Leave feature, the CPT system immediately removes a port when it detects an IGMP version 2 leave message on that port. You should use the Immediate Leave feature only when there is a single receiver present on every port in the bridge domain.



#### Note

The Immediate Leave feature is supported only on IGMP version 2 hosts.

<b>Purpose</b>	This procedure enables or disables IGMP Immediate Leave feature using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-J217 Enabling or Disabling IGMP Snooping Using Cisco IOS Commands</a> , on page 5
<b>Required/As Needed</b>	As needed



Onsite/Remote	Remote
Security Level	None

### Procedure

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>bridge domain</b> <i>bridge-domain value</i>  <b>Example:</b> Router(config)# bridge-domain 22	Enters the bridge domain configuration mode.  • Enter the value of the bridge-domain.
<b>Step 4</b>	<b>[no] ip igmp snooping immediate-leave</b>  <b>Example:</b> Router(config-bdomain)# ip igmp snooping immediate-leave	Enables the IGMP Immediate Leave feature on the bridge domain. The <b>no</b> form of the command disables IGMP snooping immediate-leave.
<b>Step 5</b>	<b>end</b>  <b>Example:</b> Router(config-bdomain)# end	Returns to the privileged EXEC mode.
<b>Step 6</b>	<b>copy running-config startup-config</b>  <b>Example:</b> copy running-config startup-config	(Optional) Saves your entries in the configuration file.

To disable the IGMP Immediate Leave feature on a bridge domain, use the **no ip igmp snooping immediate-leave** global configuration command.

### Examples:

The following example shows how to enable IGMP Immediate Leave feature for bridge-domain130:

```
Router# configure terminal
Router(config)# bridge-domain 130
Router(config-bdomain)# ip igmp snooping immediate-leave
Router(config-bdomain)# end
```

# IGMP Report Suppression


**Note**

IGMP report suppression is supported only when the multicast query has IGMPv1 and IGMPv2 reports. This feature is not supported when the query includes IGMPv3 reports.

The CPT system uses IGMP report suppression to forward only one IGMP report per multicast router query, to multicast devices. When IGMP router suppression is enabled (the default), the CPT system sends the first IGMP report from all hosts for a group, to all the multicast routers. The CPT system does not send the remaining IGMP reports for the group to the multicast routers. This feature prevents duplicate reports from being sent to the multicast devices.

If the multicast router query includes requests only for IGMPv1 and IGMPv2 reports, the CPT system forwards only the first IGMPv1 or IGMPv2 report from all hosts for a group to all the multicast routers.

If the multicast router query also includes requests for IGMPv3 reports, the CPT system forwards all IGMPv1, IGMPv2, and IGMPv3 reports for a group to the multicast devices.

If you disable IGMP report suppression, all IGMP reports are forwarded to the multicast routers.

## DLP-J219 Disabling IGMP Report Suppression Using Cisco IOS Commands


**Note**

IGMP report suppression is supported only when the multicast query has IGMPv1 and IGMPv2 reports. This feature is not supported when the query includes IGMPv3 reports.

IGMP report suppression is enabled by default. When it is enabled, the CPT system forwards only one IGMP report per multicast router query. When report suppression is disabled, all IGMP reports are forwarded to the multicast routers. To re-enable IGMP report suppression, use the **ip igmp snooping report-suppression** command in the bridge domain configuration mode.

<b>Purpose</b>	This procedure disables IGMP report suppression using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-J217 Enabling or Disabling IGMP Snooping Using Cisco IOS Commands, on page 5</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

**Procedure**

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>bridge domain</b> <i>bridge-domain value</i>  <b>Example:</b> Router(config)# bridge-domain 22	Enters the bridge domain configuration mode.  • Enter the value of the bridge domain.
<b>Step 4</b>	<b>no ip igmp snooping report-suppression</b>  <b>Example:</b> Router(config-bdomain)# no ip igmp snooping report-suppression	Disables IGMP report suppression.
<b>Step 5</b>	<b>end</b>  <b>Example:</b> Router(config-bdomain)# end	Returns to the privileged EXEC mode.
<b>Step 6</b>	<b>copy running-config startup-config</b>  <b>Example:</b> copy running-config startup-config	(Optional) Saves your entries in the configuration file.

**Examples:**

The following example shows how to re-enable IGMP report suppression for bridge-domain 130:

```
Router# configure terminal
Router(config-bdomain)# bridge-domain 130
Router(config-bdomain)# ip igmp snooping report-suppression
Router(config-bdomain)# end
```

## DLP-J220 Configuring a Static Multicast Router Port Using Cisco IOS Commands

To add a static connection to a multicast router port, use the **ip igmp snooping mrouter** EFP configuration command on the CPT system. To remove a static multicast router port from the bridge domain, use the **no ip igmp snooping mrouter** configuration command.



**Note** Static connections to multicast routers are supported only at the EFP.

<b>Purpose</b>	This procedure enables a static connection to a multicast router using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-J217 Enabling or Disabling IGMP Snooping Using Cisco IOS Commands, on page 5</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

### Procedure

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b>  <b>Example:</b> Router# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>interface <i>type number</i></b>  <b>Example:</b> Router(config)# interface TengigabitEthernet 4/1	Specifies the type and location of the interface to configure, where:  • <i>type</i> —Specifies the type of interface.  • <i>number</i> —Specifies the location of the interface.  The interface can be a physical interface or a port channel. The port-channel range is 1 to 128.
<b>Step 4</b>	<b>service instance <i>id</i> ethernet</b>  <b>Example:</b> Router(config-if)# service instance 10 ethernet	Configures an Ethernet service instance on an interface.
<b>Step 5</b>	<b>encapsulation dot1q <i>id</i></b>  <b>Example:</b> Router(config-if)# encapsulation dot1q 10	Defines the encapsulation format as IEEE 802.1Q ( <b>dot1q</b> ) and specifies the identifier. The identifier indicates the CVLAN with which the packet is received on the interface.

	Command or Action	Purpose
		<ul style="list-style-type: none"> <li>Enter the value of the identifier.</li> </ul>
<b>Step 6</b>	<b>rewrite ingress tag pop 1 symmetric</b>  <b>Example:</b> Router(config-if-srv)# <b>rewrite ingress tag pop 1 symmetric</b>	Specifies the rewrite operation.
<b>Step 7</b>	<b>bridge domain <i>bridge-domain value</i></b>  <b>Example:</b> Router(config-if-srv)# <b>bridge-domain 22</b>	Specifies the multicast router bridge domain ID. The bridge domain ID range is from 1 to 16384 <ul style="list-style-type: none"> <li>Enter the value of the bridge domain.</li> </ul>
<b>Step 8</b>	<b>[no] ip igmp snooping mrouter</b>  <b>Example:</b> Router(config-if-srv)# <b>ip igmp snooping mrouter</b>	Adds a static connection to the multicast router. The <b>no</b> form of the command removes the static multicast router port from the bridge domain.
<b>Step 9</b>	<b>end</b>  <b>Example:</b> Router(config-if-srv)# <b>end</b>	Returns to the privileged EXEC mode.

**Examples:**

The following example shows how to enable a static connection to a multicast router:

```
Router(config)# interface TenGigabitEthernet4/2
Router(config-if)# service instance 20 ethernet
Router(config-if-srv)# encapsulation dot1q 10
Router(config-if-srv)# rewrite ingress tag pop 1 symmetric
Router(config-if-srv)# bridge-domain 20
Router(config-if-srv)# ip igmp snooping mrouter
```

The following example shows how to disable a static connection to a multicast router:

```
Router(config)# interface TenGigabitEthernet4/2
Router(config-if)# service instance 20 ethernet
Router(config-if-srv)# no ip igmp snooping mrouter
```

**Note**

To add a static multicast router port to the EFP using CTC, see Step 6.e of [NTP-J68 Configuring IGMP Snooping Using CTC](#), on page 17.

## DLP-J230 Viewing IGMP Configuration Using Cisco IOS Commands

<b>Purpose</b>	This procedure explains how to view IGMP configuration using Cisco IOS commands.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

### Procedure

	<b>Command or Action</b>	<b>Purpose</b>
<b>Step 1</b>	<b>enable</b>  <b>Example:</b> Router> enable	Enables privileged EXEC mode. <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>
<b>Step 2</b>	<b>show ip igmp snooping [groups [count   vlan <i>bridge-domain ID</i> [ <i>ip-address</i>   count  dynamic [count]   user [count] ]]]   mrouter [vlan <i>bridge-domain ID</i>] querier   vlan <i>bridge-domain ID</i>]</b>  <b>Example:</b> Router# show ip igmp snooping	Displays the IGMP snooping information. <ul style="list-style-type: none"> <li>• <b>groups</b>—(Optional) Displays group information.</li> <li>• <b>count</b>—(Optional) Displays the number of multicast groups learned by IGMP snooping.</li> <li>• <b>vlan <i>bridge-domain ID</i></b>—(Optional) Specifies a bridge domain.               <ul style="list-style-type: none"> <li>• <i>bridge-domain ID</i>— Bridge domain ID. Valid values are from 1 to 16384.</li> </ul> </li> <li>• <b><i>ip-address</i></b>—(Optional) Displays information about the specified group.</li> <li>• <b>count</b>—(Optional) Displays the group count inside a bridge domain.</li> <li>• <b>dynamic</b>—(Optional) Displays dynamic entries learned through IGMP snooping.</li> <li>• <b>count</b>—(Optional) Displays the number of dynamic entries.</li> <li>• <b>user</b>—(Optional) Displays only the user-configured multicast entries.</li> <li>• <b>count</b>—(Optional) Displays the number of user-configured multicast entries.</li> </ul>

	Command or Action	Purpose
		<ul style="list-style-type: none"> <li>• <b>mrouter</b>—(Optional) Displays information about dynamically learned and manually configured multicast router ports.</li> <li>• <b>querier</b>—(Optional) Displays IGMP querier information.</li> </ul>
<b>Step 3</b>	<p><b>show ip igmp snooping querier [vlan <i>bridge-domain ID</i>] [detail]</b></p> <p><b>Example:</b> Router# show ip igmp snooping querier</p>	<p>Displays information about the IP address and the receiving port for the recently received IGMP query messages.</p> <ul style="list-style-type: none"> <li>• <b>vlan <i>bridge-domain ID</i></b> —(Optional) Specifies a bridge domain.                             <ul style="list-style-type: none"> <li>• <i>bridge-domain ID</i>— Bridge domain ID. Valid values are from 1 to 16384.</li> <li>• <b>detail</b>—Specifies the configuration and operational state of the IGMP snooping querier in the bridge domain.</li> </ul> </li> </ul>

**Examples**

The following example displays the output of the **show ip igmp snooping [vlan *bridge-domain ID*]** command.

Router# **show ip igmp sn vlan 2**

```
Global IGMP Snooping configuration:
-----
IGMP snooping Oper State      : Enabled
IGMPv3 snooping (minimal)    : Enabled
Report suppression           : Enabled
TCN solicit query            : Disabled
Robustness variable          : 2
Last member query count      : 2
Last member query interval   : 1000
Check TTL=1                  : No
Check Router-Alert-Option    : No

Vlan 2
-----
IGMP snooping Admin State     : Enabled
IGMP snooping Oper State     : Enabled
IGMPv2 immediate leave       : Disabled
Report suppression           : Enabled
Robustness variable          : 2
Last member query count      : 2
Last member query interval   : 1000
Check TTL=1                  : Yes
Check Router-Alert-Option    : Yes
Query Interval                : 0
Max Response Time            : 10000
```

The following example displays the output of the **show ip igmp snooping groups** command.

```
Router# show ip igmp snooping groups

Flags: I -- IGMP snooping, S -- Static, P -- PIM snooping, A -- ASM mode
Vlan      Group/source          Type      Version      Port List
-----
2         224.1.1.1             I         v2           Te7/4 Te5/2
Gi41/1 Gi41/44 Gi51/1 Gi51/44 Te4/2
```

The following example displays the output of the **show ip igmp snooping groups vlan** command.

```
Router# show ip igmp snooping groups vlan 2

Flags: I -- IGMP snooping, S -- Static, P -- PIM snooping, A -- ASM mode
Vlan      Group/source          Type      Version      Port List
-----
2         224.1.1.1             I         v2           Te7/4 Te5/2
Gi41/1 Gi41/44 Gi51/1 Gi51/44 Te4/2
```

The following example displays the output of the **show ip igmp snooping groups vlan bridge-domain ID [ip\_address]** command.

```
Router# show ip igmp snooping groups vlan 2 224.1.1.1

Flags: I -- IGMP snooping, S -- Static, P -- PIM snooping, A -- ASM mode
Vlan      Group/source          Type      Version      Port List
-----
2         224.1.1.1             I         v2           Te7/4 Te5/2
Gi41/1 Gi41/44 Gi51/1 Gi51/44 Te4/2
```

The following example displays the output of the **show ip igmp snooping mrouter** command.

```
Router# show ip igmp snooping mrouter

Vlan      ports
-----
2         Te4/4 (dynamic)
```

The following example displays the output of the **show ip igmp snooping mrouter vlan 2** command.

```
Router# show ip igmp snooping mrouter

Vlan      ports
-----
2         Te4/4 (dynamic)
```

The following example shows the output of the **show ip igmp snooping querier** command.

```
Router# show ip igmp snooping querier

Vlan      IP Address          IGMP Version      Port
-----
2         10.10.10.1         v2                 Te4/4
```



The following example shows the output of the **show ip igmp snooping querier [vlan bridge-domain ID ]** command.

```
Router# show ip igmp snooping querier vlan 2
```

```
IP address           : 10.10.10.1
IGMP version        : v2
Port                 : Te4/4
Max response time   : 10s
```

## NTP-J68 Configuring IGMP Snooping Using CTC

<b>Purpose</b>	This procedure explains how to configure IGMP Snooping, Immediate Leave, Report Suppression, and IGMP Static Router Port using CTC.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<p>Create an Ethernet Virtual Private LAN EVC circuit with the following conditions:</p> <ul style="list-style-type: none"> <li>• Type of VLAN Tagging: <ul style="list-style-type: none"> <li>◦ Double Tagged</li> <li>◦ Single Tagged</li> <li>◦ Untagged</li> </ul> </li> <li>• Rewrite Operation: <ul style="list-style-type: none"> <li>◦ POP 1 for Single Tagged</li> <li>◦ POP 2 for Double Tagged</li> <li>◦ N/A for Untagged</li> </ul> </li> </ul> <p>To create an EVC circuit, see <a href="#">DLP-J2 Create an EVC Circuit Using CTC</a>.</p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote
<b>Security Level</b>	None

## Procedure

---

- Step 1** Complete the [NTP-J22 Log into CTC](#) procedure at a node where you want to configure IGMP snooping.
- Step 2** In node view, click the **Layer2+** tab.
- Step 3** Click **Carrier Ethernet**.
- Step 4** From the list of Ethernet Virtual Circuits (EVCs), select an Ethernet Virtual Private LAN EVC circuit to configure IGMP snooping.
- Step 5** Click **Edit**. The Edit Circuit dialog box appears.
- Step 6** In the IGMP Snooping tab, specify the settings for the bridge domain.
- Select a bridge domain from the list.
  - Check the **IGMP Snooping** check box to enable IGMP snooping on this bridge domain.
  - Check the **Immediate Leave** check box. When you enable IGMP immediate leave, IGMP snooping immediately removes a port when it detects a leave message on that port.
  - Check the **Report Suppression** check box. When you enable report suppression, the bridge domain forwards only one IGMP report for each multicast query.
  - Check the **IGMP Static Router Port** check box to add a static router to the EFP.
 

**Note** To disable IGMP Snooping, Immediate Leave, Report Suppression, or IGMP Static Router Port, uncheck the checkbox against each one of them.
  - Click **Apply**.
- Step 7** To view the IGMP configuration, refer to the procedure explained in [DLP-J56 Open the Cisco IOS Configuration Mode and View the Feature Configuration Details Using CTC](#).
- 

## IGMP Proxy Reporting

IGMP supports proxy reporting for IGMPv1 and IGMPv2 messages to handle group-specific queries. These queries are not sent downstream, but the CPT system does respond to them directly. When the CPT system receives a group-specific query, the CPT system terminates the query and sends an IGMP proxy report if there is a receiver for the group. There is no proxy reporting for IGMPv3 messages. For IGMPv3, a group-specific query or a group source-specific query is flooded to all VLAN member ports. The database for the IGMPv3 membership report is built based on the reports received.

Host reports responding to a specific query can be suppressed by the report suppression feature. Report suppression is supported for IGMPv1, IGMPv2 and IGMPv3 messages. With report suppression enabled (by default), when the CPT system receives a general query, the CPT system starts a suppression cycle for reports from all hosts to each group or channel. Only the first report to the discovered multicast routers are forwarded; the rest of the reports are suppressed. For IGMPv1 and IGMPv2, the time of suppression is the report response time indicated in the general query message. For IGMPv3, suppression occurs for the entire general query interval.

**Note**

- Source-based filtering for IGMP version 3 reports is not supported in hardware. The states are maintained only in software and used for explicit host tracking and statistics collection. The source-only entries are deleted every 5 minutes and relearned to ensure that they are still valid.
- Turning off explicit host tracking disables fast-leave processing and proxy reporting.

## L2 Address Aliasing Issue

The IGMP snooping forwarding table is based on L2 address. Since multiple IP addresses can map to the same L2 address, an L2 address aliasing can occur. For example, IP addresses 225.1.1.1 and 226.1.1.1 map to the same MAC address 01005E010101 which results in L2 address aliasing.

## IGMP Snooping Interaction with LAG

A link aggregation (LAG) interface can be added to a bridge domain, which has IGMP snooping enabled.

The following example shows how to configure the source port, which is part of the LAG interface that is a member of the bridge domain that has IGMP snooping enabled.

```

Configuration on the bridge-domain
Router(config)# bridge-domain 30
Router(config-bdmain)# ip igmp snooping

Configuration on port 1
Router(config)# interface port-channel 10
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 10
Router(config-if-srv)# rewrite ingress tag pop 1 symmetric
Router(config-if-srv)# bridge-domain 30
Router(config)# interface ten 6/1
Router(config-if)# channel-group 10
Router(config)# interface ten 6/2
Router(config-if)# channel-group 10

Configuration port 2
Router(config)# interface gi36/2
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 20 second-dot1q 30
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

Configuration on port 3
Router(config)# interface gi36/3
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 40
Router(config-if-srv)# rewrite ingress tag pop 1 symmetric
Router(config-if-srv)# bridge-domain 30

```

The following example shows how to configure the receiver port, which is part of the LAG interface that is a member of the bridge domain that has IGMP snooping enabled.

```

Configuration on the bridge-domain
Router(config)# bridge-domain 30
Router(config-bdmain)# ip igmp snooping

```

```

Configuration on port 1
Router(config)# interface ten 6/1
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 10 second-dot1q 30
Router(config-if-srv)# rewrite ingress pop 2 symmetric
Router(config-if-srv)# bridge-domain 30

Configuration port 2
Router(config)# interface port-channel 10
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 10
Router(config-if-srv)# rewrite ingress tag pop 1 symmetric
Router(config-if-srv)# bridge-domain 30

Router(config)# interface gi36/1
Router(config-if)# channel-group 10

Router(config)# interface gi36/2
Router(config-if)# channel-group 10

Configuration on port 3
Router(config)# interface gi36/5
Router(config-if)# service instance 10 ethernet
Router(config-if-srv)# encapsulation dot1q 40
Router(config-if-srv)# rewrite ingress tag pop 1 symmetric
Router(config-if-srv)# bridge-domain 30

```

## High Availability

The multicast group tables are synchronized between the active and standby fabric cards. If an active fabric reloads, then the standby fabric card becomes active. Since, the multicast group tables are already synchronized, there is no traffic loss, unless the source or the receiver is not present on the card that reloaded.



### Note

The IGMP snooping feature does not interact with REP.

## IGMP Statistics and Counters

An entry in a counter contains multicasting statistical information for the IGMP snooping capable CPT system. The equivalent IOS command to retrieve statistical information is **show ip igmp snooping counters**.

This information can be stored in the following counters:

- Tx General Queries—Number of general queries transmitted through an interface.
- Tx Group Specific Queries—Total group specific queries transmitted through an interface.
- Tx Reports—Total membership reports transmitted through an interface.
- Tx Leaves—Total leave messages transmitted through an interface.
- Rx General Queries—Total general queries received at an interface.
- Rx Group Specific Queries—Total group specific queries received at an interface.
- Rx Reports—Total membership reports received at an interface.
- Rx Leaves—Total leave messages received at an interface.

- Rx Valid Packets—Total valid IGMP packets received at an interface.
- Rx Invalid Packets—Total number of invalid IGMP packets that are received at an interface.

The following example shows the statistical information using the **show ip igmp snooping counters** command.

Router> **show ip igmp snooping counters**

```

packet queue maximum size:      20000
packet queue current size:      0
packet queue peak size:         0
packet queue drop count:       0
----
Vlan 1
----

Counters of group "IGMP snooping counters"
overall there are 15 counters
Type                               | Value      | Ovr |
Und
-----+-----+-----+
RX processed Query Count           | 0          |    |
RX processed Group Specific Query  | 0          |    |
RX processed Join                   | 787120    |    |
RX processed Leave                  | 0          |    |
RX processed Total Valid Packets   | 782       |    |
RX processed Other Packets         | 0          |    |
RX Packets dropped for sanity errors | 0          |    |
RX Packets dropped for checksum errors | 0          |    |
RX Packets dropped for header length errors | 0          |    |
RX Packets dropped for other errors | 0          |    |
RX processed Topology change notification | 0          |    |
TX processed Query Count           | 0          |    |
TX processed Group Specific Query  | 0          |    |
TX processed Join                   | 0          |    |
TX processed Leave                  | 0          |    |

Counters of group "IGMP snooping V3 counters"
overall there are 18 counters
RX processed V3 ALLOW NEW          | 0          |    |
RX processed V3 BLOCK OLD         | 0          |    |
Type                               | Value      | Ovr |

```

```

Und
-----+-----+-----
RX processed V3 MODE IS INCLUDE          | 0          |  |
RX processed V3 MODE IS EXCLUDE          | 0          |  |
RX processed V3 CHANGE TO INCLUDE        | 0          |  |
RX processed V3 CHANGE TO EXCLUDE        | 0          |  |
RX processed V3 Query                     | 782        |  |
RX processed V3 Group Specific Query     | 0          |  |
RX processed V3 GSS Query                 | 0          |  |
TX processed V3 ALLOW NEW                 | 0          |  |
TX processed V3 BLOCK OLD                 | 0          |  |
TX processed V3 MODE IS INCLUDE          | 0          |  |
TX processed V3 MODE IS EXCLUDE          | 0          |  |
TX processed V3 CHANGE TO INCLUDE        | 0          |  |
TX processed V3 CHANGE TO EXCLUDE        | 0          |  |
TX processed V3 Query                     | 0          |  |
TX processed V3 Group Specific Query     | 0          |  |
TX processed V3 GSS Query                 | 0          |  |

```

## Alarms

The MCAST-MAC-TABLE-FULL condition is raised from IGMP snooping at the card level. The CPT system supports a maximum of 2000 multicast groups. The MCAST-MAC-TABLE-FULL condition is raised when the multicast table is full and a new join request is received. This table is cleared when at least one entry gets cleared from the multicast table after the alarm is raised.