

# Sun Ethernet Fabric Operating System IGS Administration Guide

ORACLE®

Part No: E21708-03  
July 2015



**Part No: E21708-03**

Copyright © 2010, 2015, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

**Documentation Accessibility**

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

**Access to Oracle Support**

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

**Référence: E21708-03**

Copyright © 2010, 2015, Oracle et/ou ses affiliés. Tous droits réservés.

Ce logiciel et la documentation qui l'accompagne sont protégés par les lois sur la propriété intellectuelle. Ils sont concédés sous licence et soumis à des restrictions d'utilisation et de divulgation. Sauf stipulation expresse de votre contrat de licence ou de la loi, vous ne pouvez pas copier, reproduire, traduire, diffuser, modifier, breveter, transmettre, distribuer, exposer, exécuter, publier ou afficher le logiciel, même partiellement, sous quelque forme et par quelque procédé que ce soit. Par ailleurs, il est interdit de procéder à toute ingénierie inverse du logiciel, de le désassembler ou de le décompiler, excepté à des fins d'interopérabilité avec des logiciels tiers ou tel que prescrit par la loi.

Les informations fournies dans ce document sont susceptibles de modification sans préavis. Par ailleurs, Oracle Corporation ne garantit pas qu'elles soient exemptes d'erreurs et vous invite, le cas échéant, à lui en faire part par écrit.

Si ce logiciel, ou la documentation qui l'accompagne, est concédé sous licence au Gouvernement des Etats-Unis, ou à toute entité qui délivre la licence de ce logiciel ou l'utilise pour le compte du Gouvernement des Etats-Unis, la notice suivante s'applique:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

Ce logiciel ou matériel a été développé pour un usage général dans le cadre d'applications de gestion des informations. Ce logiciel ou matériel n'est pas conçu ni n'est destiné à être utilisé dans des applications à risque, notamment dans des applications pouvant causer des dommages corporels. Si vous utilisez ce logiciel ou matériel dans le cadre d'applications dangereuses, il est de votre responsabilité de prendre toutes les mesures de secours, de sauvegarde, de redondance et autres mesures nécessaires à son utilisation dans des conditions optimales de sécurité. Oracle Corporation et ses affiliés déclinent toute responsabilité quant aux dommages causés par l'utilisation de ce logiciel ou matériel pour ce type d'applications.

Oracle et Java sont des marques déposées d'Oracle Corporation et/ou de ses affiliés. Tout autre nom mentionné peut correspondre à des marques appartenant à d'autres propriétaires qu'Oracle.

Intel et Intel Xeon sont des marques ou des marques déposées d'Intel Corporation. Toutes les marques SPARC sont utilisées sous licence et sont des marques ou des marques déposées de SPARC International, Inc. AMD, Opteron, le logo AMD et le logo AMD Opteron sont des marques ou des marques déposées d'Advanced Micro Devices. UNIX est une marque déposée d'The Open Group.

Ce logiciel ou matériel et la documentation qui l'accompagne peuvent fournir des informations ou des liens donnant accès à des contenus, des produits et des services émanant de tiers. Oracle Corporation et ses affiliés déclinent toute responsabilité ou garantie expresse quant aux contenus, produits ou services émanant de tiers, sauf mention contraire stipulée dans un contrat entre vous et Oracle. En aucun cas, Oracle Corporation et ses affiliés ne sauraient être tenus pour responsables des pertes subies, des coûts occasionnés ou des dommages causés par l'accès à des contenus, produits ou services tiers, ou à leur utilisation, sauf mention contraire stipulée dans un contrat entre vous et Oracle.

**Accessibilité de la documentation**

Pour plus d'informations sur l'engagement d'Oracle pour l'accessibilité à la documentation, visitez le site Web Oracle Accessibility Program, à l'adresse <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

**Accès au support électronique**

Les clients Oracle qui ont souscrit un contrat de support ont accès au support électronique via My Oracle Support. Pour plus d'informations, visitez le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> ou le site <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> si vous êtes malentendant.

# Contents

---

<b>Using This Documentation</b> .....	7
Product Documentation Library .....	7
Acronyms and Abbreviations .....	7
CLI Command Modes .....	8
Feedback .....	8
<b>IGS Overview</b> .....	9
IGS Protocol Description .....	9
Topology Example .....	10
Configuration Prerequisites .....	10
Default Settings .....	11
<b>Configuring IGS</b> .....	13
Enabling and Disabling IGS .....	13
▼ Enable IGS Globally .....	14
▼ Enable IGS on a Specific VLAN Interface .....	15
▼ Disable IGS .....	15
▼ Configure Multicast Forwarding Mode .....	16
▼ Configure the IGS Version .....	16
Configuring a Multicast Router Port .....	17
▼ Enable Multicast Router Port .....	17
▼ Disable a Multicast Router Port .....	18
▼ Configure the Multicast Router Port Time-Out Value .....	18
Configuring IGS Querier Settings .....	19
▼ Enable IGS as a Querier .....	20
▼ Configure the IGMP Snooping Query Interval .....	20
Configuring Proxy Reporting .....	21
▼ Disable Proxy Reporting .....	21
▼ Enable Proxy Reporting .....	22
Configuring the Port-Purge Interval .....	22

▼ Set the Port-Purge Interval .....	22
▼ Reset the Port-Purge Interval .....	23
Configuring Leave Processing .....	24
▼ Enable the Fast Leave Process .....	24
▼ Disable the Fast Leave Process .....	25
Configuring the Report Suppression Interval .....	25
▼ Enable the Report Suppression Interval .....	25
▼ Disable the Report Suppression Interval .....	26
Configuring the Group Query Interval Value .....	26
▼ Set the Group Query Interval Value .....	27
▼ Reset the Group Query Interval .....	27
Configuring the Group Retry Count Value .....	28
▼ Set the Group Retry Count Value .....	28
▼ Reset the Group Retry Count Value .....	29
Configuring Report Forwarding .....	29
▼ Enable Report Forwarding .....	29
▼ Disable Report Forwarding .....	30
▼ Reset Report Forwarding to the Default Value .....	31
Clearing the Snooping Statistics .....	31
▼ Clear the Statistics for a Specific VLAN .....	31
▼ Clear the Statistics for All VLANs .....	33
Configuring the General Query Transmission Option .....	34
▼ Enable the General Query Transmission Option .....	34
▼ Disable the General Query Transmission Option .....	35
▼ Display Statistics .....	35
<b>Flow-Based Configurations .....</b>	<b>37</b>
Flow-Based Configuration Example .....	37
Configuration Parameters .....	38
▼ Configure the MAC-Based Multicast Forwarding Mode .....	39
▼ Configure the IP-Based Multicast Forwarding Mode .....	41
▼ Configure a Static Router Port .....	45
▼ Configure the IGS Version .....	48
▼ Configure Queriers in Flow-Based Configurations .....	53
▼ Configure Proxy Reporting in Flow-Based Configurations .....	55

## Using This Documentation

---

- **Overview** – Provides information about configuration of IGS protocol that runs as a part of SEFOS
- **Audience** – Users implementing IGS protocol with other protocols in the router stack
- **Required Knowledge** – Basic knowledge of the IGS protocol

## Product Documentation Library

Documentation and resources for this product and related products are available at:

- [http://www.oracle.com/goto/es2-72\\_es2-64/docs](http://www.oracle.com/goto/es2-72_es2-64/docs)
- <http://www.oracle.com/goto/ES1-24/docs>
- <http://www.oracle.com/goto/sn-10gbE-72p/docs>
- <http://www.oracle.com/goto/sb6k-24p-10gbe/docs>

## Acronyms and Abbreviations

Acronym or Abbreviation	Explanation
CLI	Command-line interface
GARP	Generic Attribute Registration Protocol
GMRP	GARP Multicast Registration Protocol
ID	Identifier
IGMP	Internet Group Management Protocol
IGS	IGMP snooping
Oracle ILOM	Oracle Integrated Lights Out Management
IP	Internet Protocol
MAC	Media address control
MSTP	Multiple Spanning Tree Protocol
RSTP	Rapid Spanning Tree Protocol
SEFOS	Sun Ethernet Fabric Operating System

Acronym or Abbreviation	Explanation
VLAN	Virtual local area network

## CLI Command Modes

The following table lists the configuration modes used in this document with their access and exit methods.

Command Mode	Access Method	Prompt	Exit Method
User EXEC	Access SEFOS from Oracle ILOM with read-only rights (privilege level 1).	SEFOS>	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Privileged EXEC	Access SEFOS from Oracle ILOM with full administrative rights (privilege level 15).	SEFOS#	Use the <code>logout</code> or <code>exit</code> command to return to the Oracle ILOM prompt.
Global Configuration	From User EXEC mode, use the <code>enable</code> command.	SEFOS(config)#	Use the <code>end</code> command to return to Privileged EXEC mode.
Interface Configuration	From Global Configuration mode, use the <code>interface interface-type interface-id</code> command.	SEFOS(config-if)#	Use the <code>exit</code> command to return to Global Configuration mode, or use the <code>end</code> command to return to Privileged EXEC mode.

## Feedback

Provide feedback on this documentation at:

<http://www.oracle.com/goto/docfeedback>



# IGS Overview

---

These sections contain a description of the IGS protocol as it is implemented in SEFOS. These sections also contain a description of an example topology that is referenced in the configuration instructions and a description of the default settings for the IGS software.

- [“IGS Protocol Description” on page 9](#)
- [“Topology Example” on page 10](#)
- [“Configuration Prerequisites” on page 10](#)
- [“Default Settings” on page 11](#)

## IGS Protocol Description

IGS enables a switch to snoop or capture information from IGMP packets being sent back and forth between hosts and a router. Based on this information, the switch adds or deletes the multicast addresses from its address table, thereby enabling or disabling multicast traffic from flowing to individual host ports. In subnets where IGMP is configured, IGS manages multicast traffic at layer 2.

IGMP (on a router) periodically sends out IGMP general queries. When IGS is enabled, the switch responds to the IGMP queries with only one IGMP join request per multicast group. The switch creates one entry per subnet in the layer 2 forwarding table for each layer 2 multicast group from which it receives an IGMP join request. Hosts interested in the multicast traffic send IGMP join requests and are added to the forwarding table entry.

Layer 2 multicast groups learned through IGS are dynamic. However, it is possible to statically configure layer 2 multicast groups using the `ip igmp snooping static` command. If group membership for a multicast group address is specified statically, then the configured static setting supersedes any automatic manipulation by IGS. Multicast group membership lists consist of both user-defined settings and IGS.

Groups with IP addresses in the `224.0.0.0-255.0.0.0` range are reserved for routing control packets and are flooded to all the forwarding ports of the VLAN. These addresses map to the multicast MAC address range `0100.5E00.0001` to `0100.5E00.00FF`.

A host connected to a layer 2 interface that needs to join an IP multicast group, sends an IGMP join request specifying the IP multicast group. A host that needs to leave the multicast group

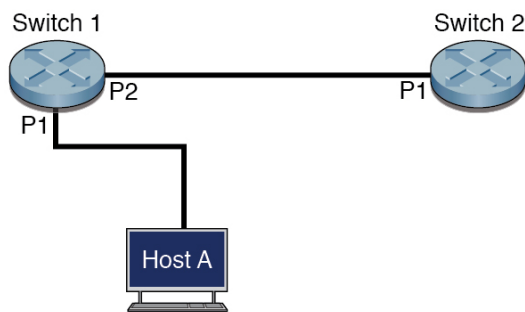
can either ignore the periodic IGMP general queries or can send an IGMP leave message. When the switch receives an IGMP leave message from a host, the switch sends out an IGMP group-specific query to determine whether any device connected to that interface is interested in the traffic for the specific multicast group. The switch then updates the table entry for that layer 2 multicast group so that only those hosts interested in receiving multicast traffic for the group are listed.

When a host connected to the switch wants to join an IP multicast group, the host sends an unsolicited IGMP join message, specifying the IP multicast group to join. Alternatively, when the switch receives a general query from the router, the switch forwards the query to all ports in the VLAN. Hosts wanting to join the multicast group respond by sending a join message to the switch. The switch creates a multicast forwarding-table entry for the group if it is not already present.

The switch also adds the interface from which the join message was received to the forwarding table entry. After the forwarding table entry is created, the host associated with that interface receives multicast traffic for that multicast group.

## Topology Example

The procedures in this guide are based on the example topology given in this section. The procedures contain CLI input and example output that use 0/1, 0/2, and 0/3 as the given interface numbers. Variables such as interfaces, IP addresses, and other ID numbers might be different based on your site configuration. This illustration shows the example topology on which the instructions are based.



## Configuration Prerequisites

Before you can configure IGS, you must ensure that the following guidelines are met:

- GMRP is disabled.
- Fast leave is enabled on a port (the port must be connected to a host, not to a switch or hub).

## Default Settings

This table contains the default settings for the IGS features. If the switch resets for any reason, it returns to the saved configuration. If you have not saved a site configuration, the switch returns to the default settings.

Feature	Setting
Group specific query interval	2 seconds
Group specific query retry count	2
IGS	Disabled
IGS learning method	MAC based
IGS version	V3
Multicast routers	Not configured
Port purge interval	260 seconds
Proxy reporting	Enabled
Report forward interval	5 seconds
Router port purge interval	125 seconds



# Configuring IGS

---

These sections contain procedures that describe how to configure the IGS software in SEFOS. The procedures are based on [“Topology Example” on page 10](#). The CLI input and example output contains port numbers and configuration settings that are specific to the example topology. The configuration input for your site might vary.

- [“Enabling and Disabling IGS” on page 13](#)
- [“Configure Multicast Forwarding Mode” on page 16](#)
- [“Configure the IGS Version” on page 16](#)
- [“Configuring a Multicast Router Port” on page 17](#)
- [“Configuring IGS Querier Settings” on page 19](#)
- [“Configuring Proxy Reporting” on page 21](#)
- [“Configuring the Port-Purge Interval” on page 22](#)
- [“Configuring Leave Processing” on page 24](#)
- [“Configuring the Report Suppression Interval” on page 25](#)
- [“Configuring the Group Query Interval Value” on page 26](#)
- [“Configuring the Group Retry Count Value” on page 28](#)
- [“Configuring Report Forwarding” on page 29](#)
- [“Clearing the Snooping Statistics” on page 31](#)
- [“Configuring the General Query Transmission Option” on page 34](#)
- [“Display Statistics” on page 35](#)

## Enabling and Disabling IGS

This section contains procedures that explain how to enable IGS globally or on a per-port basis in a VLAN. Additionally, a procedure for disabling IGS on the switch is included.

- [“Enable IGS Globally” on page 14](#)
- [“Enable IGS on a Specific VLAN Interface” on page 15](#)
- [“Disable IGS” on page 15](#)

## ▼ Enable IGS Globally

By default, IGS is disabled globally. To enable IGS, GMRP must first be disabled.

### 1. Enter Global Configuration mode, and disable GMRP.

```
SEFOS# configure terminal
SEFOS(config)# set gmrp disable
```

### 2. Enable IGS globally.

```
SEFOS(config)# ip igmp snooping
SEFOS(config)# end
```

### 3. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

### 4. Send an IGMP V2 report to group 227.2.2.2, which is learned on the switch.

```
SEFOS# show ip igmp snooping forwarding-database

Vlan  MAC-Address          Ports
----  -
1     01:00:5e:02:02:02    Ex0/1
```

## ▼ Enable IGS on a Specific VLAN Interface

When IGS is enabled globally, it is enabled in all of the existing VLAN interfaces. When IGMP snooping is disabled globally, it is disabled in all of the existing VLAN interfaces.

### 1. Enter the configuration mode for the VLAN interface.

```
SEFOS# configure terminal
SEFOS(config)# vlan 2
```

### 2. Enable IGS on the interface.

```
SEFOS(config-vlan)# ip igmp snooping
SEFOS(config-vlan)# end
```

### 3. Review the configuration.

```
SEFOS# show ip igmp snooping vlan 2

Snooping VLAN Configuration for the VLAN 2
IGMP Snooping enabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

When IGS is enabled and disabled globally, but not enabled on VLAN 2, the show command produces:

```
Snooping VLAN Configuration for the VLAN 2
IGMP Snooping is disabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

## ▼ Disable IGS

### 1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

**2. Disable IGS.**

```
SEFOS(config)# no ip igmp snooping
```

## ▼ Configure Multicast Forwarding Mode

The snooping multicast forwarding mode can be IP-based or MAC-based. By default, multicast forwarding mode is MAC-based.

**1. Configure the multicast forwarding mode (IP in this example).**

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode ip
SEFOS(config)# end
```

**2. Review the configuration.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is IP based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Configure the IGS Version

You can configure the operating version of the IGS switch for a specific VLAN as v1, v2, or v3. By default, the operating version of the IGS switch for all of the VLANs is v3. Before you can



configure IGS features, you must already configure your network environment, as described in [“Topology Example” on page 10](#).

1. **Enter the configure mode for the VLAN interface.**

```
SEFOS# configure terminal  
SEFOS(config)# vlan 4
```

2. **Configure the IGS version.**

```
SEFOS(config-vlan)# ip igmp snooping version v2  
SEFOS(config)# end
```

3. **Review the configuration.**

```
SEFOS# show ip igmp snooping vlan 4  
  
Snooping VLAN Configuration for the VLAN 4  
IGMP Snooping enabled  
IGMP configured version is V2  
Fast leave is disabled  
Snooping switch is acting as Non-Querier  
Query interval is 125 seconds
```

## Configuring a Multicast Router Port

You can configure multicast router ports for a VLAN statically, or the port can be learned dynamically. Whenever a port receives a query message, then that port is also added to the multicast router port list. This section contains procedures that explain how to enable or disable multicast router ports. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable Multicast Router Port” on page 17](#)
- [“Disable a Multicast Router Port” on page 18](#)
- [“Configure the Multicast Router Port Time-Out Value” on page 18](#)

### ▼ Enable Multicast Router Port

1. **Enter the configure mode for the VLAN.**

```
SEFOS# configure terminal  
SEFOS(config)# vlan 4
```

**2. Enable static configuration of multicast router ports.**

```
SEFOS(config-vlan)# ip igmp snooping mrouter extreme-ethernet 0/8
SEFOS(config-vlan)# ip igmp snooping mrouter extreme-ethernet 0/9
SEFOS(config)# end
```

**3. Review the configuration.**

```
SEFOS# show ip igmp snooping mrouter

Vlan  Ports
-----
1. Ex0/8(static), Ex0/9(static)
```

**4. Send a query message on port 2, and review the configuration in switch A.**

```
SEFOS# show ip igmp snooping mrouter

Vlan  Ports
-----
      1 Ex0/1(dynamic)
Ex0/8(static), Ex0/9(static)
```

Router ports are learned on reception of PIM or OSPF messages from a router.

## ▼ Disable a Multicast Router Port

**1. Enter the configure mode for the VLAN.**

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
```

**2. Disable the router port.**

```
SEFOS(config-vlan)# no ip igmp snooping mrouter extreme-ethernet 0/8
SEFOS(config)# end
```

## ▼ Configure the Multicast Router Port Time-Out Value

Configuring the multicast router port time-out value sets the IGS router port-purge time-out value, after which the port gets deleted if no IGMP router control packets are received. Before

you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

### 1. Configure the multicast router port time-out value.

```
SEFOS# configure terminal
SEFOS(config)# ip igmp snooping mrouter-time-out 60
SEFOS(config)# end
```

Dynamically learned mrouter entries are deleted after 60 seconds.

### 2. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 60 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

Statically configured router ports are not deleted after the expiration of the router purge-time interval.

## Configuring IGS Querier Settings

You can configure the IGS switch as a querier for a specific VLAN. You can also configure the group-specific query interval for that VLAN. The IGS switch stops acting as a querier on the reception of general queries. The switch resumes the querier function when there are no IGMP routers in the network. The IGS switch continues to act as a querier on the reception of router control messages (for instance, PIM or OSPF messages), and the switch acts as a querier when the router port is operationally down and there are no router ports in the switch. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable IGS as a Querier” on page 20](#)
- [“Configure the IGMP Snooping Query Interval” on page 20](#)

## ▼ Enable IGS as a Querier

By configuring the IGS switch as a querier, the switch starts sending general queries at regular time intervals. The querier message sent by the switch does not take part in querier election. If the switch receives a query from any other router, the switch stops acting as a querier.

1. **Enter the configure mode for the VLAN.**

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
```

2. **Enable the switch as the IGS querier.**

```
SEFOS(config-vlan)# ip igmp snooping querier
SEFOS(config-vlan)# end
SEFOS#
```

The switch sends general queries on the member ports of VLAN 4 every 125 seconds.

3. **Review the configuration.**

```
SEFOS# show ip igmp snooping vlan 4

Snooping VLAN Configuration for the VLAN 4
IGMP Snooping enabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Querier
Snooping switch is acting as Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

## ▼ Configure the IGMP Snooping Query Interval

The IGS query interval refers to the time interval during which the switch waits after sending a group-specific query to determine if hosts are still interested in a specific multicast group.

1. **Enter the configure mode for the VLAN.**

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
```

## 2. Configure the query interval.

```
SEFOS(config-vlan)# ip igmp snooping query-interval 60
SEFOS(config)# end
```

## 3. Review the configuration.

```
SEFOS# show ip igmp snooping

Snooping VLAN Configuration for the VLAN 4
IGMP Snooping enabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Querier
Snooping switch is acting as Querier
Query interval is 60 seconds
Port Purge Interval is 130 seconds
Max Response Code is 100, Time is 10 seconds
```

# Configuring Proxy Reporting

Proxy reporting enables reports that are received from downstream hosts to be summarized. You can also use proxy reporting to build internal membership states. An IGMP proxy reporting switch reports its own state in response to upstream queriers. Proxy reporting reduces IGMP network traffic. By default, proxy reporting is enabled. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Disable Proxy Reporting” on page 21](#)
- [“Enable Proxy Reporting” on page 22](#)

## ▼ Disable Proxy Reporting

### 1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

### 2. Disable proxy reporting.

```
SEFOS(config)# no ip igmp snooping proxy-reporting
```

## ▼ Enable Proxy Reporting

### 1. Configure proxy reporting.

```
SEFOS# configure terminal
SEFOS(config)# ip igmp snooping proxy-reporting
SEFOS(config)# end
```

### 2. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## Configuring the Port-Purge Interval

The expiration of the port-purge timer on the port for a particular multicast group results in the port being removed from the forwarding list of the corresponding multicast entry in the multicast forwarding table. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Set the Port-Purge Interval” on page 22](#)
- [“Reset the Port-Purge Interval” on page 23](#)

## ▼ Set the Port-Purge Interval

### 1. Enter the Global Configuration mode.

```
SEFOS# configure terminal
```

## 2. View the multicast forwarding table.

```
SEFOS# show ip igmp snooping forwarding-database
```

Vlan	MAC-Address	Ports
1	01:00:5e:01:01:01	Ex0/1

## 3. Set the port-purge interval.

```
SEFOS(config)# ip igmp snooping port-purge-interval 130
SEFOS(config)# end
```

If an entry is learned on the forwarding database, then after an interval of 130 seconds, the entry is removed from the forwarding database.

## 4. Review the configuration.

```
SEFOS# show ip igmp snooping globals
```

```
Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 130 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

# ▼ Reset the Port-Purge Interval

## 1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. **Set the port-purge interval to its default value.**

```
SEFOS(config)# no ip igmp snooping port-purge-interval
```

## Configuring Leave Processing

Configuring the fast leave processing removes the interface from the forwarding table as soon as the switch receives a leave message from the interface (that is, the switch refrains from sending MAC-based general queries over the interface). The VLAN interface is pruned from the multicast tree for the multicast group specified in the original leave message. Configuring the immediate-leave processing ensures optimal bandwidth management for all of the hosts on a switched network, even when multiple multicast groups are simultaneously in use. You can use the same instructions to enable or disable the leave process to immediate. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable the Fast Leave Process” on page 24](#)
- [“Disable the Fast Leave Process” on page 25](#)

### ▼ Enable the Fast Leave Process

1. **Enter the configuration mode for the VLAN interface.**

```
SEFOS# configure terminal  
SEFOS(config)# vlan 4
```

2. **Enable the fast leave process.**

```
SEFOS(config-vlan)# ip igmp snooping fast-leave  
SEFOS(config-vlan)# end
```

3. **Review the configuration.**

```
SEFOS# show ip igmp snooping
```

```
Snooping VLAN Configuration for the VLAN 4  
IGMP Snooping enabled  
IGMP configured version is V3  
Fast leave is enabled
```



```
Snooping switch is configured as Non-Querier  
Snooping switch is acting as Non-Querier  
Query interval is 125 seconds  
Port Purge Interval is 260 seconds  
Max Response Code is 100, Time is 10 seconds
```

## ▼ Disable the Fast Leave Process

1. Enter the configuration mode for the VLAN interface.

```
SEFOS# configure terminal
```

2. Disable the fast leave process for the VLAN.

```
SEFOS(config-vlan)# no ip igmp snooping fast-leave
```

## Configuring the Report Suppression Interval

Reports sent to router ports can be suppressed for a specific period of time. You can configure the suppression time interval for which the IGMPv2 report messages for the same group are not forwarded onto the router ports. By default, the report suppression interval is 5 seconds. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable the Report Suppression Interval” on page 25](#)
- [“Disable the Report Suppression Interval” on page 26](#)

## ▼ Enable the Report Suppression Interval

1. Configure the report suppression interval.

```
SEFOS# configure terminal  
SEFOS(config)# ip igmp snooping report-suppression-interval 8  
SEFOS(config)# end
```

Only one report is forwarded within the report forward interval of 8 seconds for a particular group.

2. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 8 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Disable the Report Suppression Interval

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Set the report suppression interval time to its default value.

```
SEFOS(config)# no ip igmp snooping report-suppression-interval
```

## Configuring the Group Query Interval Value

When a switch receives an IGMP leave message on a port, the switch sends the group-specific query message on that particular port. You can configure the time interval value after which the switch is supposed to send a group specific query on a port. You also can configure the maximum number of group specific queries sent on a port on reception of an IGMPv2 leave message. The default value of the group query interval value is 2 seconds. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Set the Group Query Interval Value” on page 27](#)

- [“Reset the Group Query Interval” on page 27](#)

## ▼ Set the Group Query Interval Value

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Set the group query interval.

```
SEFOS(config)# ip igmp snooping group-query-interval 3
SEFOS(config)# end
```

3. Review the configuration.

```
SEFOS# show ip igmp snooping globals
Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 3 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Reset the Group Query Interval

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Set the group query interval to its default value.

```
SEFOS(config)# no ip igmp snooping group-query-interval
```

## Configuring the Group Retry Count Value

Configuring the group retry count sets the maximum number of group specific queries sent on a port on reception of an IGMPv2 leave message. The default value of group retry count is 2. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Set the Group Retry Count Value” on page 28](#)
- [“Reset the Group Retry Count Value” on page 29](#)

### ▼ Set the Group Retry Count Value

1. **Enter Global Configuration mode.**

```
SEFOS# configure terminal
```

2. **Set the group retry count.**

```
SEFOS(config)# ip igmp snooping retry-count 4
SEFOS(config)# end
```

3. **Review the configuration.**

```
SEFOS# show ip igmp snooping globals
```

```
Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 3 seconds
Reports are forwarded on router ports
Group specific query retry count is 4
```

Multicast VLAN disabled  
Leave config level is Vlan based

## ▼ Reset the Group Retry Count Value

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Set the group retry count to its default value.

```
SEFOS(config)# no ip igmp snooping retry-count
```

## Configuring Report Forwarding

By default, an IGMP report message is forwarded on all of the router ports in a VLAN. However, you can configure the reports to be forwarded on the member ports of the VLAN. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable Report Forwarding” on page 29](#)
- [“Disable Report Forwarding” on page 30](#)
- [“Reset Report Forwarding to the Default Value” on page 31](#)

## ▼ Enable Report Forwarding

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Enable report forwarding on all ports.

```
SEFOS(config)# ip igmp snooping report-forward all-ports  
SEFOS(config)# end
```

3. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on all ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Disable Report Forwarding

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Disable the forwarding of reports only to the router ports.

```
SEFOS(config)# ip igmp snooping report-forward router-ports
SEFOS(config)# end
```

3. Review the configuration.

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
```

```
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Reset Report Forwarding to the Default Value

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Set the report forwarding status to its default value.

```
SEFOS(config)# no ip igmp snooping report-forward
SEFOS(config)# end
```

## Clearing the Snooping Statistics

The snooping statistics are updated for each VLAN whenever the various multicast packets are transmitted or received. The statistics are cleared per VLAN or for all VLANs based on the configuration. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Clear the Statistics for a Specific VLAN” on page 31](#)
- [“Clear the Statistics for All VLANs” on page 33](#)

## ▼ Clear the Statistics for a Specific VLAN

1. Enter the configuration mode for the VLAN.

```
SEFOS# configure terminal
SEFOS(config)# vlan 4
```

2. Enable IGS in the VLAN.

```
SEFOS(config-vlan)# ip igmp snooping
SEFOS(config-vlan)# end
```

### 3. Review the statistics.

```
SEFOS# show ip igmp snooping statistics vlan 1
```

```
Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 0
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
Group specific queries transmitted: 0
Group and source specific queries transmitted : 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Unsuccessful joins received count Per Vlan : 0
Active/Successful joins received count Per Vlan: 0
Active Groups count: 0
Packets dropped: 0
```

### 4. Clear the statistics for the VLAN 1.

```
SEFOS# configure terminal
SEFOS(config)# ip igmp snooping clear counters vlan 1
```

### 5. Verify the configuration information.

```
SEFOS# show ip igmp snooping statistics vlan 1
```

```
Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 0
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
```



```
Group specific queries transmitted: 0
Group and source specific queries transmitted : 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Unsuccessful joins recieved count Per Vlan : 0
Active/Successful joins recieved count Per Vlan: 0
Active Groups count: 0
Packets dropped: 0
```

## ▼ Clear the Statistics for All VLANs

### 1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

### 2. Clear the statistics for all of the VLANs.

```
SEFOS(config)# ip igmp snooping clear counters
SEFOS(config)# end
```

### 3. Review the statistics.

```
SEFOS# show ip igmp snooping statistics

Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
ASM reports received: 0
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
Group specific queries transmitted: 0
Group and source specific queries transmitted : 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Unsuccessful joins recieved count Per Vlan : 0
Active/Successful joins recieved count Per Vlan: 0
Active Groups count: 0
Packets dropped: 0
```

## Configuring the General Query Transmission Option

The IGS switch is configured to send IGMP general queries on all of the nonrouter ports when a spanning tree topology change occurs in the network. If the spanning tree mode is RSTP, IGMP general queries are sent on all of the nonrouter ports that are the VLANs member ports present in the switch. If the spanning tree mode is MSTP, IGMP general queries are sent on all of the nonrouter ports of the VLAN that are mapped for the MSTP instance. The IGMP general query transmission option is disabled by default. Before you can configure IGS features, you must configure your network environment, as described in [“Topology Example” on page 10](#).

- [“Enable the General Query Transmission Option” on page 34](#)
- [“Disable the General Query Transmission Option” on page 35](#)

### ▼ Enable the General Query Transmission Option

1. **Enter Global Configuration mode.**

```
SEFOS# configure terminal
```

2. **Enable the transmission of the IGMP general query for any topology change.**

```
SEFOS(config)# ip igmp snooping send-query enable
SEFOS(config)# end
```

3. **Review the configuration.**

```
SEFOS# show ip igmp snooping globals
```

```
Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally enabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
```

Leave config level is Vlan based

## ▼ Disable the General Query Transmission Option

1. Enter Global Configuration mode.

```
SEFOS# configure terminal
```

2. Disable the query transmission option.

```
SEFOS(config)# ip igmp snooping send-query disable
SEFOS(config)# end
```

3. Review the configuration information.

```
SEFOS# show ip igmp snooping globals
Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

## ▼ Display Statistics

- View the statistics of various packets received or transmitted.

```
SEFOS# show ip igmp snooping statistics
Snooping Statistics for VLAN 1
General queries received: 0
Group specific queries received: 0
Group and source specific queries received: 0
```

```
ASM reports received: 2
SSM reports received: 0
IS_INCLUDE messages received: 0
IS_EXCLUDE messages received: 0
TO_INCLUDE messages received: 0
TO_EXCLUDE messages received: 0
ALLOW messages received: 0
Block messages received: 0
Leave messages received: 0
General queries transmitted: 0
Group specific queries transmitted: 0
ASM reports transmitted: 0
SSM reports transmitted: 0
Leaves transmitted: 0
Unsuccessful joins recieved count Per Vlan : 0
Active/Successful joins recieved count Per Vlan: 0
Active Groups count: 0
Packets dropped: 0
```

# Flow-Based Configurations

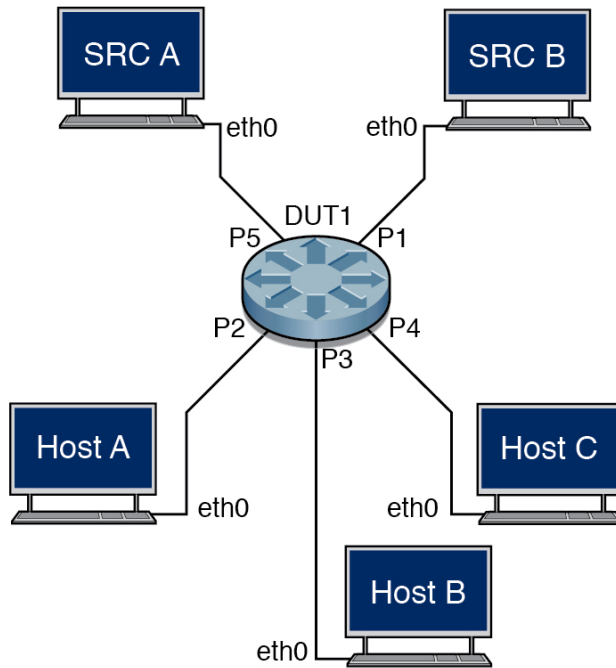
---

These sections contain procedures that explain how to work with flow-based configurations. The instructions are based on the topology example given here. User input and CLI output reflect the configuration parameters. Your site parameters might vary.

- [“Flow-Based Configuration Example” on page 37](#)
- [“Configuration Parameters” on page 38](#)
- [“Configure the MAC-Based Multicast Forwarding Mode” on page 39](#)
- [“Configure the IP-Based Multicast Forwarding Mode” on page 41](#)
- [“Configure a Static Router Port” on page 45](#)
- [“Configure the IGS Version” on page 48](#)
- [“Configure Queriers in Flow-Based Configurations” on page 53](#)
- [“Configure Proxy Reporting in Flow-Based Configurations” on page 55](#)

## Flow-Based Configuration Example

This illustration shows the example topology that is referenced in these sections.



## Configuration Parameters

This table contains the configuration parameters for the components in the example topology.

Node	Port	MAC Address	IP Address
Host A	eth0	00:11:22:33:44:0a	12.0.0.10
Host B	eth0	00:11:22:33:44:0b	12.0.0.20
Host C	eth0	00:11:22:33:44:0c	12.0.0.30
SRC A	eth0	00:11:22:33:44:ee	12.0.0.40
SRC B	eth0	00:11:22:33:44:ff	12.0.0.50
DUT1	P1	00:01:02:03:04:01	12.0.0.1
	P2	00:01:02:03:04:02	
	P3	00:01:02:03:04:03	
	P4	00:01:02:03:04:04	
	P5	00:01:02:03:04:05	

## ▼ Configure the MAC-Based Multicast Forwarding Mode

If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

1. **On DUT1, configure the multicast forwarding mode for IGS as MAC-based.**

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode mac
```

2. **Disable GMRP.**

```
SEFOS(config)# set gmrp disable
```

3. **Enable IGS.**

```
SEFOS(config)# ip igmp snooping
```

4. **Configure VLAN 2 in the switch.**

```
SEFOS(config)# vlan 2
```

5. **Configure the static VLAN entry (VLAN 2) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-4
SEFOS(config-vlan)# exit
```

6. **Enter the Interface Configuration mode for Gigabit Ethernet interface 0/1.**

```
SEFOS(config)# interface extreme-ethernet 0/1
```

7. **Set the port VLAN ID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

8. **Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

9. **Enter Interface Configuration mode for Gigabit Ethernet interface 0/2.**

```
SEFOS(config)# interface extreme-ethernet 0/2
```

10. **Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

11. **Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```

12. **Enter Interface Configuration mode for Gigabit Ethernet interface 0/3.**

```
SEFOS(config)# interface extreme-ethernet 0/3
```

13. **Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

14. **Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```

15. **Enter the interface configuration mode for Gigabit Ethernet interface 0/4.**

```
SEFOS(config)# interface extreme-ethernet 0/4
```

16. **Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

17. **Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# end
```

18. **Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals
```



```

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based

```

**19. Review the VLAN information.**

```
SEFOS# show vlan id 2
```

```

Vlan database-----Vlan ID           : 2Member Ports           : Ex0/1, Ex0/2,
Ex0/3, Ex0/4Untagged Ports       : NoneForbidden Ports       : NoneName                 :
Status                           : Permanent-----

```

**20. Send V1, V2, and V3 join messages for group MG1 (227.1.1.1) from host A and host C.**

**21. Review the forwarding database.**

```
SEFOS# show ip igmp snooping forwarding-database
```

```

Vlan      MAC-Address      Ports -----
01:01:01  Ex0/2, Ex0/4      2      01:00:5e:

```

**22. Send multicast data packets for MG1 (227.1.1.1) from SRC A.**

The multicast data packet should be received only on host A and host C.

## ▼ Configure the IP-Based Multicast Forwarding Mode

If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

- 1. On DUT1, configure the multicast forwarding mode for IGS as IP-based.**

```
SEFOS# configure terminal  
SEFOS(config)# snooping multicast-forwarding-mode ip
```

**2. Disable GMRP.**

```
SEFOS(config)# set gmrp disable
```

**3. Enable IGS.**

```
SEFOS(config)# ip igmp snooping
```

**4. Configure VLAN 2 in the switch.**

```
SEFOS(config)# vlan 2
```

**5. Configure the static VLAN entry (VLAN 2) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-5  
SEFOS(config-vlan)# exit
```

**6. Enter the Interface Configuration mode for Gigabit Ethernet interface 0/1.**

```
SEFOS(config)# interface extreme-ethernet 0/1
```

**7. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**8. Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```

**9. Enter Interface Configuration mode for Gigabit Ethernet interface 0/2.**

```
SEFOS(config)# interface extreme-ethernet 0/2
```

**10. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**11. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 12. Enter Interface Configuration mode for Gigabit Ethernet interface 0/3.**

```
SEFOS(config)# interface extreme-ethernet 0/3
```

- 13. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 14. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 15. Enter Interface Configuration mode for Gigabit Ethernet interface 0/4.**

```
SEFOS(config)# interface extreme-ethernet 0/4
```

- 16. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 17. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

- 18. Enter Interface Configuration mode for Gigabit Ethernet interface 0/5.**

```
SEFOS(config)# interface extreme-ethernet 0/5
```

- 19. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 20. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

**21. Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IIGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is IP based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

**22. Review the VLAN information.**

```
SEFOS# show vlan id 2

Vlan database-----Vlan ID          : 2Member Ports          : Ex0/1, Ex0/2,
Ex0/3, Ex0/4, Ex0/5Untagged Ports    : NoneForbidden Ports    : NoneName
:Status                               : Permanent-----
```

- 23. Send V2 join messages for group MG1 (227.1.1.1) from host A.**
- 24. Send V3 join messages for group MG1 (227.1.1.1) and SRC B (12.0.0.50) from host C.**
- 25. Send multicast data packets for MG1 (01:00:5e:01:01:01) from SRC A (12.0.0.40) and SRC B (12.0.0.50).**
- 26. Review the forwarding database.**

```
SEFOS# show ip igmp snooping forwarding-database

Vlan      Source Address   Group Address      Ports -----
-----
12.0.0.50      227.1.1.1        Ex0/2, Ex0/4      227.1.1.1      Ex0/2      2
```

Host A receives multicast data from both of the sources. However, host C receives multicast data only from SRC B.

## ▼ Configure a Static Router Port

Multicast router ports can be configured statically, or they can be learned dynamically at run time. Use the instructions in this section to configure a router port statically. If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

1. **On DUT1, configure the multicast forwarding mode for IGS as MAC-based.**

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode mac
```

2. **Disable GMRP.**

```
SEFOS(config)# set gmrp disable
```

3. **Enable IGS.**

```
SEFOS(config)# ip igmp snooping
```

4. **Configure VLAN 2 in the switch.**

```
SEFOS(config)# vlan 2
```

5. **Configure the static VLAN entry (VLAN 2) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-5
```

6. **Configure the static router port as P1 for this VLAN.**

```
SEFOS(config-vlan)# ip igmp snooping mrouter extreme-ethernet 0/1
SEFOS(config-vlan)# exit
```

7. **Enter the Interface Configuration mode for Gigabit Ethernet interface 0/1.**

```
SEFOS(config)# interface extreme-ethernet 0/1
```

8. **Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

9. **Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 10. Enter Interface Configuration mode for Gigabit Ethernet interface 0/2.**

```
SEFOS(config)# interface extreme-ethernet 0/2
```

- 11. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 12. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 13. Enter Interface Configuration mode for Gigabit Ethernet interface 0/3.**

```
SEFOS(config)# interface extreme-ethernet 0/3
```

- 14. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 15. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 16. Enter Interface Configuration mode for Gigabit Ethernet interface 0/4.**

```
SEFOS(config)# interface extreme-ethernet 0/4
```

- 17. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

- 18. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

**19. Enter Interface Configuration mode for Gigabit Ethernet interface 0/5.**

```
SEFOS(config)# interface extreme-ethernet 0/5
```

**20. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**21. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

**22. Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

**23. Review the multicast router information.**

```
SEFOS# show ip igmp snooping mrouter

Vlan  Ports
-----  -----
    2   Ex0/1(static)
```

**24. Review the VLAN database information.**

```
SEFOS# show vlan id 2
```

```
Vlan database-----Vlan ID          : 2Member Ports      : Ex0/1, Ex0/2,
Ex0/3, Ex0/4, Ex0/5Untagged Ports    : NoneForbidden Ports  : NoneName
:Status                               : Permanent-----
```

25. **Send V2 join messages for group MG1 (227.1.1.1) from host A.**
26. **Review the forwarding database.**

```
SEFOS# show ip igmp snooping forwarding-database
```

```
Vlan  MAC-Address      Ports -----
5e:01:01:01  Ex0/1, Ex0/2          2  01:00:
```

27. **Send multicast data packets for MG1 (227.1.1.1) from SRC B.**  
The multicast data packet should be received only on host A and SRC A.

## ▼ Configure the IGS Version

The operating version of an IGS switch on a VLAN can be V1, V2, or V3. This section describes the configuration of IGMP version on a VLAN. If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

1. **On DUT1, configure the multicast forwarding mode for IGS as MAC-based.**

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode mac
```

2. **Disable GMRP.**

```
SEFOS(config)# set gmrp disable
```

3. **Enable IGS.**

```
SEFOS(config)# ip igmp snooping
```

4. **Configure VLAN 2 in the switch.**

```
SEFOS(config)# vlan 2
```

5. **Configure the static VLAN entry (VLAN 2) with the required ports.**



```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-2
```

**6. Configure the version of IGS as V2 for the VLAN.**

```
SEFOS(config-vlan)# ip igmp snooping version v2  
SEFOS(config-vlan)# exit
```

**7. Configure VLAN 3 in the switch.**

```
SEFOS(config)# vlan 3
```

**8. Configure the static VLAN entry (VLAN 3) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/3-4
```

**9. Configure the version of IGS as V3 for the VLAN.**

```
SEFOS(config-vlan)# ip igmp snooping version v3  
SEFOS(config-vlan)# exit
```

**10. Enter Interface Configuration mode for Gigabit Ethernet interface 0/1.**

```
SEFOS(config)# interface extreme-ethernet 0/1
```

**11. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**12. Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```

**13. Enter Interface Configuration mode for Gigabit Ethernet interface 0/2.**

```
SEFOS(config)# interface extreme-ethernet 0/2
```

**14. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**15. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 16. Enter Interface Configuration mode for Gigabit Ethernet interface 0/3.**

```
SEFOS(config)# interface extreme-ethernet 0/3
```

- 17. Set the PVID as VLAN 3.**

```
SEFOS(config-if)# switchport pvid 3
```

- 18. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

- 19. Enter Interface Configuration mode for Gigabit Ethernet interface 0/4.**

```
SEFOS(config)# interface extreme-ethernet 0/4
```

- 20. Set the PVID as VLAN 3.**

```
SEFOS(config-if)# switchport pvid 3
```

- 21. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

- 22. Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
```

```
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

**23. Review the IGS version in VLAN 2.**

```
SEFOS# show ip igmp snooping vlan 2

Snooping VLAN Configuration for the VLAN 2
  IGMP Snooping enabled
  IGMP configured version is V2
  Fast leave is disabled
  Snooping switch is configured as Non-Querier
  Snooping switch is acting as Non-Querier
  Query interval is 125 seconds
  Port Purge Interval is 260 seconds
  Max Response Code is 100, Time is 10 seconds
```

**24. Review the IGS version in VLAN 3.**

```
SEFOS# show ip igmp snooping vlan 3

Snooping VLAN Configuration for the VLAN 3
  IGMP Snooping enabled
  IGMP configured version is V3
  Fast leave is disabled
  Snooping switch is configured as Non-Querier
  Snooping switch is acting as Non-Querier
  Query interval is 125 seconds
  Port Purge Interval is 260 seconds
  Max Response Code is 100, Time is 10 seconds
```

**25. Review the VLAN 2 database.**

```
SEFOS# show vlan id 2

Vlan database-----Vlan ID           : 2Member Ports       : Ex0/1,
  Ex0/2Untagged Ports       : NoneForbidden Ports   : NoneName             :Status
  : Permanent-----
```

**26. Review the VLAN 3 database.**

```
SEFOS# show vlan id 3
```

```
Vlan database-----Vlan ID           : 3Member Ports       : Ex0/3,
Ex0/4Untagged Ports   : NoneForbidden Ports : NoneName             :Status
: Permanent-----
```

27. **Send IGMP V3 queries from host A and IGMP V2 queries from host B.**
28. **Review the IGS version in VLAN 2.**

```
SEFOS# show ip igmp snooping vlan 2

Snooping VLAN Configuration for the VLAN 2
IGMP Snooping enabled
IGMP configured version is V2
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

29. **Review the IGS version in VLAN 3.**

```
SEFOS# show ip igmp snooping vlan 3

Snooping VLAN Configuration for the VLAN 3
IGMP Snooping enabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

30. **Stop sending queries from host A and host B, and wait for the router port-purge interval.**
31. **Review the IGS version in VLAN 2.**

```
SEFOS# show ip igmp snooping vlan 2

Snooping VLAN Configuration for the VLAN 2
IGMP Snooping enabled
IGMP configured version is V2
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

### 32. Review the IGS version in VLAN 3.

```
SEFOS# show ip igmp snooping vlan 3

Snooping VLAN Configuration for the VLAN 3
IGMP Snooping enabled
IGMP configured version is V3
Fast leave is disabled
Snooping switch is configured as Non-Querier
Snooping switch is acting as Non-Querier
Query interval is 125 seconds
Port Purge Interval is 260 seconds
Max Response Code is 100, Time is 10 seconds
```

## ▼ Configure Queriers in Flow-Based Configurations

You can configure an IGS switch to send IGMP queries when no IGMP routers are present in a VLAN. A switch must be configured as a querier for a VLAN only when there are no queriers or routers in the network. If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

### 1. On DUT1, configure the multicast forwarding mode for IGS as MAC-based.

```
SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode mac
```

### 2. Disable GMRP.

```
SEFOS(config)# set gmrp disable
```

### 3. Enable IGS.

```
SEFOS(config)# ip igmp snooping
```

### 4. Configure VLAN 2 in the switch.

```
SEFOS(config)# vlan 2
```

### 5. Configure the static VLAN entry (VLAN 2) with the required ports.

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-3
```

### 6. Configure VLAN 2 as querier.

```
SEFOS(config-vlan)# ip igmp snooping querier
```

**7. Configure the query-interval time as 60 seconds.**

```
SEFOS(config-vlan)# ip igmp snooping query-interval 60
SEFOS(config-vlan)# exit
```

**8. Configure VLAN 3 in the switch.**

```
SEFOS(config)# vlan 3
```

**9. Configure the static VLAN entry (VLAN 3) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/4-5
SEFOS(config-vlan)# exit
```

**10. Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

**11. Review the IGS-related information in VLAN 2.**

```
SEFOS# show ip igmp snooping vlan 2

Snooping VLAN Configuration for the VLAN 2
IGMP Snooping enabled
IGMP configured version is V3
```

```

Fast leave is disabled
Snooping switch is configured as Querier
Snooping switch is acting as Querier
Query interval is 60 seconds
Port Purge Interval is 130 seconds
Max Response Code is 100, Time is 10 seconds

```

## 12. Review the configuration information for VLAN 2.

```

SEFOS# show vlan id 2

Vlan database-----Vlan ID          : 2Member Ports          : Ex0/1, Ex0/2,
Ex0/3Untagged Ports    : NoneForbidden Ports    : NoneName              :Status
: Permanent-----

```

## 13. Review the configuration information for VLAN 3.

```

SEFOS# show vlan id 3

Vlan ID          : 3Member Ports          : Ex0/4, Ex0/5Untagged Ports
: NoneForbidden Ports    : NoneName              :Status              :
Permanent-----

```

Because VLAN 2 is configured as a querier, the switch sends a general query every 60 seconds on the member ports of VLAN 2.

## ▼ Configure Proxy Reporting in Flow-Based Configurations

When proxy reporting is enabled, the switch generates reports and forwards them to the router based on the available host information. If you have questions about the topology used in this section, see [“Flow-Based Configuration Example” on page 37](#). For the default settings, see [“Default Settings” on page 11](#).

### 1. On DUT1, configure the multicast forwarding mode for IGS as MAC-based.

```

SEFOS# configure terminal
SEFOS(config)# snooping multicast-forwarding-mode mac

```

### 2. Disable GMRP.

```

SEFOS(config)# set gmrp disable

```

### 3. Enable IGS.

```
SEFOS(config)# ip igmp snooping
```

**4. Enable proxy reporting.**

```
SEFOS(config)# ip igmp snooping proxy-reporting
```

**5. Configure VLAN 2 in the switch.**

```
SEFOS(config)# vlan 2
```

**6. Configure the static VLAN entry (VLAN 2) with the required ports.**

```
SEFOS(config-vlan)# ports extreme-ethernet 0/1-4
```

**7. Configure the static router port as P2 for the VLAN.**

```
SEFOS(config-vlan)# ip igmp snooping mrouter extreme-ethernet 0/2  
SEFOS(config-vlan)# exit
```

**8. Enter the Interface Configuration mode for Gigabit Ethernet interface 0/1.**

```
SEFOS(config)# interface extreme-ethernet 0/1
```

**9. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**10. Bring up the interface.**

```
SEFOS(config-if)# no shutdown  
SEFOS(config-if)# exit
```

**11. Enter Interface Configuration mode for Gigabit Ethernet interface 0/2.**

```
SEFOS(config)# interface extreme-ethernet 0/2
```

**12. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**13. Bring up the interface.**



```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

**14. Enter Interface Configuration mode for Gigabit Ethernet interface 0/3.**

```
SEFOS(config)# interface extreme-ethernet 0/3
```

**15. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**16. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# exit
```

**17. Enter Interface Configuration mode for Gigabit Ethernet interface 0/4.**

```
SEFOS(config)# interface extreme-ethernet 0/4
```

**18. Set the PVID as VLAN 2.**

```
SEFOS(config-if)# switchport pvid 2
```

**19. Bring up the interface.**

```
SEFOS(config-if)# no shutdown
SEFOS(config-if)# end
```

**20. Review the IGS-related configurations.**

```
SEFOS# show ip igmp snooping globals

Snooping Configuration
-----
IGMP Snooping globally enabled
IIGMP Snooping is operationally enabled
IGMP Snooping Enhanced mode is disabled
Transmit Query on Topology Change globally disabled
Multicast forwarding mode is MAC based
Proxy globally disabled
Proxy reporting globally enabled
Filter is disabled
Router port purge interval is 125 seconds
Port purge interval is 260 seconds
Report forward interval is 5 seconds
```

```
Group specific query interval is 2 seconds
Reports are forwarded on router ports
Group specific query retry count is 2
Multicast VLAN disabled
Leave config level is Vlan based
```

**21. Review the database information for VLAN 2.**

```
SEFOS# show vlan id 2
```

```
Vlan database-----Vlan ID          : 2Member Ports          : Ex0/1, Ex0/2, Ex0/3,
Ex0/4Untagged Ports      : NoneForbidden Ports      : NoneName              :Status
: Permanent-----
```

**22. Review the multicast router information.**

```
SEFOS# show ip igmp snooping mrouter
```

```
Vlan  Ports
-----  -----
      2   Ex0/2(static)
```

**23. Send an IGMP V2 report from host B and host C.**

Only one of the reports should be forwarded to the router port on host A.