# IGMP Static Group Range Support

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This module describes how you can simplify the administration of networks with devices that require static group membership entries on many interfaces by configuring IGMP static group range support to specify group ranges in class maps and attach the class maps to an interface.

## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see Bug Search Tool and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

## Restrictions for IGMP Static Group Range Support

- • Only one IGMP static group class map can be attached to an interface.
- • If an IGMP static group class map is modified (group entries are added to or removed from the class map), the group entries that are added to or removed from the IGMP static group class map are added to or deleted from the IGMP cache and the mroute table, respectively.
- • If an IGMP static group class map is replaced on an interface by another class map, the group entries associated with old class map are removed, and the group entries defined in the new class map are added to the IGMP cache and mroute table.

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- If a class map attached to an interface does not exist, the class map remains inactive. Once the class map is configured, all group entries associated with the class map are added to the IGMP cache and mroute table.
- If a class map is removed from an interface, all group entries defined in the class map are removed from the IGMP cache and mroute tables.

# Information About IGMP Static Group Range Support

## IGMP Static Group Range Support Overview

Prior to the introduction of the IGMP Static Group Range Support feature, there was no option to specify group ranges for static group membership. Administering devices that required static group membership entries on many interfaces was challenging in some network environments because each static group had to be configured individually. The result was configurations that were excessively long and difficult to manage.

The IGMP Static Group Range Support feature introduces the capability to configure group ranges in class maps and attach class maps to the interface.

## Class Maps for IGMP Static Group Range Support

A class is a way of identifying a set of packets based on its contents. A class is designated through class maps. Typically, class maps are used to create traffic policies. Traffic policies are configured using the modular quality of service (QoS) command-line interface (CLI) (MQC). The normal procedure for creating traffic policies entails defining a traffic class, creating a traffic policy, and attaching the policy to an interface.

The IGMP Static Group Range Support feature introduces a type of class map that is used to define group ranges, group addresses, Source Specific Multicast (SSM) channels, and SSM channel ranges. Once created, the class map can be attached to interfaces.

Although IGMP Static Group Range Support feature uses the MQC to define class maps, the procedure for configuring IGMP static group class maps is different from the procedure used to create class maps for configuring QoS traffic policies. To configure the IGMP Static Group Range Support feature, you must perform the following:

1 Create an IGMP static group class map.
2 Define the group entries associated with the class map.
3 Attach the class map to an interface.

Unlike QoS class maps, which are defined by specifying numerous match criteria, IGMP static group class maps are defined by specifying multicast groups entries (group addresses, group ranges, SSM channels, and SSM channel ranges). Also, IGMP static group range class maps are not configured in traffic policies. Rather, the **ip ignmp static-group** command has been extended to support IGMP static group ranges.

Once a class map is attached to an interface, all group entries defined in the class map become statically connected members on the interface and are added to the IGMP cache and IP multicast route (mroute) table.

# How to Configure IGMP Static Group Range Support

## Configuring IGMP Static Group Range Support

Perform this task to create and define an IGMP static group class and attach the class to an interface.

**SUMMARY STEPS**

1. **enable**
2. **configure terminal**
3. **class-map type multicast-flows** *class-map-name*
4. **group** *group-address* [**to** *group-address*] [**source** *source-address*]
5. **exit**
6. Repeat Steps 3 to 5 to create additional class maps.
7. **interface** *type number*
8. **ip igmp static-group class-map** *class-map-name*
9. **ip igmp static-group ***
10. **end**

**DETAILED STEPS**

| | Command or Action | Purpose |
|---|---|---|
| Step 1 | **enable**<br><br>**Example:**<br><br>Device> enable | Enables privileged EXEC mode.<br><br>- Enter your password if prompted. |
| Step 2 | **configure terminal**<br><br>**Example:**<br><br>Device# configure terminal | Enters global configuration mode. |
| Step 3 | **class-map type multicast-flows** *class-map-name*<br><br>**Example:**<br><br>Device(config)# class-map type multicast-flows static1 | Enters multicast-flows class map configuration mode to create or modify an IGMP static group class map. |

| | Command or Action | Purpose |
|---|---|---|
| **Step 4** | **group** *group-address* [**to** *group-address*] [**source** *source-address*]<br><br>**Example:**<br><br>`Device(config-mcast-flows-cmap)# group 232.1.1.7 to 232.1.1.20` | Defines the group entries to be associated with the class map.<br><br>• Repeat this step to associate additional group entires to the class map being configured. |
| **Step 5** | **exit**<br><br>**Example:**<br><br>`Device(config-mcast-flows-cmap)# exit` | Exits multicast-flows class-map configuration mode and returns to global configuration mode. |
| **Step 6** | Repeat Steps 3 to 5 to create additional class maps. | -- |
| **Step 7** | **interface** *type number*<br><br>**Example:**<br><br>`Device(config)# interface FastEthernet 0/1` | Enters interface configuration mode. |
| **Step 8** | **ip igmp static-group class-map** *class-map-name*<br><br>**Example:**<br><br>`Device(config-if)# ip igmp static-group class-map static1` | Attaches an IGMP static group class map to the interface. |
| **Step 9** | **ip igmp static-group \***<br><br>**Example:**<br><br>`Device(config-if)# ip igmp static-group *` | (Optional) Places the interface into all created multicast route (mroute) entries.<br><br>• Depending on your Cisco software release, this step is required if the interface of a last hop device does not have any PIM neighbors and does not have a receiver. See the **ip igmp static-group** command in the *Cisco IOS IP Multicast Command Reference*. |
| **Step 10** | **end**<br><br>**Example:**<br><br>`Device(config-if)# end` | Exits interface configuration mode, and enters privileged EXEC mode. |

# Verifying IGMP Static Group Range Support

Perform this optional task to verify the contents of IGMP static group class maps configurations, and to confirm that all group entries defined in class maps were added to the IGMP cache and the mroute table after you attached class maps to interfaces.

### SUMMARY STEPS

1. **show ip igmp static-group class-map** [**interface** [*type number*]]
2. **show ip igmp groups** [*group-name* | *group-address*| *interface-type interface-number*] [**detail**]
3. **show ip mroute**

### DETAILED STEPS

**Step 1**   **show ip igmp static-group class-map** [**interface** [*type number*]]
Displays the contents of IGMP static group class maps and the interfaces using class maps.

The following is sample output from the **show ip igmp static-group class-map** command:

**Example:**

```
Device# show ip igmp static-group class-map

Class-map static1
  Group address range 228.8.8.7 to 228.8.8.9
  Group address 232.8.8.7, source address 10.1.1.10
  Interfaces using the classmap:
    Loopback0
Class-map static
  Group address range 232.7.7.7 to 232.7.7.9, source address 10.1.1.10
  Group address 227.7.7.7
  Group address range 227.7.7.7 to 227.7.7.9
  Group address 232.7.7.7, source address 10.1.1.10
  Interfaces using the classmap:
    FastEthernet3/1
```

The following is sample output from the **show ip igmp static-group class-map**command with the **interface** keyword:

**Example:**

```
Device# show ip igmp static-group class-map interface

Loopback0
  Class-map attached: static1
FastEthernet3/1
  Class-map attached: static
```

The following is sample output from the **show ip igmp static-group class-map**command with the **interface** keyword and *type number* arguments:

**Example:**

```
Device# show ip igmp static-group class-map interface FastEthernet 3/1
```

```
      FastEthernet3/1
        Class-map attached: static
```

**Step 2**   **show ip igmp groups** [*group-name* | *group-address*| *interface-type interface-number*] [**detail**]

Displays the multicast groups with receivers that are directly connected to the device and that are learned through IGMP.

The following is sample output from the **show ip igmp groups** command:

**Example:**

```
device# show ip igmp groups

IGMP Connected Group Membership
Group Address    Interface               Uptime      Expires    Last Reporter
232.7.7.7        FastEthernet3/1         00:00:09    stopped    0.0.0.0
232.7.7.9        FastEthernet3/1         00:00:09    stopped    0.0.0.0
232.7.7.8        FastEthernet3/1         00:00:09    stopped    0.0.0.0
227.7.7.7        FastEthernet3/1         00:00:09    stopped    0.0.0.0
227.7.7.9        FastEthernet3/1         00:00:09    stopped    0.0.0.0
227.7.7.8        FastEthernet3/1         00:00:09    stopped    0.0.0.0
224.0.1.40       FastEthernet3/2         01:44:50    00:02:09   10.2.2.5
224.0.1.40       Loopback0               01:45:22    00:02:32   10.3.3.4
```

**Step 3**   **show ip mroute**

Displays the contents of the mroute table.

The following is sample output from the **show ip mroute** command:

**Example:**

```
Device# show ip mroute

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report, Z - Multicast Tunnel
       Y - Joined MDT-data group, y - Sending to MDT-data group
Outgoing interface flags: H - Hardware switched, A - Assert winner
 Timers: Uptime/Expires
 Interface state: Interface, Next-Hop or VCD, State/Mode
(10.1.1.10, 232.7.7.7), 00:00:17/00:02:42, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:17/00:02:42
(10.1.1.10, 232.7.7.9), 00:00:17/00:02:42, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:17/00:02:42
(10.1.1.10, 232.7.7.8), 00:00:18/00:02:41, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.7), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.9), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.8), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
```

```
(*, 224.0.1.40), 00:01:40/00:02:23, RP 10.2.2.6, flags: SJCL
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    Loopback0, Forward/Sparse-Dense, 00:01:40/00:02:23
```

# Configuration Examples for IGMP Static Group Range Support

## Example: Configuring IGMP Static Group Support

The following example shows how to configure a class map and attach the class map to an interface. In this example, a class map named static is configured and attached to FastEthernet interface 3/1.

```
class-map type multicast-flows static
 group 227.7.7.7
 group 232.7.7.7 to 232.7.7.9 source 10.1.1.10
 group 232.7.7.7 source 10.1.1.10
 group 227.7.7.7 to 227.7.7.9
 .
 .
 .
 !
interface FastEthernet3/1
 ip address 192.168.1. 2 255.255.255.0
 ip pim sparse-dense-mode
 ip igmp static-group class-map static
 !
```

## Example: Verifying IGMP Static Group Support

The following is sample output from the **show ip igmp static-group class-map** command. In this example, the output displays the contents of the IGMP static group class map named static (the class map configured in the Example: Configuring IGMP Static Group Support,  page 7 section).

```
Device# show ip igmp static-group class-map

Class-map static
  Group address range 227.7.7.7 to 227.7.7.9
  Group address 232.7.7.7, source address 10.1.1.10
  Group address range 232.7.7.7 to 232.7.7.9, source address 10.1.1.10
  Group address 227.7.7.7
  Interfaces using the classmap:
    FastEthernet3/1
```

The following is sample output from the **show ip igmp groups** command. In this example, the command is issued to confirm that the group entries defined in the class map named static (the class map configured in the Example: Configuring IGMP Static Group Support,  page 7 section) were added to the IGMP cache.

```
Device# show ip igmp groups
IGMP Connected Group Membership
Group Address    Interface        Uptime    Expires   Last Reporter
232.7.7.7        FastEthernet3/1   00:00:09  stopped   0.0.0.0
232.7.7.9        FastEthernet3/1   00:00:09  stopped   0.0.0.0
```

```
232.7.7.8        FastEthernet3/1        00:00:09   stopped   0.0.0.0
227.7.7.7        FastEthernet3/1        00:00:09   stopped   0.0.0.0
227.7.7.9        FastEthernet3/1        00:00:09   stopped   0.0.0.0
227.7.7.8        FastEthernet3/1        00:00:09   stopped   0.0.0.0
224.0.1.40       FastEthernet3/2        01:44:50   00:02:09  10.2.2.5
224.0.1.40       Loopback0              01:45:22   00:02:32  10.3.3.4
```

The following is sample output from the **show ip mroute**command. In this example, the command is issued to confirm that the group entries defined in the class map named static (the class map configured in the section) were added to the mroute table.

```
Device# show ip mroute

IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir Group, s - SSM Group, C - Connected,
       L - Local, P - Pruned, R - RP-bit set, F - Register flag,
       T - SPT-bit set, J - Join SPT, M - MSDP created entry,
       X - Proxy Join Timer Running, A - Candidate for MSDP Advertisement,
       U - URD, I - Received Source Specific Host Report, Z - Multicast Tunnel
       Y - Joined MDT-data group, y - Sending to MDT-data group
Outgoing interface flags: H - Hardware switched, A - Assert winner
 Timers: Uptime/Expires
 Interface state: Interface, Next-Hop or VCD, State/Mode
(10.1.1.10, 232.7.7.7), 00:00:17/00:02:42, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:17/00:02:42
(10.1.1.10, 232.7.7.9), 00:00:17/00:02:42, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:17/00:02:42
(10.1.1.10, 232.7.7.8), 00:00:18/00:02:41, flags: sTI
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.5
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.7), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.9), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 227.7.7.8), 00:00:18/00:02:41, RP 10.2.2.6, flags: SJC
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    FastEthernet3/1, Forward/Sparse-Dense, 00:00:18/00:02:41
(*, 224.0.1.40), 00:01:40/00:02:23, RP 10.2.2.6, flags: SJCL
  Incoming interface: FastEthernet3/2, RPF nbr 10.2.2.6
  Outgoing interface list:
    Loopback0, Forward/Sparse-Dense, 00:01:40/00:02:23
```

# Additional References

### Related Documents

| Related Topic | Document Title |
| --- | --- |
| Cisco IOS commands | *Cisco IOS Master Commands List, All Releases* |
| IP multicast commands | *Cisco IOS IP Multicast Command Reference* |

**Standards and RFCs**

| Standard/RFC | Title |
| --- | --- |
| RFC 2933 | *Internet Group Management Protocol MIB* |

**MIBs**

| MIB | MIBs Link |
| --- | --- |
| *IGMP-MIB* | To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs |

**Technical Assistance**

| Description | Link |
| --- | --- |
| The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password. | http://www.cisco.com/cisco/web/support/index.html |

# Feature Information for IGMP Static Group Range Support

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

*Table 1* *Feature Information for IGMP Static Group Range Support*

| Feature Name | Releases | Feature Information |
| --- | --- | --- |
| IGMP Static Group Range Support | 12.2(18)SXF5<br>Cisco IOS XE Release 2.6<br>15.0(1)M<br>12.2(33)SRE<br>15.1(1)SG<br>Cisco IOS XE Release 3.3SG | The IGMP Static Group Range Support feature introduces the capability to configure group ranges in class maps and attach class maps to an interface. This feature is an enhancement that simplifies the administration of networks with devices that require static group membership entries on many interfaces.<br><br>The following commands were introduced or modified by this feature: **class-map type multicast-flows**, **group** (multicast-flows), **ip igmp static-group** , **show ip igmp static-group class-map**. |
| IGMP MIB Support Enhancements for SNMP | 12.2(11)T<br>12.2(33)SRE<br>Cisco IOS XE Release 2.1<br>15.1(1)SG<br>12.2(50)SY<br>15.0(1)S | The Internet Group Management Protocol (IGMP) is used by IP hosts to report their multicast group memberships to neighboring multicast routers. The IGMP MIB describes objects that enable users to remotely monitor and configure IGMP using Simple Network Management Protocol (SNMP). It also allows users to remotely subscribe and unsubscribe from multicast groups. The IGMP MIB Support Enhancements for SNMP feature adds full support of RFC 2933 (Internet Group Management Protocol MIB) in Cisco IOS software.<br><br>There are no new or modfied commands for this feature. |

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.