



SSE-X3548S/SSE-X3548SR
IP Multicast Overview

User's Guide

Revision 1.14

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1 IP Multicast Overview

IP communication is of three types:

- Unicast: Host sends packets to a single host
- Broadcast: Host sends packets to all hosts
- Multicast: Host sends packets to a subset of hosts simultaneously

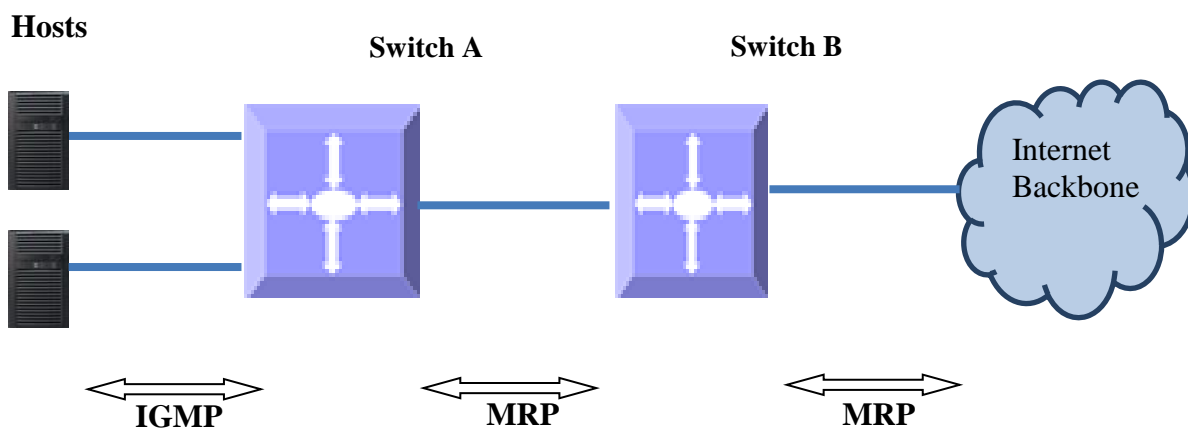
IP Multicast Routing enables efficient usage of network resources for bandwidth intensive services including video and audio. A multicast group is a set of receivers that want to receive a particular data stream. An IP *Multicast Group Address* in the range 224.0.0.0 to 239.0.0.0 is selected for receivers of a multicast group. Senders transmit IP data using the Multicast Group address as the destination address to multicast to all group members. Receivers interested in receiving data of a particular group must join the group by signaling a router/switch on their subnet. IGMP is used as the signaling protocol for conveying *group membership*. Network devices along the path from Source to Receivers forward data only on ports leading to the receivers, rather than flooding on all ports.

Membership in a multicast group is dynamic as hosts can join and leave at any time. There is no restriction on the location or number of members in a multicast group. A host can be a member of more than one multicast group at a time.

Supernetwork switches can send and receive Multicast traffic by supporting the following Multicast features:

- **IGMP** at the access end of the network that processes hosts announcing their participation in a Multicast group(s).
- **Multicast Routing Protocol's (MRP's)** at the enterprise and core of the network for maintaining the senders/receivers database and forwarding data from Senders to Receivers.

Figure IGMP-1: IP Multicast Routing



2 IGMP Basics

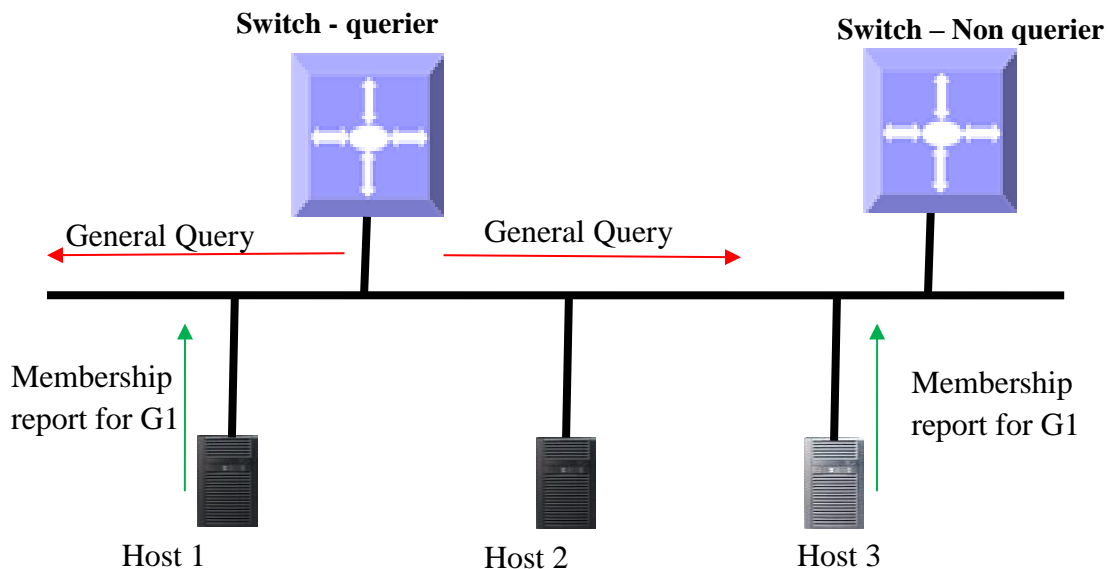
IGMP is an IPv4 protocol used by hosts to request Multicast data for a particular group. A switch performs the IGMP function by

- Sending IGMP query messages to identify receivers interested in particular Multicast group(s). IGMP query is sent only by a querier.
- Processing IGMP report messages from hosts in response to the query message from the querier.

Switch maintains a multicast forwarding table based on the hosts joined for every multicast group and updates the multicast forwarding table when hosts leave multicast groups.

In figure IGMP-2, the querier switch sends an *IGMP General Query* message on the LAN. Host1 and Host2 respond to the query with the *IGMP report* for G1 Group membership.

Figure IGMP-2: Multicast Forwarding with IGMP



IGMP has 3 versions. The basic difference between the versions is:

IGMP v1: Supports basic query-response mechanism to identify active Multicast group(s).

IGMP v2: Extends v1 with features like querier election, IGMP Leave, group-specific query and maximum response time field.

IGMP v3: Provides support for source-specific query and report in addition to IGMP v1 and IGMPv2 features.



Supermicro switch acts as a querier by default as long as it is the Multicast router with lower IP address on the subnet.

3 IGMP Support

Supermicro switches support IGMP for all three IGMP versions (1, 2 and 3).
Supermicro switches support up to 255 multicast groups.

4 IGMP Defaults

Parameter	Default Value
IGMP global status	Disabled
IGMP status in VLAN	Disabled
IGMP version	2
Query interval	125
Query Max response time	100
Robustness value	2
Last member query interval	10
Immediate leave (fast leave)	Disabled
Static Multicast Group Membership	None

5 Enabling IGMP

IGMP is disabled by default in Supermicro switches.
IGMP needs to be enabled globally and also needs to be enabled in interfaces individually.
Follow the steps below to enable IGMP.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	set ip igmp enable	Enables IGMP globally.
Step 3	interface <interface-type> <interface-id> or interface vlan <id> interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan

		<p><i>interface-id</i> is the VLAN identifier for VLAN interfaces.</p> <p>To configure multiple interfaces, use the “interface range ...” command.</p> <p>To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20</p> <p>If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.</p>
Step 4	set ip igmp enable	Enables IGMP on interface.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp global-config show ip igmp interface <interface-type> <interface-id>	Displays the IGMP information.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.

The example below shows the commands to enable IGMP.

Enable IGMP for layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)# set ip igmp enable
SMIS(config)#end
```

```
SMIS# show ip igmp global-config
IGMP is globally enabled
```

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# set ip igmp enable
SMIS(config-if)#end
```

```
SMIS# show ip igmp interface
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
```


Robustness value is 2
 IGMP querying router is 2.2.2.2 (this system)
 Fast leave is disabled on this interface
 No multicast groups joined

6 IGMP Version

The IGMP protocol standard has three versions: v1, v2 and v3. Supermicro switches support IGMP for all three versions. Supermicro IGMP support interoperates with different IGMP versions as defined in IGMP protocol standard.

The default IGMP version is v2, which works compatible with IGMP versions 1 and 3.

Supermicro switches provide flexibility for user to configure IGMP versions for individual interfaces. User can configure different IGMP version on different interfaces.

Follow the steps below to change IGMP version on any interface.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (.). E.g.: interface range vlan 10,20 If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.

Step 3	ip igmp version { 1 2 3 }	Configures IGMP version.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP version information for the given interface.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “no ip igmp version” command resets the IGMP version to its default value of 2.

The example below shows the commands to configure different versions of IGMP.

Configure IGMP version 3 for layer3 VLAN 10.

SMIS# **configure terminal**

SMIS(config)# **interface vlan 10**

SMIS(config-if)# **ip igmp version 3**

SMIS(config-if)# **end**

SMIS# **show ip igmp interface**

vlan10, line protocol is up

Internet Address is 2.2.2.2/8

IGMP is enabled on interface

Current IGMP router version is 3

IGMP query interval is 125 seconds

Last member query response interval is 10 seconds

IGMP max query response time is 100 seconds

Robustness value is 2

IGMP querying router is 2.2.2.2 (this system)

Fast leave is disabled on this interface

No multicast groups joined

7 IGMP query and report

When IGMP is enabled in Supermicro switch, it assumes itself as querier. As long as switch does not receive an IGMP query from another Multicast router in the subnet, with IP address lower than itself, it continues to be the IGMP querier on the subnet. If Supermicro switch acting as querier receives a query from another Multicast router on the subnet with an IP address lower than itself, then the switch transitions to a non-querier role and resets a timer that is based on value of its querier timeout. Upon expiry of the querier timer, Supermicro switch transitions to querier again, if there are no queries from

the router with lower IP address, otherwise it continues to remain the non-querier on the subnet. The querier switch is in charge of sending periodic query messages on the network to determine the presence of any new hosts. In response to query message from the querier, hosts respond with IGMP report messages indicating inclusion or exclusion of a particular Multicast Group address. The querier consolidates the reports from all hosts and maintains it in an IGMP group table.

There are various parameters that control the query messages and report messages:

Query Interval: This configures the time interval between transmissions of query messages by querier.

Max Response Time: This configures the maximum time interval until which the querier will wait for receiving reports from the hosts

Robustness Value: This parameter tunes certain intervals used in IGMP protocol and also determines the retransmissions of IGMPv3 report messages to prevent loss in network.

7.1 Query Interval

IGMP querier sends IGMP queries periodically to determine if there are any new hosts. This periodic time interval is called the *query interval*.

The default query interval is 125 seconds.

Supermicro switches provide flexibility for user to configure query interval for individual interfaces. User can configure different query interval on different interfaces.

Follow the steps below to change query interval on any interface.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	Interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (,). E.g.: interface range vlan 10,20 If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.

Step 3	ip igmp query-interval <value>	Configures IGMP query interval. The query interval value can be 1-65535 seconds. Default is 125 seconds.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP query interval information for the given interface.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “no ip igmp query-interval” command resets the IGMP query interval to its default value of 125.

The example below shows the commands to configure IGMP query interval.

Configure IGMP query interval for layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp query-interval 500
SMIS(config-if)# end
```

```
SMIS# show ip igmp interface
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 500 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 2.2.2.2 (this system)
Fast leave is disabled on this interface
No multicast groups joined
```

```
SMIS# show ip igmp statistics
IGMP Statistics for vlan10
Number of General queries received 0
Number of Group Specific queries received 0
Number of Group and Source Specific queries received 0
Number of v1/v2 reports received 0
Number of v3 reports received 0
```

Number of v2 leaves received 0
 Number of General queries transmitted 32
 Number of Group Specific queries transmitted 0
 Number of Group and Source Specific queries transmitted 0

7.2 Maximum query response time

For every inclusion report received by the querier, the particular interface entry is added in the IGMP group table for that particular group. A timer of value *Group membership timeout* is started for each group/interface entry in the IGMP group table. The *query response interval* is used to calculate the group membership timeout.

Group membership timeout = (robustness value * query interval) + *max query response interval*

Once a query is received by the hosts, the hosts should respond with IGMP reports within *Max query response time*. The querier deletes the hosts' interface entry from the IGMP group table if no reports are received from the host until expiry of Group membership timeout.

The default query-max-response time is 100 seconds.

Supermicro switches provide flexibility for user to configure query-max-response time for individual interfaces. User can configure different query-max-response time on different interfaces.

Follow the steps below to change query-max-response on any interface.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (,). E.g.: interface range vlan 10,20 If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.

Step 3	ip igmp query-max-response-time <value>	Configures IGMP query-max-response time. The value of query-max-response time is 1-255 seconds. Default is 100 seconds.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP query-max-response time information for the given interface.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “no ip igmp query-max-response-time” command resets the query-max-response-time to its default 100.

Configure query-max-response time only on IGMPv2 interface.

The example below shows the commands to configure IGMP query maximum response time.

Configure IGMP query maximum response time for layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp query-max-response-time 255
SMIS(config-if)# end
```

```
SMIS# show ip igmp interface
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 255 seconds
Robustness value is 2
IGMP querying router is 2.2.2.2 (this system)
Fast leave is disabled on this interface
No multicast groups joined
```

7.3 Robustness Value

The robustness value can be fine-tuned to allow for expected packet loss on a subnet. The value of this

variable affects certain IGMP message intervals for IGMPv2 and IGMPv3 as below:

- *Group membership interval*: Amount of time that must pass before a multicast router determines that there are no more members of a group on a network.
Group membership interval = (Robustness value * query interval) + query response interval
- *Other querier present interval*: The robustness value is used to calculate the amount of time that must pass before a multicast router determines that there is no longer another multicast router that is the querier.
Other querier present interval = (Robustness value * query interval) + (0.5 * query response interval)
- *Last-member query count*: Number of group-specific queries sent before the router assumes there are no local members of a group. The number of queries is equal to the value of the robustness value.

In IGMPv3, devices send a state-change report in case of change of interface state. The number of times state-change report is retransmitted is the robustness value minus one.

The default robustness value is 2. Suggest increasing this value if the subnet is expected to lose packets. Supermicro switches provide flexibility for user to configure robustness value for individual interfaces. User can configure different robustness value on different interfaces.

Follow the steps below to change robustness value on any interface.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (,). E.g.: interface range vlan 10,20

		If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.
Step 3	ip igmp robustness <value>	Configures IGMP robustness value. The robustness value can be any number from 1-255 seconds. Default is 2 seconds.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP robustness information for the given interface.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “no ip igmp robustness” command resets the robustness value to its default 2.

Configure Robustness value only on IGMPv2 and IGMPv3 interfaces.

The example below shows the commands to configure IGMP query maximum response time.

Configure IGMP robustness value for layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp robustness 10
SMIS(config-if)# end
```

```
SMIS# show ip igmp interface
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 10
IGMP querying router is 2.2.2.2 (this system)
Fast leave is disabled on this interface
No multicast groups joined
```

8 Leaving a Multicast Group

Host computers leave multicast groups either silently or by sending IGMP leave messages. Switches monitor the IGMP leave messages sent by host computers. When a switch receives an IGMP leave message for any group on an interface, it does not delete the interface from the group entry on the multicast table immediately. Instead, the switch sends an IGMP group-specific query message on the interface that received the IGMP leave message. If there is any other IGMP host on that interface that joined the same multicast group, the switch will receive an IGMP member report as a response. If no hosts respond on that interface, the switch will assume no other IGMP hosts are connected on that interface for the same group and will delete the corresponding interface from the group entry on the multicast table.



Switches follow the above process only for IGMP version 2 leave messages.

The following parameters are used to control the leave message handling procedure in Supermicro switches.

Group Query Interval – This configures the amount of time a switch will wait to get response for its group specific queries from IGMP hosts.

Immediate Leave – This configures the switch to consider the host leave immediately instead of sending group specific query messages to look for other IGMP hosts on the interface that received an IGMP leave message.

These parameters can be configured as explained below.

8.1 Last member Query Interval

Switches send a group specific query messages on the interface that received an IGMP leave message. Switches wait for the group query interval time to get a response from the hosts for its group specific query messages. If they receive any host member report as a response, they will drop the leave message received earlier on that interface. If they do not receive any response from hosts for a group query interval time, the switches will remove the interface from the group entry in the multicast forwarding table.

Users can configure this last member query interval. The default last member query interval is 10 seconds.

Follow the steps below to configure the last member query interval.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan

		<p><i>interface-id</i> is the VLAN identifier for VLAN interfaces.</p> <p>To configure multiple interfaces, use the “interface range ...” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20</p> <p>To provide multiple interfaces or ranges, use separate with a comma (,). E.g.: interface range vlan 10,20</p> <p>If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.</p>
Step 3	ip igmp last-member-query-interval <value>	<p>Configures the last member query interval.</p> <p>The last member query interval value can be any number from 1-255 seconds. Default is 2 seconds.</p>
Step 4	end	Exits the configuration mode.
Step 5	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP last member query interval information for the given interface(s).
Step 6	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “**no ip igmp last-member-query-interval**” command resets the last member query interval value to its default value of 10 seconds.

Last member query interval should be configured only on an IGMPv2 or IGMPv3 interface.

The example below shows the commands used to configure the last member query interval time.

Configure the last member query interval time as 250 seconds for layer3 VLAN10.

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp last-member-query-interval 250
SMIS(config-if)#end
```

```
SMIS# show ip igmp interface
```

vlan10, line protocol is up
 Internet Address is 2.2.2.2/8
 IGMP is enabled on interface
 Current IGMP router version is 2
 IGMP query interval is 125 seconds
 Last member query response interval is 250 seconds
 IGMP max query response time is 100 seconds
 Robustness value is 2
 IGMP querying router is 2.2.2.2 (this system)
 Fast leave is disabled on this interface
 No multicast groups joined

8.2 Immediate Leave

The switch can be configured to immediately remove the interface from the group entry on the multicast table when any interface receives an IGMP leave message without sending out group specific query messages. This function is called immediate leave and it is configurable per interface basis. Immediate leave is disabled by default in all interfaces.

Follow the steps below to enable the immediate leave for any interface.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (.). E.g.: interface range vlan 10,20 If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.

Step 3	ip igmp immediate leave	Enables the IGMP immediate leave.
Step 4	end	Exits the configuration mode.
Step 5	show ip igmp interface <interface-type> <interface-id>	Displays the IGMP immediate leave information for the given interface.
Step 6	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “no ip igmp immediate leave” command can be used to disable the immediate leave function for any VLAN.

Immediate leave should be configured only on an IGMPv2 interface.

The example below shows the commands used to enable the immediate leave function.

Enable the immediate leave for Layer3 VLAN 10.

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp immediate-leave
SMIS(config-if)# end
```

```
SMIS# show ip igmp interface
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 2.2.2.2 (this system)
Fast leave is enabled on this interface
No multicast groups joined
```

9 Static Multicast Group Membership

IGMP Group membership can be configured statically on an interface. The static IGMP group entries are used to statically forward Multicast data on the particular interface. The entries in the static group membership table exist without any timeout, until they are explicitly deleted.

By default there are no static Multicast memberships.

Follow the steps below to configure static group and source membership.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	<p>Enters the interface configuration mode.</p> <p><i>interface-type</i> – may be any of the following: vlan</p> <p><i>interface-id</i> is the VLAN identifier for VLAN interfaces.</p> <p>To configure multiple interfaces, use the “interface range ...” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20</p> <p>To provide multiple interfaces or ranges, use separate with a comma (,). E.g.: interface range vlan 10,20</p> <p>If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.</p>
Step 3	ip igmp static-group <Group Address> [source <Source Address>]	<p>Enables the IGMP static group membership.</p> <p>Group: Mention the IP address of the Multicast group in dotted decimal notation.</p> <p>Source (optional): Mention the IP address of the Source in dotted decimal notation.</p>
Step 4	end	Exits the configuration mode.
Step 5	show ip igmp groups show ip igmp sources	Displays the IGMP group membership information.
Step 6	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.



The “**no ip igmp static-group <Group Address> [source <Source Address>]**” command can be used to remove a statically configured group and source from an interface.

The ‘source’ option should be used only on an IGMPv3 interface.

The example below shows the commands to configure IGMP Static group membership.

Configure IGMP Static group membership for layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)#interface vlan 10
SMIS(config-if)# ip igmp static-group 225.5.5.5
SMIS(config-if)# ip igmp static-group 235.1.1.1
SMIS(config-if)# end
```

SMIS# **show ip igmp groups**

I - Include Mode, E - Exclude Mode
S - Static Mbr, D - Dynamic Mbr

GroupAddress	Flg	Iface	UpTime	ExpiryTime	LastReporter
225.5.5.5	S	vlan10	[0d 00:00:06.17]	[0d 00:00:00.00]	0.0.0.0
235.1.1.1	S	vlan10	[0d 01:20:01.36]	[0d 00:00:00.00]	0.0.0.0

SMIS# **show ip igmp interface**

```
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 2.2.2.2 (this system)
Fast leave is disabled on this interface
Number of multicast groups joined 2
```

10 Disabling IGMP

IGMP is disabled by default in Supermicro switches.

After enabling IGMP, if user needs to disable it, it has to be disabled globally and also in interfaces individually.

Follow the steps below to disable IGMP.

Step	Command	Description
Step 1	configure terminal	Enters the configuration mode.
Step 2	set ip igmp disable	Disables IGMP globally.
Step 3	interface <interface-type> <interface-id> or interface range <interface-type> <interface-id>	Enters the interface configuration mode. <i>interface-type</i> – may be any of the following: vlan <i>interface-id</i> is the VLAN identifier for VLAN interfaces. To configure multiple interfaces, use the “ interface range ... ” command. To provide a range use a hyphen (-) between the start and end interface numbers. E.g.: interface range vlan 10-20 To provide multiple interfaces or ranges, use separate with a comma (.). E.g.: interface range vlan 10,20 If multiple interfaces are provided, the next step will enable IGMP on all these interfaces.
Step 4	set ip igmp disable	Disables IGMP in VLAN.
Step 5	end	Exits the configuration mode.
Step 6	show ip igmp global-config show ip igmp interface <interface-type> <interface-id>	Displays the IGMP information.
Step 7	write startup-config	Optional step – saves this IGMP configuration to be part of the startup configuration.

The example below shows the commands used to disable IGMP.

Disable the IGMP function assuming the switch has layer3 VLAN 10

```
SMIS(config)#configure terminal
SMIS(config)# set ip igmp disable
SMIS(config)#end
```

SMIS# **show ip igmp global-config**
IGMP is globally **disabled**

SMIS(config)#**configure terminal**
SMIS(config)#**interface vlan 10**
SMIS(config-if)# **set ip igmp disable**
SMIS(config-if)#**end**

SMIS# **show ip igmp interface**
vlan10, line protocol is up
Internet Address is 2.2.2.2/8
IGMP is disabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 2.2.2.2 (this system)
Fast leave is disabled on this interface
No multicast groups joined

11 IGMP Configuration Example

Configure the following requirements as shown below in Figure IGMP-3.

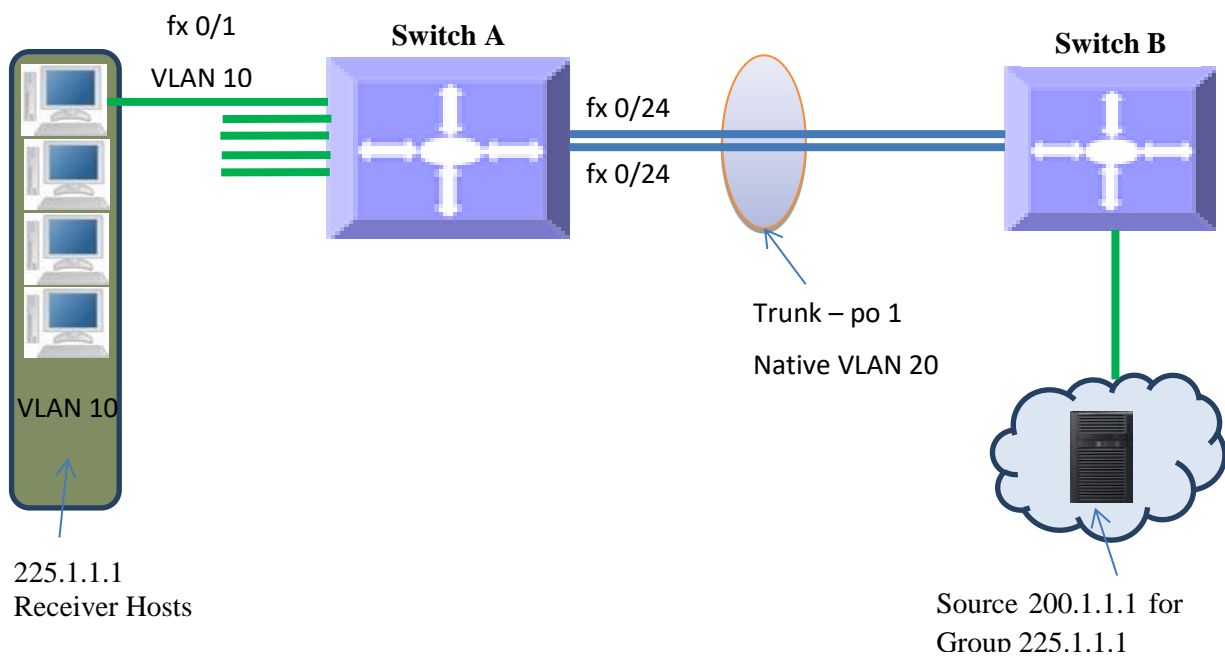
Switch A:

1. Enable IGMP.
2. Configure static Multicast group and source on VLAN10.
3. Configure immediate leave and query interval
4. Verify the IGMP group table

Switch B:

1. Enable IGMP.
2. Verify the IGMP group table
3. Configure robustness value

Figure IGMP-3: IGMP Configuration example



When an MRP like PIM is enabled on interfaces between Switch A and Switch B, traffic flows from Source 200.1.1.1 to receivers for Group 225.1.1.1

IGMP Configuration on Switch A

#Create Layer3 VLAN interface

```
SMIS(config)# vlan 10
SMIS(config-vlan)# ports fx 0/1 untagged
SMIS(config-vlan)# exit
SMIS(config)# interface vlan 10
SMIS(config-if)# ip address 10.10.10.10 255.0.0.0
SMIS(config-if)# exit
```

```
SMIS(config)# vlan 20
SMIS(config-vlan)# ports fx 0/24 untagged
SMIS(config-vlan)# exit
SMIS(config)# interface vlan 20
SMIS(config-if)# ip address 20.20.20.1 255.0.0.0
SMIS(config-if)# exit
```

```
#Enable IGMP on interface
SMIS(config)# interface vlan 10
SMIS(config-if)# set ip igmp enable
SMIS(config-if)# ip igmp version 3
SMIS(config-if)# ip igmp immediate leave
SMIS(config-if)# ip igmp query-interval 60
SMIS(config-if)# ip igmp static-group 225.1.1.1 source 200.1.1.1
SMIS(config-if)# exit
```

```
SMIS(config)# interface vlan 20
SMIS(config-if)# set ip igmp enable
SMIS(config-if)# exit
```

```
#Enable IGMP globally
SMIS(config)# set ip igmp enable
```

```
# Check the running-configuration for accuracy
SMIS# show running-config
```

Building configuration...

Switch ID	Hardware Version	Firmware Version
-----------	------------------	------------------

```
ip address dhcp
vlan 1
  ports fx 0/2-23 untagged
  ports fx 0/25-48 untagged
  ports fx 0/1-4 untagged
exit
vlan 10
  ports fx 0/1 untagged
exit
```

```
vlan 20
ports fx 0/24 untagged
exit
```

```
interface vlan 1
ip address dhcp
```

```
interface vlan 10
ip address 10.10.10.10 255.0.0.0
set ip igmp enable
ip igmp immediate-leave
ip igmp version 3
ip igmp query-interval 60
ip igmp static-group 225.1.1.1 source 200.1.1.1
```

```
interface vlan 20
ip address 20.20.20.1 255.0.0.0
set ip igmp enable
```

```
exit
set ip igmp enable
```

```
# Save this IGMP configuration.
SMIS# write startup-config
Building configuration, Please wait. May take a few minutes ...
[OK]
SMIS#
```

```
#Display IGMP Global Configuration
SMIS(config)# show ip igmp global-config
IGMP is globally enabled
```

```
#Display IGMP interface information
SMIS(config)# show ip igmp interface
vlan10, line protocol is up
Internet Address is 10.10.10.10/8
IGMP is enabled on interface
Current IGMP router version is 3
IGMP query interval is 60 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 10.10.10.10 (this system)
Fast leave is enabled on this interface
Number of multicast groups joined 1
```

```
vlan20, line protocol is up
```

Internet Address is 20.20.20.1/8
IGMP is enabled on interface
Current IGMP router version is 2
IGMP query interval is 125 seconds
Last member query response interval is 10 seconds
IGMP max query response time is 100 seconds
Robustness value is 2
IGMP querying router is 20.20.20.1 (this system)
Fast leave is disabled on this interface
No multicast groups joined

#Display IGMP Group information
SMIS(config)# show ip igmp groups

I - Include Mode, E - Exclude Mode
S - Static Mbr, D - Dynamic Mbr

GroupAddress	Flg	Iface	UpTime	ExpiryTime	LastReporter
225.1.1.1	IS	vlan10	[0d 00:35:06.25]	[0d 00:00:00.00]	10.10.10.10

#Display IGMP Source information
SMIS(config)# show ip igmp sources

I - Include Mode, E - Exclude Mode
S - Static Mbr, D - Dynamic Mbr
F - Forward List, N - Non-Forward List

GroupAddress	Iface	SrcAddress	Flg	ExpiryTime	LastReporter
225.1.1.1	vlan10	200.1.1.1	ISF	[0d 00:00:00.00]	10.10.10.10

IGMP Configuration on Switch B

#Create Layer3 VLAN interface
SMIS(config)# vlan 20
SMIS(config-vlan)# ports fx 0/24 untagged
SMIS(config-vlan)# exit

SMIS(config)# interface vlan 20
SMIS(config-if)# ip address 20.20.20.5

#Enable IGMP on Layer3 VLAN interface
SMIS(config-if)# set ip igmp enable
SMIS(config-if)# ip igmp robustness 5
SMIS(config-if)# exit

#Enable IGMP globally
SMIS(config)# set ip igmp enable

Check the running-configuration for accuracy

SMIS# show running-config

Building configuration...

Switch ID	Hardware Version	Firmware Version
-----------	------------------	------------------

ip address dhcp

vlan 1

ports fx 0/1-23 untagged

ports fx 0/1-3 untagged

exit

vlan 20

ports fx 0/24 untagged

exit

interface vlan 20

ip address 20.20.20.5 255.0.0.0

set ip igmp enable

ip igmp robustness 5

exit

set ip igmp enable

Save this IGMP configuration

SMIS# write startup-config

Building configuration, Please wait. May take a few minutes ...

[OK]

#Display IGMP Global Configuration

SMIS(config)# show ip igmp global-config

IGMP is globally enabled

#Display IGMP interface information

SMIS(config)# show ip igmp interface

vlan20, line protocol is up

Internet Address is 20.20.20.5/8

IGMP is enabled on interface

Current IGMP router version is 2

IGMP query interval is 125 seconds

Last member query response interval is 10 (1/10 seconds)

IGMP max query response time is 100 (1/10 seconds)

Robustness value is 5

IGMP querying router is 20.20.20.1

Fast leave is disabled on this interface

No multicast groups joined

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