CHAPTER 7

Ethernet Gateway and IPoIB Redundancies

This chapter describes the Ethernet gateway redundancies and includes the following sections:

- Configuring Ethernet Gateway Redundancy with the Cisco SFS 3504 Server Switch, page 7-3
- Configuring Ethernet Gateway Redundancy Using the Cisco SFS 3012R Server Switch, page 7-10
- Configuring Ethernet Gateway Redundancy for the Cisco SFS 3001 Server Switch, page 7-23

Note: For expansions of acronyms and abbreviations used in this publication, see Appendix A, “Acronyms and Abbreviations.”

Ethernet gateway redundancy is based on the concept of redundancy group. Redundancy group is a logical entity bridging an Ethernet VLAN to an IB partition, just like a bridge group, but in redundant fashion. A redundancy group can contain one or more bridge groups located on the same or different gateways. Gateways with bridge group members of the same redundancy group can be in the same or different chassis.

A redundancy group can operate in two modes. The first one, which is the default mode, is active-passive. In active-passive mode, only one bridge group is active and all others are in hot-standby state. In case the active bridge group fails, another bridge group from the same redundancy group is selected and activated. In active-active mode, all bridge groups are active and load balancing is enabled. Load balancing allows the user to distribute the load of IB nodes among all bridge groups of the redundancy group. In case of a bridge group failure, the load of the IB nodes is redistributed among the remaining bridge groups.

Note: Even in an active-active mode, only one bridge group forwards the broadcast and multicast traffic. If the bridge group forwarding broadcast and multicast fails, a new bridge group member of the same redundancy group is selected to forward broadcast and multicast. The selection mechanism is identical to the one used in active-passive mode to select the active bridge group.

A logical diagram of gateways in a redundant configuration is shown in Figure 7-1. Two or more Ethernet gateways are configured to bridge between the Ethernet fabric and the IB fabric. The gateways can be in the same or different chassis. The redundancy manager monitors the health of the gateways and in case of failure elects a new primary bridge group. The redundancy manager is part of the SFS OS and runs on the controller card of each chassis.
Different topologies work in similar ways but provide different levels of redundancy. For example, a redundancy group with two bridge groups in the same chassis but different gateways protects against gateway failure but does not provide chassis redundancy. Alternatively, a redundancy group with two bridge groups on gateways in different chassis provides the same level of gateway redundancy but also provides chassis redundancy. Examples are provided later in this chapter.

When a bridge group becomes a member of a redundancy group, some parameters are overwritten with the corresponding parameters from the redundancy group. These parameters are restored when the bridge group is removed from the redundancy group. Some examples of such parameters are broadcast and multicast forwarding.

The examples in the sections that follow show the most popular deployment of different types of I/O chassis. To simplify configuration, only one IP subnet is bridged (Data IP subnet). The Ethernet ports are not VLAN tagged. The configuration on the Ethernet switch connected to the gateways determines which VLAN is bridged. This VLAN is mapped to the default IB partition using the Ethernet gateway. One IP subnet is allocated for in-band IB management (Management IP subnet). The in-band IB management interface must be configured in order for the redundancy to work. This is true even in a single chassis configuration.

Each bridge group must have an IP address assigned from the data subnet for the redundancy with load-balancing (active-active mode) to work. The following addresses are assigned for the purpose of the examples in this chapter:

Data Subnet: 10.0.0.0/8

Default Gateway (on the Ethernet switch): 10.0.0.1

IB Management Subnet: 192.168.0.0/8

Note: Every host that complies with the RFC-4391 IPoIB specification, can use Ethernet gateway redundancies. For more information on IPoIB redundancies, see Chapter 6, “Host Redundancy, and IPoIB and SRP Redundancies.”

Ethernet gateway uses gratuitous ARPs to redirect traffic from one gateway to another during failover, fail-back, new member join/leave events and such. Because gratuitous ARPs are not guaranteed to reach all network nodes, some ARP entries may become out of sync for a period of time up to the ARP cache timeout. That is why ARP cache timeout on all network nodes must be set to the maximum acceptable outage time.
Configuring Ethernet Gateway Redundancy with the Cisco SFS 3504 Server Switch

This section describes how to configure redundant Ethernet gateways with the Cisco SFS 3504 Server Switch to provide high availability redundancy and includes the following topics:

- Verifying Redundancy Configuration for Cisco SFS 3504 Server Switches, page 7-6
- Verifying Bridge Group Configuration for Cisco SFS 3504 Server Switches, page 7-8

Two or more Cisco SFS 3504 Server Switches must be used to provide high availability redundancy. A very typical deployment would consist of two Cisco SFS 3504 Server Switches with two Ethernet gateways in each chassis (see Figure 7-2). The switches are configured with one bridge group for every gateway and each bridge group having six Ethernet ports aggregated in single link aggregation groups (trunk). All four bridge groups are in a single redundancy group.

Data subnet: 10.0.0.0/8
Management subnet: 192.168.0.0/24

Figure 7-2 Ethernet Gateway Redundancy with Dual Cisco SFS 3504 Server Switches

Note

For the purpose of the examples in the following sections, the Ethernet gateways are in slots numbers 1 and 2 for both Cisco SFS 3504 chassis.

To configure the first Cisco SFS 3504 Server Switch, perform the following steps:

**Step 1**
Enter configuration mode.

The following example shows how to enter configuration mode:

```
SFS-3504-1> enable
SFS-3504-1# configure terminal
```
**Step 2** Configure and connect an IB in-band management interface.

The IP address must be unique on each chassis.

**Note** If an out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure an IB management interface:

```
SFS-3504-1(config)# interface mgmt-ib
SFS-3504-1(config)# ipaddress 192.168.0.1 255.255.255.0
SFS-3504-1(config-if-mgmt-ib)# no shutdown
SFS-3504-1(config-if-mgmt-ib)# exit
SFS-3504-1(config)#
```

**Step 3** Create and configure two link aggregation groups (trunks) by assigning Ethernet ports to the link aggregation groups.

The following example shows how to create and configure link aggregation groups by assigning Ethernet ports:

```
SFS-3504-1(config)# interface trunk 1
SFS-3504-1(config-if-trunk)# enable
SFS-3504-1(config-if-trunk)# distribution-type src-dst-ip
SFS-3504-1(config-if-trunk)# interface ethernet 1/1-1/6
SFS-3504-1(config-if-ether-1/1-1/6)# trunk-group 1
SFS-3504-1(config-if-ether-1/1-1/6)# exit
SFS-3504-1(config)# interface trunk 2
SFS-3504-1(config-if-trunk)# enable
SFS-3504-1(config-if-trunk)# distribution-type src-dst-ip
SFS-3504-1(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3504-1(config-if-ether-2/1-2/6)# trunk-group 2
SFS-3504-1(config-if-ether-2/1-2/6)# exit
SFS-3504-1(config)#
```

**Step 4** Configure two bridge groups and assign ports to them.

**Note** IP addresses must be from the data IP subnet and must be unique for each bridge group.

The following example shows how to configure bridge groups and assign ports to them:

```
SFS-3504-1(config)# bridge-group 1 subnet-prefix 10.0.0.0 8
SFS-3504-1(config)# bridge-group 1 ip-addr 10.0.0.101
SFS-3504-1(config)# bridge-group 1 ib-next-hop 10.0.0.1
SFS-3504-1(config)# interface trunk 1
SFS-3504-1(config-if-trunk)# bridge-group 1
SFS-3504-1(config-if-trunk)# interface gateway 1
SFS-3504-1(config-if-gw-1/2)# bridge-group 1
SFS-3504-1(config-if-gw-1/2)# exit
SFS-3504-1(config)# bridge-group 2 subnet-prefix 10.0.0.0 8
SFS-3504-1(config)# bridge-group 2 ip-addr 10.0.0.102
SFS-3504-1(config)# bridge-group 2 ib-next-hop 10.0.0.1
SFS-3504-1(config)# interface trunk 2
SFS-3504-1(config-if-trunk)# bridge-group 2
SFS-3504-1(config-if-trunk)# interface gateway 2
SFS-3504-1(config-if-gw-2/2)# bridge-group 2
SFS-3504-1(config-if-gw-2/2)# exit
SFS-3504-1(config)#
```
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Configuring Ethernet Gateway Redundancy with the Cisco SFS 3504 Server Switch

Step 5  Configure a redundancy group and assign both bridge groups to it.

Note  The redundancy group ID must be the same in both chassis.

The following example shows how to configure a redundancy group and assign both bridge groups to it:

SFS-3504-1(config)# redundancy-group 1
SFS-3504-1(config)# bridge-group 1 redundancy-group 1
SFS-3504-1(config)# bridge-group 2 redundancy-group 1

Step 6  (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing:

SFS-3504-1(config)# redundancy-group 1 load-balancing
SFS-3504-1(config)# exit

To configure the second Cisco SFS 3504 Server Switch, perform the following steps:

Step 1  Enter configuration mode.

The following example shows how to enter configuration mode:

SFS-3504-2> enable
SFS-3504-2# configure terminal

Step 2  Configure and connect an IB in-band management interface

The IP address must be unique on each chassis.

Note  If an out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure an IB management interface:

SFS-3504-2(config)# interface mgmt-ib
SFS-3504-2(config-if-mgmt-ib)# ip address 192.168.0.2 255.255.255.0
SFS-3504-2(config-if-mgmt-ib)# no shutdown
SFS-3504-2(config-if-mgmt-ib)# exit
SFS-3504-2(config)#

Step 3  Create and configure two link aggregation groups (trunks) by assigning Ethernet ports to the link aggregation groups.

The following example shows how to create and configure link aggregation groups:

SFS-3504-2(config)# interface trunk 3
SFS-3504-2(config-if-trunk)# enable
SFS-3504-2(config-if-trunk)# distribution-type src-dst-ip
SFS-3504-2(config-if-trunk)# interface ethernet 1/1-1/6
SFS-3504-2(config-if-ether-1/1-1/6)# trunk-group 3
SFS-3504-2(config-if-ether-1/1-1/6)# interface trunk 4
SFS-3504-2(config-if-trunk)# enable
SFS-3504-2(config-if-trunk)# distribution-type src-dst-ip
SFS-3504-2(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3504-2(config-if-ether-2/1-2/6)# trunk-group 4
SFS-3504-2(config-if-ether-2/1-2/6)# exit
SFS-3504-2(config)#
Step 4 Configure two bridge groups and assign ports to them.

**Note** IP addresses must be from the data IP subnet and must be unique for each bridge group.

The following example shows how to configure bridge groups and assign ports to them:

```
SFS-3504-2(config)# bridge-group 3 subnet-prefix 10.0.0.0 8
SFS-3504-2(config)# bridge-group 3 ip-addr 10.0.0.103
SFS-3504-2(config)# bridge-group 3 ib-next-hop 10.0.0.1
SFS-3504-2(config)# interface trunk 3
SFS-3504-2(config-if-trunk)# bridge-group 3
SFS-3504-2(config-if-trunk)# interface gateway 1
SFS-3504-2(config-if-gw-1/2)# bridge-group 3
SFS-3504-2(config-if-gw-1/2)# exit

SFS-3504-2(config)# bridge-group 4 subnet-prefix 10.0.0.0 8
SFS-3504-2(config)# bridge-group 4 ip-addr 10.0.0.104
SFS-3504-2(config)# bridge-group 4 ib-next-hop 10.0.0.1
SFS-3504-2(config)# interface trunk 4
SFS-3504-2(config-if-trunk)# bridge-group 4
SFS-3504-2(config-if-trunk)# interface gateway 2
SFS-3504-2(config-if-gw-2/2)# bridge-group 4
SFS-3504-2(config-if-gw-2/2)# exit
SFS-3504-2(config)#
```

Step 5 Configure a redundancy group and assign both bridge groups to it.

**Note** The redundancy group ID must be the same in both chassis.

The following example shows how to configure a redundancy group and assign both bridge groups to it:

```
SFS-3504-2(config)# redundancy-group 1
SFS-3504-2(config)# bridge-group 3 redundancy-group 1
SFS-3504-2(config)# bridge-group 4 redundancy-group 1
SFS-3504-2(config)#
```

Step 6 (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing:

```
SFS-3504-2(config)# redundancy-group 1 load-balancing
SFS-3504-2(config)# exit
```

Verifying Redundancy Configuration for Cisco SFS 3504 Server Switches

To verify the redundancy group configuration and status, use the `show redundancy-group` CLI command. This command shows the redundancy group properties and all its members. It is important to make sure the properties match the configuration and all members are reported. Redundancy groups must be checked on both chassis.
The following is sample output from `show redundancy-group` command for the first switch:

```
SFS-3504-1# show redundancy-group
==============================================================================
Redundancy Groups
==============================================================================
 rlbd-id : 1
  name :
   group-p_key : ff:ff
   load-balancing : enabled
   broadcast-forwarding : false
   directed-broadcast : false
   multicast : false
   gratuitous-igmp : false
   igmp-version : v2
   num-members : 4
   new-member-force-reelection : false
==============================================================================
Redundancy Group Members
==============================================================================
bridge-group src-addr        last-receive
-------------------------------------------------------------------------------
  1            192.168.0.1     Sun Jan  4 00:27:31 1970
  2            192.168.0.1     Sun Jan  4 00:27:31 1970
  3            192.168.0.2     Sun Jan  4 00:27:31 1970
  4            192.168.0.2     Sun Jan  4 00:27:31 1970
SFS-3504-2# show redundancy-group
==============================================================================
Redundancy Groups
==============================================================================
 rlbd-id : 1
  name :
   group-p_key : ff:ff
   load-balancing : enabled
   broadcast-forwarding : false
   directed-broadcast : false
   multicast : false
   gratuitous-igmp : false
   igmp-version : v2
   num-members : 4
   new-member-force-reelection : false
==============================================================================
Redundancy Group Members
==============================================================================
bridge-group src-addr        last-receive
-------------------------------------------------------------------------------
  1            192.168.0.1     Sun Jan  4 00:27:12 1970
  2            192.168.0.1     Sun Jan  4 00:27:23 1970
  3            192.168.0.2     Sun Jan  4 00:25:51 1970
  4            192.168.0.2     Sun Jan  4 00:25:54 1970
SFS-3504-2#
```
Verifying Bridge Group Configuration for Cisco SFS 3504 Server Switches

To check the bridge group configuration and status, use the `show bridge-group` CLI command. Check both the Cisco SFS 3504 Server Switches, and make sure all the bridge groups are members of the same redundancy group.

When a bridge group is a member of a redundancy group, most of the properties are inherited from the redundancy group. Also make sure only one bridge group, across all chassis, is primary and the rest are secondary. This is true even when load balancing is enabled (active-active mode). In active-passive mode, only the primary bridge group is forwarding. All others are in hot standby state. In active-active mode, all bridge groups are forwarding unicast traffic and only the primary is forwarding broadcast and multicast if enabled.

The following is sample output from the `show bridge-group` command and shows how to verify the bridge group configuration for the first switch:

```
SFS-3504-1# show bridge-group
=================================================================================
Bridge Groups
=================================================================================
  bridge-group-id : 1
  bridge-group-name : ip-addr : 10.0.0.101
                    eth-bridge-port : trunk 1 (not tagged)
                    ib-bridge-port : 1/2(gw) (pkey: ff:ff)
                    broadcast-forwarding : false
                    broadcast-forwarding-mode : inherit-from-redundancy-group
                    directed-broadcast : false
                    directed-broadcast-mode : inherit-from-redundancy-group
                    loop-protection-method : one
                    multicast : false
                    multicast-mode : inherit-from-redundancy-group
                    gratuitous-igmp : false
                    gratuitous-igmp-mode : inherit-from-redundancy-group
                    igmp-version : v2
                    igmp-version-mode : inherit-from-redundancy-group
                    redundancy-group : 1
                    status-in-redundancy-group : primary
  bridge-group-id : 2
  bridge-group-name : ip-addr : 10.0.0.102
                    eth-bridge-port : trunk 2 (not tagged)
                    ib-bridge-port : 2/2(gw) (pkey: ff:ff)
                    broadcast-forwarding : false
                    broadcast-forwarding-mode : inherit-from-redundancy-group
                    directed-broadcast : false
                    directed-broadcast-mode : inherit-from-redundancy-group
                    loop-protection-method : one
                    multicast : false
                    multicast-mode : inherit-from-redundancy-group
                    gratuitous-igmp : false
                    gratuitous-igmp-mode : inherit-from-redundancy-group
                    igmp-version : v2
                    igmp-version-mode : inherit-from-redundancy-group
                    redundancy-group : 1
                    status-in-redundancy-group : secondary
```
The following is sample output from the `show bridge-group` command that shows how to verify the bridge group configuration for the second switch:

```
SFS-3504-2# show bridge-group

Bridge Groups

bridge-group-id: 3
bridge-group-name:
  I-addr : 10.0.0.103
  eth-bridge-port : trunk 3 (not tagged)
  ib-bridge-port : 1/2(gw) (pkey: ff:ff)
  broadcast-forwarding : false
  broadcast-forwarding-mode : inherit-from-redundancy-group
  directed-broadcast : false
  directed-broadcast-mode : inherit-from-redundancy-group
  loop-protection-method : one
  multicast : false
  multicast-mode : inherit-from-redundancy-group
  gratuitous-igmp : false
  gratuitous-igmp-mode : inherit-from-redundancy-group
  igmp-version : v2
  igmp-version-mode : inherit-from-redundancy-group
  redundancy-group : 1
  status-in-redundancy-group : secondary

bridge-group-id: 4
bridge-group-name:
  ip-addr : 10.0.0.104
  eth-bridge-port : trunk 4 (not tagged)
  ib-bridge-port : 2/2(gw) (pkey: ff:ff)
  broadcast-forwarding : false
  broadcast-forwarding-mode : inherit-from-redundancy-group
  directed-broadcast : false
  directed-broadcast-mode : inherit-from-redundancy-group
  loop-protection-method : one
  multicast : false
  multicast-mode : inherit-from-redundancy-group
  gratuitous-igmp : false
  gratuitous-igmp-mode : inherit-from-redundancy-group
  igmp-version : v2
  igmp-version-mode : inherit-from-redundancy-group
  redundancy-group : 1
  status-in-redundancy-group : secondary

SFS-3504#
```
Configuring Ethernet Gateway Redundancy Using the Cisco SFS 3012R Server Switch

This section describes how to configure the Ethernet gateway redundancy using the Cisco SFS 3012R Server Switch and includes the following topics:

- Configuring Ethernet Gateway Redundancy Using a Single Cisco SFS 3012R Server Switch, page 7-10
- Configuring Ethernet Gateway Redundancy Using Dual Cisco SFS 3012R Server Switches, page 7-15

The Cisco SFS 3012R Server Switch is a fully redundant chassis. It has twelve gateway slots, two controller modules, and two switch cards. Each gateway is connected to both switch cards through the backplane. A single Cisco SFS 3012R Server Switch is therefore capable of being configured for high availability.

Configuring Ethernet Gateway Redundancy Using a Single Cisco SFS 3012R Server Switch

This section describes how to configure Ethernet gateway redundancy using a single Cisco SFS 3012R Server Switch and includes the following topics:

- Verifying Redundancy Group Configuration for Cisco SFS 3001 Server Switches, page 7-27
- Verifying Bridge Group Configuration for Cisco SFS 3001 Server Switches, page 7-28

The example in this section shows a typical single-switch configuration with four Ethernet gateways and two switch cards. Two of the gateways, slots 2 and 4, are configured to use switch cards in slot 15 and the other two gateways, slots 3 and 5, are configured to use switch cards in slot 16. (To locate the slot numbers on the Cisco SFS 3012R Server Switch, see Figure 4-4.) Thus if any of the switch cards fail, two gateways continue to remain operational. If the Ethernet ports of the gateways are required to be connected to different Ethernet switches, connect the gateways to the same IB switch card that are connected to different Ethernet switches. Thus if any one Ethernet switch and any one IB switch card were to fail, at least one gateway continues to remain operational.

Note

For the purpose of this example, gateways in slots 2 and 3 must be connected to different Ethernet switches than gateways in slots 4 and 5.

The topology used in this example is shown in Figure 7-3.
Once the redundancy groups are configured, a primary bridge is selected and forwarding is enabled.

To configure redundancy in a single Cisco SFS 3012R Server Switch, perform the following steps:

**Step 1**  Enter configuration mode.

The following example shows how to enter configuration mode:

```
SFS-3012R> enable
SFS-3012R# configure terminal
```

**Step 2**  Configure and connect an IB in-band management interface

Although there is only one chassis in this configuration, the interface must be configured and connected in order for the redundancy to work.

**Note**  If an out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure and connect an IB in-band management interface:

```
SFS-3012R(config)# interface mgmt-ib
SFS-3012R(config-if-mgmt-ib)# 192.168.0.1 255.255.255.0
SFS-3012R(config-if-mgmt-ib)# no shutdown
SFS-3012R(config-if-mgmt-ib)# exit
```

**Step 3**  Create and configure all four link aggregation groups (trunks) by assigning Ethernet ports to each link aggregation group.

The following example shows how to create and configure four link aggregation groups:

```
SFS-3012R(config)# interface trunk 1
SFS-3012R(config-if-trunk)# enable
SFS-3012R(config-if-trunk)# distribution-type src-dst-ip
SFS-3012R(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3012R(config-if-ether-2/1-2/6)# trunk-group 1
```
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Configuring Ethernet Gateway Redundancy Using the Cisco SFS 3012R Server Switch

Step 4 Configure all four bridge groups and assign ports to them.

Two of the bridge groups use IB port 1 to connect to the switch card in slot 15 and the other two bridge groups use IB port 2 to connect to the switch card in slot 16.

Note The IP address must be from the Data IP subnet and must be unique for each bridge group.

The following example shows how to configure bridge groups and assign ports to them:

SFS-3012R(config)# bridge-group 1 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 1 ip-addr 10.0.0.101
SFS-3012R(config)# bridge-group 1 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 1
SFS-3012R(config)# interface gateway 2/1
SFS-3012R(config)# exit

SFS-3012R(config)# bridge-group 2 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 2 ip-addr 10.0.0.102
SFS-3012R(config)# bridge-group 2 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 2
SFS-3012R(config)# interface gateway 3/2
SFS-3012R(config)# exit

SFS-3012R(config)# bridge-group 3 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 3 ip-addr 10.0.0.103
SFS-3012R(config)# bridge-group 3 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 3
SFS-3012R(config)# interface gateway 4/1
SFS-3012R(config)# exit
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Configuring Ethernet Gateway Redundancy Using the Cisco SFS 3012R Server Switch

Step 5  Configure a redundancy group, and assign all four bridge groups to it.

The following example shows how to configure a redundancy group and assign bridge groups to it:

SFS-3012R(config)# redundancy-group 1
SFS-3012R(config)# bridge-group 1 redundancy-group 1
SFS-3012R(config)# bridge-group 2 redundancy-group 1
SFS-3012R(config)# bridge-group 3 redundancy-group 1
SFS-3012R(config)# bridge-group 4 redundancy-group 1

Step 6  (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing between bridge groups:

SFS-3012R(config)# redundancy-group 1 load-balancing
SFS-3012R(config)# exit

Verifying Redundancy Group Configuration for a Single Cisco SFS 3012R Server Switch

This section describes how to verify redundancy group configuration for a single Cisco SFS 3012R Server Switch.

The following is sample output from the show redundancy-group command to check the redundancy group configuration and status. This command shows the redundancy group properties and all the members.

Note  Make sure the properties match the configuration and that all members are reported.

SFS-3012R# show redundancy-group

===================================================================
Redundancy Groups
===================================================================
rlb-id : 1
name :
group-p_key : ff:ff
load-balancing : enabled
broadcast-forwarding : false
multicast : false
gratuitous-igmp : false
igmp-version : v2
num-members : 4
new-member-force-reelection : false
Verifying Bridge Group Configuration for a Single Cisco SFS 3012R Server Switch

This section describes how to verify bridge group configuration for a single Cisco SFS 3012R Server Switch.

To check the bridge group configuration and status use the `show bridge-group` CLI command. Make sure all bridge groups are members of the same redundancy group. When a bridge group is a member of a redundancy group, most of the properties are inherited from the redundancy group. Also make sure only one bridge group is primary and the rest are secondary. This is true even when load balancing is enabled (active-active mode). In the active-passive mode, only the primary bridge group is forwarding and all others are in hot standby state. In the active-active mode all bridge groups are forwarding unicast traffic and only the primary bridge group is forwarding broadcast and multicast if enabled.

The following is sample output from the `show bridge-group` command, and it checks the bridge group configuration and status.

```
SFS-3012R# show bridge-group
```

```
Bridge Groups

bridge-group-id : 1
bridge-group-name :
  ip-addr : 10.0.0.101
  eth-bridge-port : trunk 1 (not tagged)
  ib-bridge-port : 2/1(gw) (pkey: ff:ff)
  broadcast-forwarding : false
  broadcast-forwarding-mode : inherit-from-redundancy-group
  loop-protection-method : one
  multicast : false
  multicast-mode : inherit-from-redundancy-group
  gratuitous-igmp : false
  gratuitous-igmp-mode : inherit-from-redundancy-group
  igmp-version : v2
  igmp-version-mode : inherit-from-redundancy-group
  redundancy-group : 1
  status-in-redundancy-group : primary

bridge-group-id : 2
bridge-group-name :
  ip-addr : 10.0.0.102
  eth-bridge-port : trunk 2 (not tagged)
  ib-bridge-port : 3/2(gw) (pkey: ff:ff)
  broadcast-forwarding : false
  broadcast-forwarding-mode : inherit-from-redundancy-group
  loop-protection-method : one
  multicast : false
  multicast-mode : inherit-from-redundancy-group
  gratuitous-igmp : false
  gratuitous-igmp-mode : inherit-from-redundancy-group
```
Configuring Ethernet Gateway Redundancy Using Dual Cisco SFS 3012R Server Switches

This section describes how to configure a dual Cisco SFS 3012R Server Switch redundancy configuration and includes the following topics:

- Verifying Redundancy Group Configuration for Dual Cisco SFS 3012R Server Switches, page 7-19
- Verifying Bridge Group Configuration for Dual Cisco SFS 3012R Server Switches, page 7-20

This typical example shows a dual Cisco SFS 3012R Server Switch setup with a total of four Ethernet gateways that are available as two for each server switch. Both gateways in each chassis are configured to use different switch cards. The gateway in slot 2 uses the switch card in slot 15 and the gateway in slot 3 uses the switch card in slot 16. (To locate the slot numbers on the Cisco SFS 3012R Server Switch, see Figure 4-4.) Thus if any of the switch cards fail, the other gateway continues to remain operational. If the Ethernet ports of the gateways are connected to two different Ethernet switches, the gateways in the same chassis must be connected to different Ethernet switches. This topology allows one chassis and one Ethernet switch failure without interruption to the service. The topology used in this example is shown in Figure 7-4.
Once redundancy group is configured, a primary bridge group is elected and forwarding is enabled.

To configure the first Cisco SFS 3012R Server Switch, perform the following steps:

**Step 1** Enter configuration mode.

The following example shows how to enter configuration mode:

```
SFS-3012R> enable
SFS-3012R# configure terminal
```

**Step 2** Configure and connect the IB in-band management interface.

The IP address must be unique on each chassis.

```
SFS-3012R(config)# interface mgmt-ib
SFS-3012R(config-if-mgmt-ib)# ip address 192.168.0.1 255.255.255.0
SFS-3012R(config-if-mgmt-ib)# no shutdown
SFS-3012R(config-if-mgmt-ib)# exit
```

**Note** If the out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure and connect the IB in-band management interface:

```
SFS-3012R(config)# interface trunk 1
SFS-3012R(config-if-trunk)# enable
SFS-3012R(config-if-trunk)# distribution-type src-dst-ip
SFS-3012R(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3012R(config-if-ether-2/1-2/6)# trunk-group 1
```
Step 4 Configure two bridge groups and assign ports to them.

One of the bridge groups uses the IB port 1 to connect to the switch card in slot 15 and the other bridge group uses the IB port 2 to connect to the switch card in slot 16.

**Note** IP addresses must be from Data IP subnet and must be unique for each bridge group.

The following example shows how to configure two bridge groups and assign ports to them:

```plaintext
SFS-3012R(config)# bridge-group 1 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 1 ip-addr 10.0.0.101
SFS-3012R(config)# bridge-group 1 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 1
SFS-3012R(config-if-trunk)# bridge-group 1
SFS-3012R(config)# interface gateway 2/1
SFS-3012R(config-if-gw-2/2)# bridge-group 1
SFS-3012R(config-if-gw-2/2)# exit

SFS-3012R(config)# bridge-group 2 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 2 ip-addr 10.0.0.102
SFS-3012R(config)# bridge-group 2 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 2
SFS-3012R(config-if-trunk)# bridge-group 2
SFS-3012R(config)# interface gateway 3/2
SFS-3012R(config-if-gw-3/2)# bridge-group 2
SFS-3012R(config-if-gw-3/2)# exit
```

Step 5 Configure the redundancy group and assign both bridge groups to it.

**Note** The redundancy group ID must be the same in both chassis.

The following example shows how to configure the redundancy group and assign bridge groups to it:

```plaintext
SFS-3012R(config)# redundancy-group 1
SFS-3012R(config)# bridge-group 1 redundancy-group 1
SFS-3012R(config)# bridge-group 2 redundancy-group 1
```

Step 6 (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing between bridge groups:

```plaintext
SFS-3012R(config)# redundancy-group 1 load-balancing
```
Chapter 7      Ethernet Gateway and IPoIB Redundancies

To configure the second Cisco SFS 3012R Server Switch, perform the following steps:

**Step 1** Enter configuration mode.
The following example shows how to enable configuration mode:

```
SFS-3012R> enable
SFS-3012R# configure terminal
```

**Step 2** Configure and connect the IB in-band management interface.
The IP address must be unique on each chassis.

*Note* If the out-of-band Ethernet interface on the controller card is also configured it must be on a different IP subnet.

The following example shows how to configure and connect the IB in-band management interface:

```
SFS-3012R(config)# interface mgmt-ib
SFS-3012R(config-if-mgmt-ib)# ip address 192.168.0.2 255.255.255.0
SFS-3012R(config-if-mgmt-ib)# no shutdown
SFS-3012R(config-if-mgmt-ib)# exit
```

**Step 3** Create and configure two link aggregation groups (trunks). Assign Ethernet ports to link aggregation groups.
The following example shows how to create and configure two link aggregation groups:

```
SFS-3012R(config)# interface trunk 3
SFS-3012R(config-if-trunk)# enable
SFS-3012R(config-if-trunk)# distribution-type src-dst-ip
SFS-3012R(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3012R(config-if-trunk)# exit

SFS-3012R(config)# interface trunk 4
SFS-3012R(config-if-trunk)# enable
SFS-3012R(config-if-trunk)# distribution-type src-dst-ip
SFS-3012R(config-if-trunk)# interface ethernet 3/1-3/6
SFS-3012R(config-if-trunk)# exit
```

**Step 4** Configure two bridge groups and assign ports to them.
One of the bridge groups uses the IB port 1 to connect to the switch card in slot 15, and the other bridge group uses the IB port 2 to connect to the switch card in slot 16.

*Note* IP addresses must be from Data IP subnet and must be unique for each bridge group.

The following example shows how to configure two bridge groups and assign ports to them:

```
SFS-3012R(config)# bridge-group 3 subnet-prefix 10.0.0.0 8
SFS-3012R(config)# bridge-group 3 ip-addr 10.0.0.103
SFS-3012R(config)# bridge-group 3 ib-next-hop 10.0.0.1
SFS-3012R(config)# interface trunk 3
SFS-3012R(config-if-trunk)# bridge-group 3
SFS-3012R(config)# interface gateway 2/1
SFS-3012R(config-if-gw-2/1)# bridge-group 3
SFS-3012R(config-if-gw-2/1)# exit
```
Chapter 7  Ethernet Gateway and IPoIB Redundancies

Configuring Ethernet Gateway Redundancy Using the Cisco SFS 3012R Server Switch

Chapter 7      Ethernet Gateway and IPoIB Redundancies

Step 5  Configure a redundancy group and assign both bridge groups to it.

Note  The redundancy group ID must be the same in both chassis.

The following example shows how to configure a redundancy group and assign both bridge groups to it:

SFS-3012R(config)# redundancy-group 1
SFS-3012R(config)# bridge-group 3 redundancy-group 1
SFS-3012R(config)# bridge-group 4 redundancy-group 1

Step 6  (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing between bridge groups:

SFS-3012R(config)# redundancy-group 1 load-balancing
SFS-3012R(config)# exit

Verifying Redundancy Group Configuration for Dual Cisco SFS 3012R Server Switches

This section describes how to verify redundancy group configuration for the Cisco SFS 3012R Server Switch.

To check redundancy group configuration and status use the `show redundancy-group` CLI command. This command shows redundancy group properties and all members. It is important to make sure the properties match the configuration and all members are reported. The redundancy group must be checked on both chassis.

The following is sample output from the `show redundancy-group` command for the first switch:

SFS-3012R# show redundancy-group

============================================================================
Redundancy Groups
============================================================================

rlb-id : 1
  name :
  group-p_key : ff:ff
  load-balancing : enabled
  broadcast-forwarding : false
  multicast : false
  gratuitous-igmp : false
  igmp-version : v2
  num-members : 4
  new-member-force-reelection : false
Verifying Bridge Group Configuration for Dual Cisco SFS 3012R Server Switches

This section describes how to verify bridge group configuration for the Cisco SFS 3012R Server Switch. To check bridge group configuration and status use the `show bridge-group` CLI command. Inspect both chassis and confirm all bridge groups are members of the same redundancy group. When a bridge group is a member of a redundancy group, most of the properties are inherited from the redundancy group. Also make sure only one bridge group, across all chassis, is primary and the rest are secondary. This is true even when load balancing is enabled (active-active mode). In active-passive mode only the primary bridge group is forwarding. All others are in hot standby state. In active-active mode all bridge groups are forwarding unicast traffic and only primary is forwarding broadcast and multicast if enabled.
Step 1  Verify the bridge group configuration for the first Cisco SFS 3012R Server Switch.

The following is sample output from the `show bridge-group` command that shows how to verify the bridge group configuration for the first Cisco SFS 3012R Server Switch:

```
SFS-3012R# show bridge-group

================================================================================
Bridge Groups
================================================================================
bridge-group-id : 1
bridge-group-name :
    ip-addr : 10.0.0.101
    eth-bridge-port : trunk 1 (not tagged)
    ib-bridge-port : 2/1(gw) (pkey: ff:ff)
    broadcast-forwarding : false
    broadcast-forwarding-mode : inherit-from-redundancy-group
    loop-protection-method : one
    multicast : false
    multicast-mode : inherit-from-redundancy-group
    gratuitous-igmp : false
    gratuitous-igmp-mode : inherit-from-redundancy-group
    igmp-version : v2
    igmp-version-mode : inherit-from-redundancy-group
    redundancy-group : 1
    status-in-redundancy-group : primary

bridge-group-id : 2
bridge-group-name :
    ip-addr : 10.0.0.102
    eth-bridge-port : trunk 2 (not tagged)
    ib-bridge-port : 3/2(gw) (pkey: ff:ff)
    broadcast-forwarding : false
    broadcast-forwarding-mode : inherit-from-redundancy-group
    loop-protection-method : one
    multicast : false
    multicast-mode : inherit-from-redundancy-group
    gratuitous-igmp : false
    gratuitous-igmp-mode : inherit-from-redundancy-group
    igmp-version : v2
    igmp-version-mode : inherit-from-redundancy-group
    redundancy-group : 1
    status-in-redundancy-group : secondary
```
Step 2: Verify the bridge group configuration for the second Cisco SFS 3012R Server Switch.

The following is sample output from the `show bridge-group` command that shows how to verify the bridge group configuration for the second Cisco SFS 3012R Server Switch:

```
SFS-3012R# show bridge-group

Bridge Groups

bridge-group-id : 3
bridge-group-name :
  ip-addr : 10.0.0.103
eth-bridge-port : trunk 3 (not tagged)
ib-bridge-port : 2/1(gw) (pkey: ff:ff)
broadcast-forwarding : false
broadcast-forwarding-mode : inherit-from-redundancy-group
loop-protection-method : one
multicast : false
multicast-mode : inherit-from-redundancy-group
gratuitous-igmp : false
gratuitous-igmp-mode : inherit-from-redundancy-group
igmp-version : v2
igmp-version-mode : inherit-from-redundancy-group
redundancy-group : 1
status-in-redundancy-group : secondary

bridge-group-id : 4
bridge-group-name :
  ip-addr : 10.0.0.104
eth-bridge-port : trunk 4 (not tagged)
ib-bridge-port : 3/2(gw) (pkey: ff:ff)
broadcast-forwarding : false
broadcast-forwarding-mode : inherit-from-redundancy-group
loop-protection-method : one
multicast : false
multicast-mode : inherit-from-redundancy-group
gratuitous-igmp : false
gratuitous-igmp-mode : inherit-from-redundancy-group
igmp-version : v2
igmp-version-mode : inherit-from-redundancy-group
redundancy-group : 1
status-in-redundancy-group : secondary
```
Configuring Ethernet Gateway Redundancy for the Cisco SFS 3001 Server Switch

This section describes how to configure Ethernet gateway redundancy for two Cisco SFS 3001 Server Switches. and includes the following topics:

- Verifying Redundancy Group Configuration for Cisco SFS 3001 Server Switches, page 7-27
- Verifying Bridge Group Configuration for Cisco SFS 3001 Server Switches, page 7-28

Two or more Cisco SFS 3001 Server Switches must be used to provide high availability redundancy. A very typical deployment consists of two Cisco SFS 3001 Server Switches with one Ethernet gateway in each (see Figure 7-5).

Figure 7-5 Ethernet Redundancy with Dual Cisco SFS 3001 Server Switches

A single Cisco SFS 3001 Server Switch provides power supply redundancy only. A single Cisco SFS 3001 Server Switch does not provide Ethernet gateway redundancy, because it contains a single gateway slot. For more on the Cisco SFS 3001 redundancy, see Chapter 4, “Cisco SFS 3504 and Cisco SFS 3000 Series Server Switch Redundancy.”

For each Cisco SFS 3001 Server Switch, once the redundancy groups are configured, a primary bridge is selected and forwarding is enabled.

To configure the first Cisco SFS 3001 Server Switch, perform the following steps:

---

**Step 1**

Enter configuration mode.

The following example shows how to enter configuration mode:

```
SFS-3001> enable
SFS-3001# configure terminal
```
Chapter 7  Ethernet Gateway and IPoIB Redundancies

Configuring Ethernet Gateway Redundancy for the Cisco SFS 3001 Server Switch

Step 2 Configure and connect an IB in-band management interface.

The IP address must be unique on each chassis.

Note If an out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure an IB management interface:

```
SFS-3001(config)# interface mgmt-ib
SFS-3001(config-if-mgmt-ib)# ip address 192.168.0.1 255.255.255.0
SFS-3001(config-if-mgmt-ib)# no shutdown
SFS-3001(config-if-mgmt-ib)# exit
```

Step 3 Create and configure a link aggregation group (trunk) by assigning Ethernet ports to the link aggregation group.

The following example shows how to create and configure a link aggregation group by assigning Ethernet ports:

```
SFS-3001(config)# interface trunk 1
SFS-3001(config-if-trunk)# enable
SFS-3001(config-if-trunk)# distribution-type src-dst-ip
SFS-3001(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3001(config-if-ether-2/1-2/6)# trunk-group 1
SFS-3001(config-if-ether-2/1-2/6)# exit
```

Step 4 Configure a bridge group and assign ports to it.

Note The IP address must be from the data IP subnet and must be unique for each bridge group.

The following example shows how to configure a bridge group and assign ports:

```
SFS-3001(config)# bridge-group 1 subnet-prefix 10.0.0.0 8
SFS-3001(config)# bridge-group 1 ip-addr 10.0.0.101
SFS-3001(config)# bridge-group 1 ib-next-hop 10.0.0.1
SFS-3001(config)# interface trunk 1
SFS-3001(config)# bridge-group 1
SFS-3001(config)# interface gateway 2
SFS-3001(config)# bridge-group 1
SFS-3001(config)# exit
```

Step 5 Configure a redundancy group, and assign a bridge group to it.

Note The redundancy group ID must be the same in all chassis.

The following example shows how to configure a redundancy group and assign a bridge group.

```
SFS-3001(config)# redundancy-group 1
SFS-3001(config)# bridge-group 1 redundancy-group 1
```

Step 6 (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing between bridge groups:

```
SFS-3001(config)# redundancy-group 1 load-balancing
SFS-3001(config)#
```
**Step 7** (Optional) Change the redundancy group parameters.

**Note** Enable multicast forwarding on the redundancy group and not on individual bridge groups.

The following example shows how to change the redundancy group parameters:

```
SFS-3001(config)# redundancy-group 1 multicast
SFS-3001(config)#
```

To configure the next Cisco SFS 3001 Server Switch, perform the following steps:

**Step 1** Enter configuration mode.

The following example shows how to enter configuration mode:

```
SFS-3001> enable
SFS-3001# configure terminal
```

**Step 2** Configure and connect an IB in-band management interface.

The IP address must be unique on each chassis.

**Note** If an out-of-band Ethernet interface on the controller card is also configured, it must be on a different IP subnet.

The following example shows how to configure IB management interface:

```
SFS-3001(config)# interface mgmt-ib
SFS-3001(config-if-mgmt-ib)# ip address 192.168.0.2 255.255.255.0
SFS-3001(config-if-mgmt-ib)# no shutdown
SFS-3001(config-if-mgmt-ib)# exit
```

**Step 3** Create and configure a link aggregation group (trunk) by assigning Ethernet ports to the link aggregation group.

The following example shows how to create and configure a link aggregation group by assigning Ethernet ports:

```
SFS-3001(config)# interface trunk 2
SFS-3001(config-if-trunk)# enable
SFS-3001(config-if-trunk)# distribution-type src-dst-ip
SFS-3001(config-if-trunk)# interface ethernet 2/1-2/6
SFS-3001(config-if-ether-2/1-2/6)# trunk-group 2
SFS-3001(config-if-ether-2/1-2/6)# exit
```
Step 4 Configure a bridge group and assign ports to it.

Note The IP address must be from the data IP subnet and must be unique for each bridge group.

The following example shows how to configure a bridge group and assign ports:

```
SFS-3001(config)# bridge-group 2 subnet-prefix 10.0.0.0 8
SFS-3001(config)# bridge-group 2 ip-addr 10.0.0.102
SFS-3001(config)# bridge-group 2 ib-next-hop 10.0.0.1
SFS-3001(config)# interface trunk 2
SFS-3001(config-if-trunk)# bridge-group 2
SFS-3001(config)# interface gateway 2
SFS-3001(config-if-gw-2/2)# bridge-group 2
SFS-3001(config-if-gw-2/2)# exit
```

Step 5 Configure a redundancy group, and assign a bridge group to it.

Note The redundancy group ID must be the same in all chassis.

The following example shows how to configure a redundancy group and assign a bridge group.

```
SFS-3001(config)# redundancy-group 1
SFS-3001(config)# bridge-group 2 redundancy-group 1
```

Step 6 (Optional) Enable load balancing between bridge groups.

The following example shows how to enable load balancing between bridge groups:

```
SFS-3001(config)# redundancy-group 1 load-balancing
SFS-3001(config)#
```

Step 7 (Optional) Change the redundancy group parameters.

Note Enable multicast forwarding on the redundancy group and not on individual bridge groups.

The following example shows how to change the redundancy group parameters:

```
SFS-3001(config)# redundancy-group 1 multicast
SFS-3001(config)#
```
### Verifying Redundancy Group Configuration for Cisco SFS 3001 Server Switches

To check the redundancy group configuration and status, use the `show redundancy-group` CLI command. This command shows the redundancy group properties and all its members. It is important to make sure the properties match the configuration and all members are reported. The redundancy groups must be checked on both chassis.

The following is sample output from the `show redundancy-group` command for the first switch:

```
SFS-3001# show redundancy-group

==========================================================================
Redundancy Groups
==========================================================================
   rlb-id : 1
   name :
   group-p_key : ff:ff
   load-balancing : enabled
   broadcast-forwarding : false
   multicast : true
   gratuitous-igmp : false
   igmp-version : v2
   num-members : 2
   new-member-force-reelection : false

==========================================================================
Redundancy Group Members
==========================================================================
   bridge-group src-addr        last-receive
   ---------- ------------------ ------------
   1 192.168.0.1       Thu Jan  1 00:06:50 1970
   2 192.168.0.2       Thu Jan  1 00:03:39 1970
```

The following is sample output from the `show redundancy-group` command for the next switch:

```
SFS-3001# show redundancy-group

==========================================================================
Redundancy Groups
==========================================================================
   rlb-id : 1
   name :
   group-p_key : ff:ff
   load-balancing : disabled
   broadcast-forwarding : false
   multicast : true
   gratuitous-igmp : false
   igmp-version : v2
   num-members : 2
   new-member-force-reelection : false

==========================================================================
Redundancy Group Members
==========================================================================
   bridge-group src-addr        last-receive
   ---------- ------------------ ------------
   1 192.168.0.1       Thu Jan  1 00:06:50 1970
   2 192.168.0.2       Thu Jan  1 00:03:39 1970
```
Verifying Bridge Group Configuration for Cisco SFS 3001 Server Switches

To check the bridge group configuration and status, use the `show bridge-group` CLI command. Check both the Cisco SFS 3001 Server Switches to ensure all the bridge groups are members of the same redundancy group.

When a bridge group is a member of the redundancy group, most of the properties are inherited from the redundancy group. Also make sure only one bridge group, across all chassis, is primary and the rest are secondary. This is true even when load balancing is enabled (active-active mode). In active-passive mode, only the primary bridge group is forwarding. All others are in hot standby state. In active-active mode, all bridge groups are forwarding unicast traffic and only the primary bridge group is forwarding broadcast and multicast traffic if enabled.

**Step 1**
Verify the bridge group configuration for the first Cisco SFS 3001 Server Switch.

The following is sample output from the `show bridge-group` command that shows how to verify the bridge group configuration for the first switch:

```
SFS-3001# show bridge-group

================================================================================
<table>
<thead>
<tr>
<th>Bridge Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>bridge-group-id : 1</td>
</tr>
<tr>
<td>bridge-group-name :</td>
</tr>
<tr>
<td>ip-addr : 10.0.0.101</td>
</tr>
<tr>
<td>eth-bridge-port : trunk 1 (not tagged)</td>
</tr>
<tr>
<td>ib-bridge-port : 2/2(gw) (pgkey: ff:ff)</td>
</tr>
<tr>
<td>broadcast-forwarding : false</td>
</tr>
<tr>
<td>broadcast-forwarding-mode : inherit-from-redundancy-group</td>
</tr>
<tr>
<td>loop-protection-method : one</td>
</tr>
<tr>
<td>multicast : false</td>
</tr>
<tr>
<td>multicast-mode : inherit-from-redundancy-group</td>
</tr>
<tr>
<td>gratuitous-igmp : false</td>
</tr>
<tr>
<td>gratuitous-igmp-mode : inherit-from-redundancy-group</td>
</tr>
<tr>
<td>igmp-version : v2</td>
</tr>
<tr>
<td>igmp-version-mode : inherit-from-redundancy-group</td>
</tr>
<tr>
<td>redundancy-group : 1</td>
</tr>
<tr>
<td>status-in-redundancy-group : primary</td>
</tr>
</tbody>
</table>
```
Step 2  Verify the bridge group configuration for the next SFS 3001 Server Switch.

The following is sample output from the `show bridge-group` command that shows how to verify the bridge group configuration for the next switch:

```
SFS-3001# show bridge-group

Bridge Groups

  bridge-group-id : 2
  bridge-group-name :
    ip-addr : 10.0.0.102
    eth-bridge-port : trunk 2 (not tagged)
    ib-bridge-port : 2/2(gw) (pkey: ff:ff)
    broadcast-forwarding : false
    broadcast-forwarding-mode : inherit-from-redundancy-group
    loop-protection-method : one
    multicast : false
    multicast-mode : inherit-from-redundancy-group
    gratuitous-igmp : false
    gratuitous-igmp-mode : inherit-from-redundancy-group
    igmp-version : v2
    igmp-version-mode : inherit-from-redundancy-group
    redundancy-group : 1
    status-in-redundancy-group : secondary
```