



Port assignments for FC switches

ONTAP MetroCluster

NetApp

October 12, 2022

This PDF was generated from https://docs.netapp.com/us-en/ontap-metrocluster/maintain/concept_port_assignments_for_systems_using_two_initiator_ports.html on October 12, 2022. Always check docs.netapp.com for the latest.

Table of Contents

- Port assignments for FC switches 1
 - Port assignments for systems using two initiator ports 1
 - Port assignments for FC switches when using ONTAP 9.0 2
 - Port assignments for FC switches when using ONTAP 9.1 or later 16

Port assignments for FC switches

Port assignments for systems using two initiator ports

You can configure FAS8020, AFF8020, FAS8200, and AFF A300 systems using a single initiator port for each fabric and two initiator ports for each controller.

About this task

You can follow the cabling for the FibreBridge 6500N bridge or FibreBridge 7500N or 7600N bridge using only one FC port (FC1 or FC2). Instead of using four initiators, connect only two initiators and leave the other two that are connected to the switch port empty.

You must apply the correct RCF file for the FibreBridge 6500N bridge's configuration.

If zoning is performed manually, then follow the zoning used for a FibreBridge 6500N or a FibreBridge 7500N or 7600N bridge using one FC port (FC1 or FC2). In this scenario, one initiator port rather than two is added to each zone member per fabric.

You can change the zoning or perform an upgrade from a FibreBridge 6500 to a FibreBridge 7500 using the procedure *Hot-swapping a FibreBridge 6500N bridge with a FibreBridge 7500N or 7600N bridge* from the [Maintain the MetroCluster components](#).

The following table shows port assignments for FC switches when using ONTAP 9.1 and later.

| Configurations using FibreBridge 6500N bridges or FibreBridge 7500N or 7600N using one FC port (FC1 or FC2) only | | | |
|--|--------------|--|----------------------------|
| MetroCluster 1 or DR Group 1 | | | |
| Component | Port | Brocade switch models 6505, 6510, 6520, 7840, G620, G610, and DCX 8510-8 | |
| | | Connects to FC switch... | Connects to switch port... |
| controller_x_1 | FC-VI port a | 1 | 0 |
| | FC-VI port b | 2 | 0 |
| | FC-VI port c | 1 | 1 |
| | FC-VI port d | 2 | 1 |
| | HBA port a | 1 | 2 |
| | HBA port b | 2 | 2 |
| | HBA port c | - | - |
| | HBA port d | - | - |

| | | | |
|---------|-------------|---|----|
| Stack 1 | bridge_x_1a | 1 | 8 |
| | bridge_x_1b | 2 | 8 |
| Stack y | bridge_x_ya | 1 | 11 |
| | bridge_x_yb | 2 | 11 |

The following table shows port assignments for FC switches when using ONTAP 9.0.

| MetroCluster two-node configuration | | | |
|-------------------------------------|--------------|-----------------------------------|---------------|
| Component | Port | Brocade 6505, 6510, or DCX 8510-8 | |
| | | FC_switch_x_1 | FC_switch_x_2 |
| controller_x_1 | FC-VI port a | 0 | - |
| | FC-VI port b | - | 0 |
| | HBA port a | 1 | - |
| | HBA port b | - | 1 |
| | HBA port c | 2 | - |
| | HBA port d | - | 2 |

Port assignments for FC switches when using ONTAP 9.0

You need to verify that you are using the specified port assignments when you cable the FC switches. The port assignments are different between ONTAP 9.0 and later versions of ONTAP.

Ports that are not used for attaching initiator ports, FC-VI ports, or ISLs can be reconfigured to act as storage ports. However, if the supported RCFs are being used, the zoning must be changed accordingly.

If the supported RCF files are used, ISL ports may not connect to the same ports shown here and may need to be reconfigured manually.

Overall cabling guidelines

You should be aware of the following guidelines when using the cabling tables:

- The Brocade and Cisco switches use different port numbering:
 - On Brocade switches, the first port is numbered 0.
 - On Cisco switches, the first port is numbered 1.

- The cabling is the same for each FC switch in the switch fabric.
- AFF A300 and FAS8200 storage systems can be ordered with one of two options for FC-VI connectivity:
 - Onboard ports 0e and 0f configured in FC-VI mode.
 - Ports 1a and 1b on an FC-VI card in slot 1.

Brocade port usage for controller connections in an eight-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric.

The following table shows controller port usage on Brocade models Brocade 6505, 6510, or DCX 8510-8:

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_3 | FC-VI port a | 6 | - |
| controller_x_3 | FC-VI port b | - | 6 |
| controller_x_3 | HBA port a | 7 | - |
| controller_x_3 | HBA port b | - | 7 |
| controller_x_3 | HBA port c | 8 | - |
| controller_x_3 | HBA port d | - | 8 |
| controller_x_4 | FC-VI port a | 9 | - |
| controller_x_4 | FC-VI port b | - | 9 |
| controller_x_4 | HBA port a | 10 | - |
| controller_x_4 | HBA port b | - | 10 |
| controller_x_4 | HBA port c | 11 | - |
| controller_x_4 | HBA port d | - | 11 |

Brocade port usage for FC-to-SAS bridge connections in an eight-node MetroCluster configuration running ONTAP 9.0

The following table shows bridge port usage when using FibreBridge 7500 bridges:

| Bridge | Bridge port | FC_switch_x_1 | FC_switch_x_2 |
|-------------|-------------|---------------|---------------|
| bridge_x_1a | FC1 | 12 | - |
| bridge_x_1a | FC2 | - | 12 |
| bridge_x_1b | FC1 | 13 | - |
| bridge_x_1b | FC2 | - | 13 |
| bridge_x_2a | FC1 | 14 | - |
| bridge_x_2a | FC2 | - | 14 |
| bridge_x_2b | FC1 | 15 | - |
| bridge_x_2b | FC2 | - | 15 |

| Bridge | Bridge port | FC_switch_x_1 | FC_switch_x_2 |
|-------------|-------------|---------------|---------------|
| bridge_x_3a | FC1 | 16 | - |
| bridge_x_3a | FC2 | - | 16 |
| bridge_x_3b | FC1 | 17 | - |
| bridge_x_3b | FC2 | - | 17 |
| bridge_x_4a | FC1 | 18 | - |
| bridge_x_4a | FC2 | - | 18 |
| bridge_x_4b | FC1 | 19 | - |
| bridge_x_4b | FC2 | - | 19 |

The following table shows bridge port usage when using FibreBridge 6500 bridges with Brocade 6505, 6510, or DCX 8510-8 switches:

| Bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|-------------|------|---------------|---------------|
| bridge_x_1a | FC1 | 12 | - |
| bridge_x_1b | FC1 | - | 12 |
| bridge_x_2a | FC1 | 13 | - |
| bridge_x_2b | FC1 | - | 13 |
| bridge_x_3a | FC1 | 14 | - |
| bridge_x_3b | FC1 | - | 14 |
| bridge_x_4a | FC1 | 15 | - |
| bridge_x_4b | FC1 | - | 15 |
| bridge_x_5a | FC1 | 16 | - |
| bridge_x_5b | FC1 | - | 16 |
| bridge_x_6a | FC1 | 17 | - |
| bridge_x_6b | FC1 | - | 17 |
| bridge_x_7a | FC1 | 18 | - |
| bridge_x_7b | FC1 | - | 18 |
| bridge_x_8a | FC1 | 19 | - |
| bridge_x_8b | FC1 | - | 19 |

Brocade port usage for ISLs in an eight-node MetroCluster configuration running ONTAP 9.0

The following table shows ISL port usage for Brocade 6505, 6510, or DCX 8510-8 switches:

| ISL port | FC_switch_x_1 | FC_switch_x_2 |
|------------|---------------|---------------|
| ISL port 1 | 20 | 20 |

| ISL port | FC_switch_x_1 | FC_switch_x_2 |
|------------|---------------|---------------|
| ISL port 2 | 21 | 21 |
| ISL port 3 | 22 | 22 |
| ISL port 4 | 23 | 23 |

Brocade port usage for controllers in a four-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric. The following table shows usage for the Brocade 6505, 6510, and DCX 8510-8 switches.

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_1 | FC-VI port a | 0 | - |
| controller_x_1 | FC-VI port b | - | 0 |
| controller_x_1 | HBA port a | 1 | - |
| controller_x_1 | HBA port b | - | 1 |
| controller_x_1 | HBA port c | 2 | - |
| controller_x_1 | HBA port d | - | 2 |
| controller_x_2 | FC-VI port a | 3 | - |
| controller_x_2 | FC-VI port b | - | 3 |
| controller_x_2 | HBA port a | 4 | - |
| controller_x_2 | HBA port b | - | 4 |
| controller_x_2 | HBA port c | 5 | - |
| controller_x_2 | HBA port d | - | 5 |

Brocade port usage for bridges in a four-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric.

The following table shows bridge port usage up to port 17 when using FibreBridge 7500 bridges. Additional bridges can be cabled to ports 18 through 23.

| FibreBridge 7500 bridge | Port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-------------------------|------|------------------------------------|------------------------------------|----------------------|----------------------|
| bridge_x_1a | FC1 | 6 | - | 6 | - |
| bridge_x_1a | FC2 | - | 6 | - | 6 |
| bridge_x_1b | FC1 | 7 | - | 7 | - |
| bridge_x_1b | FC2 | - | 7 | - | 7 |

| FibreBridge 7500 bridge | Port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|--------------------------------|-------------|--|---|-----------------------------|-----------------------------|
| bridge_x_2a | FC1 | 8 | - | 12 | - |
| bridge_x_2a | FC2 | - | 8 | - | 12 |
| bridge_x_2b | FC1 | 9 | - | 13 | - |
| bridge_x_2b | FC2 | - | 9 | - | 13 |
| bridge_x_3a | FC1 | 10 | - | 14 | - |
| bridge_x_3a | FC2 | - | 10 | - | 14 |
| bridge_x_3b | FC1 | 11 | - | 15 | - |
| bridge_x_3b | FC2 | - | 11 | - | 15 |
| bridge_x_4a | FC1 | 12 | - | 16 | - |
| bridge_x_4a | FC2 | - | 12 | - | 16 |
| bridge_x_4b | FC1 | 13 | - | 17 | - |
| bridge_x_4b | FC2 | - | 13 | - | 17 |
| | | additional bridges can be cabled through port 19, then ports 24 through 47 | | | |

The following table shows bridge port usage when using FibreBridge 6500 bridges:

| | 6500N bridge port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-------------|--------------------------|---|---|-----------------------------|-----------------------------|
| bridge_x_1a | FC1 | 6 | - | 6 | - |
| bridge_x_1b | FC1 | - | 6 | - | 6 |
| bridge_x_2a | FC1 | 7 | - | 7 | - |
| bridge_x_2b | FC1 | - | 7 | - | 7 |
| bridge_x_3a | FC1 | 8 | - | 12 | - |
| bridge_x_3b | FC1 | - | 8 | - | 12 |
| bridge_x_4a | FC1 | 9 | - | 13 | - |
| bridge_x_4b | FC1 | - | 9 | - | 13 |
| bridge_x_5a | FC1 | 10 | - | 14 | - |
| bridge_x_5b | FC1 | - | 10 | - | 14 |
| bridge_x_6a | FC1 | 11 | - | 15 | - |
| bridge_x_6b | FC1 | - | 11 | - | 15 |

| | 6500N bridge port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-------------|-------------------|--|------------------------------------|--|----------------------|
| bridge_x_7a | FC1 | 12 | - | 16 | - |
| bridge_x_7b | FC1 | - | 12 | - | 16 |
| bridge_x_8a | FC1 | 13 | - | 17 | - |
| bridge_x_8b | FC1 | - | 13 | - | 17 |
| | | additional bridges can be cabled through port 19, then ports 24 through 47 | | additional bridges can be cabled through port 23 | |

Brocade port usage for ISLs in a four-node MetroCluster configuration running ONTAP 9.0

The following table shows ISL port usage:

| ISL port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|------------|------------------------------------|------------------------------------|----------------------|----------------------|
| ISL port 1 | 20 | 20 | 8 | 8 |
| ISL port 2 | 21 | 21 | 9 | 9 |
| ISL port 3 | 22 | 22 | 10 | 10 |
| ISL port 4 | 23 | 23 | 11 | 11 |

Brocade port usage for controllers in a two-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric. The following table shows the cabling for Brocade 6505, 6510, and DCX 8510-8 switches.

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_1 | FC-VI port a | 0 | - |
| controller_x_1 | FC-VI port b | - | 0 |
| controller_x_1 | HBA port a | 1 | - |
| controller_x_1 | HBA port b | - | 1 |
| controller_x_1 | HBA port c | 2 | - |
| controller_x_1 | HBA port d | - | 2 |

Brocade port usage for bridges in a two-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric.

The following table shows bridge port usage up to port 17 when using FibreBridge 7500 bridges with Brocade 6505, 6510, and DCX 8510-8 switches. Additional bridges can be cabled to ports 18 through 23.

| FibreBridge 7500 bridge | Port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-------------------------|------|---|---------------------------------------|---|-------------------------|
| bridge_x_1a | FC1 | 6 | - | 6 | - |
| bridge_x_1a | FC2 | - | 6 | - | 6 |
| bridge_x_1b | FC1 | 7 | - | 7 | - |
| bridge_x_1b | FC2 | - | 7 | - | 7 |
| bridge_x_2a | FC1 | 8 | - | 12 | - |
| bridge_x_2a | FC2 | - | 8 | - | 12 |
| bridge_x_2b | FC1 | 9 | - | 13 | - |
| bridge_x_2b | FC2 | - | 9 | - | 13 |
| bridge_x_3a | FC1 | 10 | - | 14 | - |
| bridge_x_3a | FC2 | - | 10 | - | 14 |
| bridge_x_3a | FC1 | 11 | - | 15 | - |
| bridge_x_3a | FC2 | - | 11 | - | 15 |
| bridge_x_4a | FC1 | 12 | - | 16 | - |
| bridge_x_4a | FC2 | - | 12 | - | 16 |
| bridge_x_4b | FC1 | 13 | - | 17 | - |
| bridge_x_4b | FC2 | - | 13 | - | 17 |
| | | additional bridges can be cabled through port 19, then ports 24 through 47 | | additional bridges can be cabled through port 23 | |

The following table shows bridge port usage when using FibreBridge 6500 bridges with Brocade 6505, 6510, and DCX 8510-8 switches:

| FibreBridge 6500 bridge | Port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-------------------------|------|---------------------------------------|---------------------------------------|-------------------------|-------------------------|
| bridge_x_1a | FC1 | 6 | - | 6 | - |
| bridge_x_1b | FC1 | - | 6 | - | 6 |

| FibreBridge 6500 bridge | Port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|--------------------------------|-------------|--|---|--|---------------------------------|
| bridge_x_2a | FC1 | 7 | - | 7 | - |
| bridge_x_2b | FC1 | - | 7 | - | 7 |
| bridge_x_3a | FC1 | 8 | - | 12 | - |
| bridge_x_3b | FC1 | - | 8 | - | 12 |
| bridge_x_4a | FC1 | 9 | - | 13 | - |
| bridge_x_4b | FC1 | - | 9 | - | 13 |
| bridge_x_5a | FC1 | 10 | - | 14 | - |
| bridge_x_5b | FC1 | - | 10 | - | 14 |
| bridge_x_6a | FC1 | 11 | - | 15 | - |
| bridge_x_6b | FC1 | - | 11 | - | 15 |
| bridge_x_7a | FC1 | 12 | - | 16 | - |
| bridge_x_7b | FC1 | - | 12 | - | 16 |
| bridge_x_8a | FC1 | 13 | - | 17 | - |
| bridge_x_8b | FC1 | - | 13 | - | 17 |
| | | additional bridges can be cabled through port 19, then ports 24 through 47 | | additional bridges can be cabled through port 23 | |

Brocade port usage for ISLs in a two-node MetroCluster configuration running ONTAP 9.0

The following table shows ISL port usage for Brocade 6505, 6510, and DCX 8510-8 switches:

| ISL port | FC_switch_x_1 (6510 or DCX 8510-8) | FC_switch_x_2 (6510 or DCX 8510-8) | FC_switch_x_1 (6505) | FC_switch_x_2 (6505) |
|-----------------|---|---|---------------------------------|---------------------------------|
| ISL port 1 | 20 | 20 | 8 | 8 |
| ISL port 2 | 21 | 21 | 9 | 9 |
| ISL port 3 | 22 | 22 | 10 | 10 |
| ISL port 4 | 23 | 23 | 11 | 11 |

Cisco port usage for controllers in an eight-node MetroCluster configuration running ONTAP 9.0

The following table shows controller port usage on Cisco 9148 and 9148S switches:

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_3 | FC-VI port a | 7 | - |
| controller_x_3 | FC-VI port b | - | 7 |
| controller_x_3 | HBA port a | 8 | - |
| controller_x_3 | HBA port b | - | 8 |
| controller_x_3 | HBA port c | 9 | - |
| controller_x_3 | HBA port d | - | 9 |
| controller_x_4 | FC-VI port a | 10 | - |
| controller_x_4 | FC-VI port b | - | 10 |
| controller_x_4 | HBA port a | 11 | - |
| controller_x_4 | HBA port b | - | 11 |
| controller_x_4 | HBA port c | 13 | - |
| controller_x_4 | HBA port d | - | 13 |

Cisco port usage for FC-to-SAS bridges in an eight-node MetroCluster configuration running ONTAP 9.0

The following table shows bridge port usage up to port 23 when using FibreBridge 7500 bridges when using Cisco 9148 or 9148S switches. Additional bridges can be attached using ports 25 through 48.

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|-------------------------|------|---------------|---------------|
| bridge_x_1a | FC1 | 14 | 14 |
| bridge_x_1a | FC2 | - | - |
| bridge_x_1b | FC1 | 15 | 15 |
| bridge_x_1b | FC2 | - | - |
| bridge_x_2a | FC1 | 17 | 17 |
| bridge_x_2a | FC2 | - | - |
| bridge_x_2b | FC1 | 18 | 18 |
| bridge_x_2b | FC2 | - | - |
| bridge_x_3a | FC1 | 19 | 19 |
| bridge_x_3a | FC2 | - | - |
| bridge_x_3b | FC1 | 21 | 21 |
| bridge_x_3b | FC2 | - | - |
| bridge_x_4a | FC1 | 22 | 22 |
| bridge_x_4a | FC2 | - | - |
| bridge_x_4b | FC1 | 23 | 23 |

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_4b | FC2 | - | - |

Additional bridges can be attached using ports 25 through 48 following the same pattern.

The following table shows bridge port usage up to port 23 when using FibreBridge 6500 bridges with Cisco 9148 or 9148S switches. Additional bridges can be attached using ports 25-48.

| FibreBridge 6500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_1a | FC1 | 14 | - |
| bridge_x_1b | FC1 | - | 14 |
| bridge_x_2a | FC1 | 15 | - |
| bridge_x_2b | FC1 | - | 15 |
| bridge_x_3a | FC1 | 17 | - |
| bridge_x_3b | FC1 | - | 17 |
| bridge_x_4a | FC1 | 18 | - |
| bridge_x_4b | FC1 | - | 18 |
| bridge_x_5a | FC1 | 19 | - |
| bridge_x_5b | FC1 | - | 19 |
| bridge_x_6a | FC1 | 21 | - |
| bridge_x_6b | FC1 | - | 21 |
| bridge_x_7a | FC1 | 22 | - |
| bridge_x_7b | FC1 | - | 22 |
| bridge_x_8a | FC1 | 23 | - |
| bridge_x_8b | FC1 | - | 23 |

Additional bridges can be attached using ports 25 through 48 following the same pattern.

Cisco port usage for ISLs in an eight-node MetroCluster configuration running ONTAP 9.0

The following table shows ISL port usage for Cisco 9148 and 9148S switches:

| ISL ports | FC_switch_x_1 | FC_switch_x_2 |
|------------------|----------------------|----------------------|
| ISL port 1 | 12 | 12 |
| ISL port 2 | 16 | 16 |
| ISL port 3 | 20 | 20 |
| ISL port 4 | 24 | 24 |

Cisco port usage for controllers in a four-node MetroCluster configuration

The cabling is the same for each FC switch in the switch fabric.

The following table shows controller port usage on Cisco 9148, 9148S, and 9250i switches:

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_1 | FC-VI port a | 1 | - |
| controller_x_1 | FC-VI port b | - | 1 |
| controller_x_1 | HBA port a | 2 | - |
| controller_x_1 | HBA port b | - | 2 |
| controller_x_1 | HBA port c | 3 | - |
| controller_x_1 | HBA port d | - | 3 |
| controller_x_2 | FC-VI port a | 4 | - |
| controller_x_2 | FC-VI port b | - | 4 |
| controller_x_2 | HBA port a | 5 | - |
| controller_x_2 | HBA port b | - | 5 |
| controller_x_2 | HBA port c | 6 | - |
| controller_x_2 | HBA port d | - | 6 |

Cisco port usage for FC-to-SAS bridges in a four-node MetroCluster configuration running ONTAP 9.0

The following table shows bridge port usage up to port 14 when using FibreBridge 7500 bridges with Cisco 9148, 9148S, or 9250i switches. Additional bridges can be attached to ports 15 through 32 following the same pattern.

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|-------------------------|------|---------------|---------------|
| bridge_x_1a | FC1 | 7 | - |
| bridge_x_1a | FC2 | - | 7 |
| bridge_x_1b | FC1 | 8 | - |
| bridge_x_1b | FC2 | - | 8 |
| bridge_x_2a | FC1 | 9 | - |
| bridge_x_2a | FC2 | - | 9 |
| bridge_x_2b | FC1 | 10 | - |
| bridge_x_2b | FC2 | - | 10 |
| bridge_x_3a | FC1 | 11 | - |
| bridge_x_3a | FC2 | - | 11 |
| bridge_x_3b | FC1 | 12 | - |

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_3b | FC2 | - | 12 |
| bridge_x_4a | FC1 | 13 | - |
| bridge_x_4a | FC2 | - | 13 |
| bridge_x_4b | FC1 | 14 | - |
| bridge_x_4b | FC2 | - | 14 |

The following table shows bridge port usage when using FibreBridge 6500 bridges up to port 14 on Cisco 9148, 9148S, or 9250i switches. Additional bridges can be attached to ports 15 through 32 following the same pattern.

| FibreBridge 6500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_1a | FC1 | 7 | - |
| bridge_x_1b | FC1 | - | 7 |
| bridge_x_2a | FC1 | 8 | - |
| bridge_x_2b | FC1 | - | 8 |
| bridge_x_3a | FC1 | 9 | - |
| bridge_x_3b | FC1 | - | 9 |
| bridge_x_4a | FC1 | 10 | - |
| bridge_x_4b | FC1 | - | 10 |
| bridge_x_5a | FC1 | 11 | - |
| bridge_x_5b | FC1 | - | 11 |
| bridge_x_6a | FC1 | 12 | - |
| bridge_x_6b | FC1 | - | 12 |
| bridge_x_7a | FC1 | 13 | - |
| bridge_x_7b | FC1 | - | 13 |
| bridge_x_8a | FC1 | 14 | - |
| bridge_x_8b | FC1 | - | 14 |

Additional bridges can be attached to ports 15 through 32 following the same pattern.

Cisco 9148 and 9148S port usage for ISLs on a four-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric.

The following table shows ISL port usage for Cisco 9148 and 9148S switches:

| ISL port | FC_switch_x_1 | FC_switch_x_2 |
|-----------------|----------------------|----------------------|
| ISL port 1 | 36 | 36 |

| ISL port | FC_switch_x_1 | FC_switch_x_2 |
|------------|---------------|---------------|
| ISL port 2 | 40 | 40 |
| ISL port 3 | 44 | 44 |
| ISL port 4 | 48 | 48 |

Cisco 9250i port usage for ISLs on a four-node MetroCluster configuration running ONTAP 9.0

The Cisco 9250i switch uses the FCIP ports for the ISL.

Ports 40 through 48 are 10 GbE ports and are not used in the MetroCluster configuration.

Cisco port usage for controllers in a two-node MetroCluster configuration

The cabling is the same for each FC switch in the switch fabric.

The following table shows controller port usage on Cisco 9148, 9148S, and 9250i switches:

| Component | Port | FC_switch_x_1 | FC_switch_x_2 |
|----------------|--------------|---------------|---------------|
| controller_x_1 | FC-VI port a | 1 | - |
| controller_x_1 | FC-VI port b | - | 1 |
| controller_x_1 | HBA port a | 2 | - |
| controller_x_1 | HBA port b | - | 2 |
| controller_x_1 | HBA port c | 3 | - |
| controller_x_1 | HBA port d | - | 3 |

Cisco port usage for FC-to-SAS bridges in a two-node MetroCluster configuration running ONTAP 9.0

The following table shows bridge port usage up to port 14 when using FibreBridge 7500 bridges with Cisco 9148, 9148S, and 9250i switches. Additional bridges can be attached to ports 15 through 32 following the same pattern.

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|-------------------------|------|---------------|---------------|
| bridge_x_1a | FC1 | 7 | - |
| bridge_x_1a | FC2 | - | 7 |
| bridge_x_1b | FC1 | 8 | - |
| bridge_x_1b | FC2 | - | 8 |
| bridge_x_2a | FC1 | 9 | - |
| bridge_x_2a | FC2 | - | 9 |
| bridge_x_2b | FC1 | 10 | - |
| bridge_x_2b | FC2 | - | 10 |

| FibreBridge 7500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_3a | FC1 | 11 | - |
| bridge_x_3a | FC2 | - | 11 |
| bridge_x_3b | FC1 | 12 | - |
| bridge_x_3b | FC2 | - | 12 |
| bridge_x_4a | FC1 | 13 | - |
| bridge_x_4a | FC2 | - | 13 |
| bridge_x_4b | FC1 | 14 | - |
| bridge_x_4b | FC2 | - | 14 |

The following table shows bridge port usage when using FibreBridge 6500 bridges up to port 14 on Cisco 9148, 9148S, or 9250i switches. Additional bridges can be attached to ports 15 through 32 following the same pattern.

| FibreBridge 6500 bridge | Port | FC_switch_x_1 | FC_switch_x_2 |
|--------------------------------|-------------|----------------------|----------------------|
| bridge_x_1a | FC1 | 7 | - |
| bridge_x_1b | FC1 | - | 7 |
| bridge_x_2a | FC1 | 8 | - |
| bridge_x_2b | FC1 | - | 8 |
| bridge_x_3a | FC1 | 9 | - |
| bridge_x_3b | FC1 | - | 9 |
| bridge_x_4a | FC1 | 10 | - |
| bridge_x_4b | FC1 | - | 10 |
| bridge_x_5a | FC1 | 11 | - |
| bridge_x_5b | FC1 | - | 11 |
| bridge_x_6a | FC1 | 12 | - |
| bridge_x_6b | FC1 | - | 12 |
| bridge_x_7a | FC1 | 13 | - |
| bridge_x_7b | FC1 | - | 13 |
| bridge_x_8a | FC1 | 14 | - |
| bridge_x_8b | FC1 | - | 14 |

Additional bridges can be attached to ports 15 through 32 following the same pattern.

Cisco 9148 or 9148S port usage for ISLs on a two-node MetroCluster configuration running ONTAP 9.0

The cabling is the same for each FC switch in the switch fabric.

The following table shows ISL port usage for Cisco 9148 or 9148S switches:

| ISL port | FC_switch_x_1 | FC_switch_x_2 |
|------------|---------------|---------------|
| ISL port 1 | 36 | 36 |
| ISL port 2 | 40 | 40 |
| ISL port 3 | 44 | 44 |
| ISL port 4 | 48 | 48 |

Cisco 9250i port usage for ISLs on a two-node MetroCluster configuration running ONTAP 9.0

The Cisco 9250i switch uses the FCIP ports for the ISL.

Ports 40 through 48 are 10 GbE ports and are not used in the MetroCluster configuration.

Port assignments for FC switches when using ONTAP 9.1 or later

You need to verify that you are using the specified port assignments when you cable the FC switches using ONTAP 9.1 and later.

Ports that are not used for attaching initiator ports, FC-VI ports, or ISLs can be reconfigured to act as storage ports. However, if the supported RCFs are being used, the zoning must be changed accordingly.

If the supported RCFs are used, ISL ports might not connect to the same ports shown and might need to be reconfigured manually.

If you configured your switches using the port assignments for ONTAP 9, you can continue to use the older assignments. However, new configurations running ONTAP 9.1 or later releases should use the port assignments shown here.

Overall cabling guidelines

You should be aware of the following guidelines when using the cabling tables:

- The Brocade and Cisco switches use different port numbering:
 - On Brocade switches, the first port is numbered 0.
 - On Cisco switches, the first port is numbered 1.
- The cabling is the same for each FC switch in the switch fabric.
- AFF A300 and FAS8200 storage systems can be ordered with one of two options for FC-VI connectivity:
 - Onboard ports 0e and 0f configured in FC-VI mode.
 - Ports 1a and 1b on an FC-VI card in slot 1.
- AFF A700 and FAS9000 storage systems require four FC-VI ports. The following tables show cabling for the FC switches with four FC-VI ports on each controller except for the Cisco 9250i switch.

For other storage systems, use the cabling shown in the tables but ignore the cabling for FC-VI ports c and d.

You can leave those ports empty.

- AFF A400 and FAS8300 storage systems use ports 2a and 2b for FC-VI connectivity.
- If you have two MetroCluster configurations sharing ISLs, use the same port assignments as that for an eight-node MetroCluster cabling.

The number of ISLs you cable may vary depending on site's requirements.

See the section on ISL considerations.

Brocade port usage for controllers in a MetroCluster configuration running ONTAP 9.1 or later

The following tables show port usage on Brocade switches. The tables show the maximum supported configuration, with eight controller modules in two DR groups. For smaller configurations, ignore the rows for the additional controller modules. Note that eight ISLs are supported only on the Brocade 6510, Brocade DCX 8510-8, G620, G630, G620-1, G630-1, and G720 switches.



- Port usage for the Brocade 6505 and Brocade G610 switches in an eight-node MetroCluster configuration is not shown. Due to the limited number of ports, port assignments must be made on a site-by-site basis depending on the controller module model and the number of ISLs and bridge pairs in use.
- The Brocade DCX 8510-8 switch can use the same port layout as the 6510 switch **or** the 7840 switch.

| Configurations using FibreBridge 6500N bridges or FibreBridge 7500N or 7600N using one FC port (FC1 or FC2) only | | | | |
|--|------|---|----------------------------|----------------------------|
| MetroCluster 1 or DR Group 1 | | | | |
| Component | Port | Brocade switch models 6505, 6510, 6520, 7810, 7840, G610, G620, G620-1, G630, G630-1 and DCX 8510-8 | | Brocade switch model G720 |
| | | Connects to FC switch... | Connects to switch port... | Connects to switch port... |

| | | | | |
|----------------|--------------|---|---|----|
| controller_x_1 | FC-VI port a | 1 | 0 | 0 |
| | FC-VI port b | 2 | 0 | 0 |
| | FC-VI port c | 1 | 1 | 1 |
| | FC-VI port d | 2 | 1 | 1 |
| | HBA port a | 1 | 2 | 8 |
| | HBA port b | 2 | 2 | 8 |
| | HBA port c | 1 | 3 | 9 |
| | HBA port d | 2 | 3 | 9 |
| controller_x_2 | FC-VI port a | 1 | 4 | 4 |
| | FC-VI port b | 2 | 4 | 4 |
| | FC-VI port c | 1 | 5 | 5 |
| | FC-VI port d | 2 | 5 | 5 |
| | HBA port a | 1 | 6 | 12 |
| | HBA port b | 2 | 6 | 12 |
| | HBA port c | 1 | 7 | 13 |
| | HBA port d | 2 | 7 | 13 |

Configurations using FibreBridge 6500N bridges or FibreBridge 7500N or 7600N using one FC port (FC1 or FC2) only

MetroCluster 1 or DR Group 1

| Component | Port | Brocade switch models 6505, 6510, 6520, 7810, 7840, G610, G620, G620-1, G630, G630-1 and DCX 8510-8 | | Brocade switch model G720 |
|-----------|-------------|---|----------------------------|----------------------------|
| | | Connects to FC switch... | Connects to switch port... | Connects to switch port... |
| Stack 1 | bridge_x_1a | 1 | 8 | 10 |
| | bridge_x_1b | 2 | 8 | 10 |

| | | | | |
|---------|-------------|---|----|----|
| Stack 2 | bridge_x_2a | 1 | 9 | 11 |
| | bridge_x_2b | 2 | 9 | 11 |
| Stack 3 | bridge_x_3a | 1 | 10 | 14 |
| | bridge_x_4b | 2 | 10 | 14 |
| Stack y | bridge_x_ya | 1 | 11 | 15 |
| | bridge_x_yb | 2 | 11 | 15 |



- On G620, G630, G620-1 and G630-1 switches, additional bridges can be cabled to ports 12 - 17, 20 and 21.
- On G610 switches, additional bridges can be cabled to ports 12 - 19.
- On G720 switches, additional bridges can be cabled to ports 16 - 17, 20 and 21.

Configurations using FibreBridge 6500N bridges or FibreBridge 7500N or 7600N using one FC port (FC1 or FC2) only

MetroCluster 2 or DR Group 2

| | | | Brocade switch model | | | | |
|----------------|--------------|---------------------------|----------------------|------|------------------|----------------------------|------|
| Component | Port | Connects to FC_switch ... | 6510, DCX 8510-8 | 6520 | 7840, DCX 8510-8 | G620, G620-1, G630, G630-1 | G720 |
| controller_x_3 | FC-VI port a | 1 | 24 | 48 | 12 | 18 | 18 |
| | FC-VI port b | 2 | 24 | 48 | 12 | 18 | 18 |
| | FC-VI port c | 1 | 25 | 49 | 13 | 19 | 19 |
| | FC-VI port d | 2 | 25 | 49 | 13 | 19 | 19 |
| | HBA port a | 1 | 26 | 50 | 14 | 24 | 26 |
| | HBA port b | 2 | 26 | 50 | 14 | 24 | 26 |
| | HBA port c | 1 | 27 | 51 | 15 | 25 | 27 |
| | HBA port d | 2 | 27 | 51 | 15 | 25 | 27 |

| | | | | | | | |
|----------------|---------------|---|----|----|----|----|----|
| controller_x_4 | FC-VI port a | 1 | 28 | 52 | 16 | 22 | 22 |
| | FC-VI port b | 2 | 28 | 52 | 16 | 22 | 22 |
| | FC-VI port c | 1 | 29 | 53 | 17 | 23 | 23 |
| | FC-VI port d | 2 | 29 | 53 | 17 | 23 | 23 |
| | HBA port a | 1 | 30 | 54 | 18 | 28 | 30 |
| | HBA port b | 2 | 30 | 54 | 18 | 28 | 30 |
| | HBA port c | 1 | 31 | 55 | 19 | 29 | 31 |
| | HBA port d | 2 | 32 | 55 | 19 | 29 | 31 |
| Stack 1 | bridge_x_51 a | 1 | 32 | 56 | 20 | 26 | 32 |
| | bridge_x_51 b | 2 | 32 | 56 | 20 | 26 | 32 |
| Stack 2 | bridge_x_52 a | 1 | 33 | 57 | 21 | 27 | 33 |
| | bridge_x_52 b | 2 | 33 | 57 | 21 | 27 | 33 |
| Stack 3 | bridge_x_53 a | 1 | 34 | 58 | 22 | 30 | 34 |
| | bridge_x_54 b | 2 | 34 | 58 | 22 | 30 | 34 |
| Stack y | bridge_x_ya | 1 | 35 | 59 | 23 | 31 | 35 |
| | bridge_x_yb | 2 | 35 | 59 | 23 | 31 | 35 |



- On G720 switches, additional bridges can be cabled to ports 36-39.

Configurations using FibreBridge 7500N or 7600N using both FC ports (FC1 and FC2)

MetroCluster 1 or DR Group 1

| Component | | Port | Brocade switch models 6505, 6510, 6520, 7810, 7840, G610, G620, G620-1, G630, G630-1, and DCX 8510-8 | | Brocade switch G720 |
|-----------|-------------|------|--|----------------------------|----------------------------|
| | | | Connects to FC_switch... | Connects to switch port... | Connects to switch port... |
| Stack 1 | bridge_x_1a | FC1 | 1 | 8 | 10 |
| | | FC2 | 2 | 8 | 10 |
| | bridge_x_1B | FC1 | 1 | 9 | 11 |
| | | FC2 | 2 | 9 | 11 |
| Stack 2 | bridge_x_2a | FC1 | 1 | 10 | 14 |
| | | FC2 | 2 | 10 | 14 |
| | bridge_x_2B | FC1 | 1 | 11 | 15 |
| | | FC2 | 2 | 11 | 15 |
| Stack 3 | bridge_x_3a | FC1 | 1 | 12* | 16 |
| | | FC2 | 2 | 12* | 16 |
| | bridge_x_3B | FC1 | 1 | 13* | 17 |
| | | FC2 | 2 | 13* | 17 |
| Stack y | bridge_x_ya | FC1 | 1 | 14* | 20 |
| | | FC2 | 2 | 14* | 20 |
| | bridge_x_yb | FC1 | 1 | 15* | 21 |
| | | FC2 | 2 | 15* | 21 |

* Ports 12 through 15 are reserved for the second MetroCluster or DR group on the Brocade 7840 switch.



Additional bridges can be cabled to ports 16, 17, 20 and 21 in G620, G630, G620-1 and G630-1 switches.

Configurations using FibreBridge 7500N or 7600N using both FC ports (FC1 and FC2)

| MetroCluster 2 or DR Group 2 | | | | | | | |
|------------------------------|--------------|---------------------------|------------------|------|------------------|----------------------------|------|
| Component | Port | Brocade switch model | | | | | |
| | | Connects to FC_switc h... | 6510, DCX 8510-8 | 6520 | 7840, DCX 8510-8 | G620, G620-1, G630, G630-1 | G720 |
| controller_x_3 | FC-VI port a | 1 | 24 | 48 | 12 | 18 | 18 |
| | FC-VI port b | 2 | 24 | 48 | 12 | 18 | 18 |
| | FC-VI port c | 1 | 25 | 49 | 13 | 19 | 19 |
| | FC-VI port d | 2 | 25 | 49 | 13 | 19 | 19 |
| | HBA port a | 1 | 26 | 50 | 14 | 24 | 26 |
| | HBA port b | 2 | 26 | 50 | 14 | 24 | 26 |
| | HBA port c | 1 | 27 | 51 | 15 | 25 | 27 |
| | HBA port d | 2 | 27 | 51 | 15 | 25 | 27 |

| | | | | | | | | |
|----------------|--------------|--------------|---|----|----|----|----|----|
| controller_x_4 | | FC-VI port a | 1 | 28 | 52 | 16 | 22 | 22 |
| | | FC-VI port b | 2 | 28 | 52 | 16 | 22 | 22 |
| | | FC-VI port c | 1 | 29 | 53 | 17 | 23 | 23 |
| | | FC-VI port d | 2 | 29 | 53 | 17 | 23 | 23 |
| | | HBA port a | 1 | 30 | 54 | 18 | 28 | 30 |
| | | HBA port b | 2 | 30 | 54 | 18 | 28 | 30 |
| | | HBA port c | 1 | 31 | 55 | 19 | 29 | 31 |
| | | HBA port d | 2 | 31 | 55 | 19 | 29 | 31 |
| Stack 1 | bridge_x_51a | FC1 | 1 | 32 | 56 | 20 | 26 | 32 |
| | | FC2 | 2 | 32 | 56 | 20 | 26 | 32 |
| | bridge_x_51b | FC1 | 1 | 33 | 57 | 21 | 27 | 33 |
| | | FC2 | 2 | 33 | 57 | 21 | 27 | 33 |
| Stack 2 | bridge_x_52a | FC1 | 1 | 34 | 58 | 22 | 30 | 34 |
| | | FC2 | 2 | 34 | 58 | 22 | 30 | 34 |
| | bridge_x_52b | FC1 | 1 | 35 | 59 | 23 | 31 | 35 |
| | | FC2 | 2 | 35 | 59 | 23 | 31 | 35 |

| | | | | | | | | |
|---|--------------|--|---|----|----|---|----|----|
| Stack 3 | bridge_x_53a | FC1 | 1 | 36 | 60 | - | 32 | 36 |
| | | FC2 | 2 | 36 | 60 | - | 32 | 36 |
| | bridge_x_53b | FC1 | 1 | 37 | 61 | - | 33 | 37 |
| | | FC2 | 2 | 37 | 61 | - | 33 | 37 |
| Stack y | bridge_x_5ya | FC1 | 1 | 38 | 62 | - | 34 | 38 |
| | | FC2 | 2 | 38 | 62 | - | 34 | 38 |
| | bridge_x_5yb | FC1 | 1 | 39 | 63 | - | 35 | 39 |
| | | FC2 | 2 | 39 | 63 | - | 35 | 39 |
|  | | Additional bridges can be cabled to ports 36 to 39 in G620, G630, G620-1, and G630-1 switches. | | | | | | |

Brocade port usage for ISLs in a MetroCluster configuration running ONTAP 9.1 or later

The following table shows ISL port usage for the Brocade switches.



AFF A700 or FAS9000 systems support up to eight ISLs for improved performance. Eight ISLs are supported on the Brocade 6510 and G620 switches.

| Switch model | ISL port | Switch port |
|--------------|------------|-------------|
| Brocade 6520 | ISL port 1 | 23 |
| | ISL port 2 | 47 |
| | ISL port 3 | 71 |
| | ISL port 4 | 95 |
| Brocade 6505 | ISL port 1 | 20 |
| | ISL port 2 | 21 |
| | ISL port 3 | 22 |
| | ISL port 4 | 23 |

| | | |
|--|------------|--------------------------------|
| Brocade 6510 and Brocade DCX 8510-8 | ISL port 1 | 40 |
| | ISL port 2 | 41 |
| | ISL port 3 | 42 |
| | ISL port 4 | 43 |
| | ISL port 5 | 44 |
| | ISL port 6 | 45 |
| | ISL port 7 | 46 |
| | ISL port 8 | 47 |
| Brocade 7810 | ISL port 1 | ge2 (10-Gbps) |
| | ISL port 2 | ge3(10-Gbps) |
| | ISL port 3 | ge4 (10-Gbps) |
| | ISL port 4 | ge5 (10-Gbps) |
| | ISL port 5 | ge6 (10-Gbps) |
| | ISL port 6 | ge7 (10-Gbps) |
| Brocade 7840 Note: The Brocade 7840 switch supports either two 40 Gbps VE-ports or up to four 10 Gbps VE-ports per switch for the creation of FCIP ISLs. | ISL port 1 | ge0 (40-Gbps) or ge2 (10-Gbps) |
| | ISL port 2 | ge1 (40-Gbps) or ge3 (10-Gbps) |
| | ISL port 3 | ge10 (10-Gbps) |
| | ISL port 4 | ge11 (10-Gbps) |
| Brocade G610 | ISL port 1 | 20 |
| | ISL port 2 | 21 |
| | ISL port 3 | 22 |
| | ISL port 4 | 23 |

| | | |
|--|------------|----|
| Brocade G620, G620-1, G630, G630-1, G720 | ISL port 1 | 40 |
| | ISL port 2 | 41 |
| | ISL port 3 | 42 |
| | ISL port 4 | 43 |
| | ISL port 5 | 44 |
| | ISL port 6 | 45 |
| | ISL port 7 | 46 |
| | ISL port 8 | 47 |

Cisco port usage for controllers in a MetroCluster configuration running ONTAP 9.4 or later

The tables show the maximum supported configurations, with eight controller modules in two DR groups. For smaller configurations, ignore the rows for the additional controller modules.

| Cisco 9396S | | | |
|----------------|--------------|----------|----------|
| Component | Port | Switch 1 | Switch 2 |
| controller_x_1 | FC-VI port a | 1 | - |
| | FC-VI port b | - | 1 |
| | FC-VI port c | 2 | - |
| | FC-VI port d | - | 2 |
| | HBA port a | 3 | - |
| | HBA port b | - | 3 |
| | HBA port c | 4 | - |
| | HBA port d | - | 4 |

| | | | |
|----------------|--------------|----|----|
| controller_x_2 | FC-VI port a | 5 | - |
| | FC-VI port b | - | 5 |
| | FC-VI port c | 6 | - |
| | FC-VI port d | - | 6 |
| | HBA port a | 7 | - |
| | HBA port b | - | 7 |
| | HBA port c | 8 | |
| | HBA port d | - | 8 |
| controller_x_3 | FC-VI port a | 49 | |
| | FC-VI port b | - | 49 |
| | FC-VI port c | 50 | - |
| | FC-VI port d | - | 50 |
| | HBA port a | 51 | - |
| | HBA port b | - | 51 |
| | HBA port c | 52 | |
| | HBA port d | - | 52 |

| | | | |
|----------------|--------------|----|----|
| controller_x_4 | FC-VI port a | 53 | - |
| | FC-VI port b | - | 53 |
| | FC-VI port c | 54 | - |
| | FC-VI port d | - | 54 |
| | HBA port a | 55 | - |
| | HBA port b | - | 55 |
| | HBA port c | 56 | - |
| | HBA port d | - | 56 |

| Cisco 9148S | | | |
|----------------|--------------|----------|----------|
| Component | Port | Switch 1 | Switch 2 |
| controller_x_1 | FC-VI port a | 1 | |
| | FC-VI port b | - | 1 |
| | FC-VI port c | 2 | - |
| | FC-VI port d | - | 2 |
| | HBA port a | 3 | - |
| | HBA port b | - | 3 |
| | HBA port c | 4 | - |
| | HBA port d | - | 4 |

| | | | |
|----------------|--------------|----|----|
| controller_x_2 | FC-VI port a | 5 | - |
| | FC-VI port b | - | 5 |
| | FC-VI port c | 6 | - |
| | FC-VI port d | - | 6 |
| | HBA port a | 7 | - |
| | HBA port b | - | 7 |
| | HBA port c | 8 | - |
| | HBA port d | - | 8 |
| controller_x_3 | FC-VI port a | 25 | |
| | FC-VI port b | - | 25 |
| | FC-VI port c | 26 | - |
| | FC-VI port d | - | 26 |
| | HBA port a | 27 | - |
| | HBA port b | - | 27 |
| | HBA port c | 28 | - |
| | HBA port d | - | 28 |

| | | | |
|----------------|--------------|----|----|
| controller_x_4 | FC-VI port a | 29 | - |
| | FC-VI port b | - | 29 |
| | FC-VI port c | 30 | - |
| | FC-VI port d | - | 30 |
| | HBA port a | 31 | - |
| | HBA port b | - | 31 |
| | HBA port c | 32 | - |
| | HBA port d | - | 32 |

| Cisco 9132T | | | |
|----------------|--------------|----------|----------|
| MDS module 1 | | | |
| Component | Port | Switch 1 | Switch 2 |
| controller_x_1 | FC-VI port a | 1 | - |
| | FC-VI port b | - | 1 |
| | FC-VI port c | 2 | - |
| | FC-VI port d | - | 2 |
| | HBA port a | 3 | - |
| | HBA port b | - | 3 |
| | HBA port c | 4 | - |
| | HBA port d | - | 4 |

| | | | |
|---------------------|--------------|----------|----------|
| controller_x_2 | FC-VI port a | 5 | - |
| | FC-VI port b | - | 5 |
| | FC-VI port c | 6 | - |
| | FC-VI port d | - | 6 |
| | HBA port a | 7 | - |
| | HBA port b | - | 7 |
| | HBA port c | 8 | - |
| | HBA port d | - | 8 |
| MDS module 2 | | | |
| Component | Port | Switch 1 | Switch 2 |
| controller_x_3 | FC-VI port a | 1 | - |
| | FC-VI port b | - | 1 |
| | FC-VI port c | 2 | - |
| | FC-VI port d | - | 2 |
| | HBA port a | 3 | - |
| | HBA port b | - | 3 |
| | HBA port c | 4 | - |
| | HBA port d | - | 4 |

| | | | |
|----------------|--------------|---|---|
| controller_x_4 | FC-VI port a | 5 | - |
| | FC-VI port b | - | 5 |
| | FC-VI port c | 6 | - |
| | FC-VI port d | - | 6 |
| | HBA port a | 7 | - |
| | HBA port b | - | 7 |
| | HBA port c | 8 | - |
| | HBA port d | - | 8 |



The following table shows systems with two FC-VI ports. AFF A700 and FAS9000 systems have four FC-VI ports (a, b, c, and d). If using an AFF A700 or FAS9000 system, the port assignments move along by one position. For example, FC-VI ports c and d go to switch port 2 and HBA ports a and b go to switch port 3.

| Cisco 9250i | | | |
|---|--------------|----------|----------|
| Note: The Cisco 9250i switch is not supported for eight-node MetroCluster configurations. | | | |
| Component | Port | Switch 1 | Switch 2 |
| controller_x_1 | FC-VI port a | 1 | - |
| | FC-VI port b | - | 1 |
| | HBA port a | 2 | - |
| | HBA port b | - | 2 |
| | HBA port c | 3 | - |
| | HBA port d | - | 3 |

| | | | |
|----------------|--------------|----|----|
| controller_x_2 | FC-VI port a | 4 | - |
| | FC-VI port b | - | 4 |
| | HBA port a | 5 | - |
| | HBA port b | - | 5 |
| | HBA port c | 6 | - |
| | HBA port d | - | 6 |
| controller_x_3 | FC-VI port a | 7 | - |
| | FC-VI port b | - | 7 |
| | HBA port a | 8 | - |
| | HBA port b | - | 8 |
| | HBA port c | 9 | - |
| | HBA port d | - | 9 |
| controller_x_4 | FC-VI port a | 10 | - |
| | FC-VI port b | - | 10 |
| | HBA port a | 11 | - |
| | HBA port b | - | 11 |
| | HBA port c | 13 | - |
| | HBA port d | - | 13 |

Cisco port usage for FC-to-SAS bridges in a MetroCluster configuration running ONTAP 9.1 or later

| Cisco 9396S | | | |
|-------------------------------------|------|----------|----------|
| FibreBridge 7500 using two FC ports | Port | Switch 1 | Switch 2 |

| | | | |
|-------------|-----|----|----|
| bridge_x_1a | FC1 | 9 | - |
| | FC2 | - | 9 |
| bridge_x_1b | FC1 | 10 | - |
| | FC2 | - | 10 |
| bridge_x_2a | FC1 | 11 | - |
| | FC2 | - | 11 |
| bridge_x_2b | FC1 | 12 | - |
| | FC2 | - | 12 |
| bridge_x_3a | FC1 | 13 | - |
| | FC2 | - | 13 |
| bridge_x_3b | FC1 | 14 | - |
| | FC2 | - | 14 |
| bridge_x_4a | FC1 | 15 | - |
| | FC2 | - | 15 |
| bridge_x_4b | FC1 | 16 | - |
| | FC2 | - | 16 |

Additional bridges can be attached using ports 17 through 40 and 57 through 88 following the same pattern.

| Cisco 9148S | | | |
|--|-------------|-----------------|-----------------|
| FibreBridge 7500 using two FC ports | Port | Switch 1 | Switch 2 |
| bridge_x_1a | FC1 | 9 | - |
| | FC2 | - | 9 |

| | | | |
|-------------|-----|----|----|
| bridge_x_1b | FC1 | 10 | - |
| | FC2 | - | 10 |
| bridge_x_2a | FC1 | 11 | - |
| | FC2 | - | 11 |
| bridge_x_2b | FC1 | 12 | - |
| | FC2 | - | 12 |
| bridge_x_3a | FC1 | 13 | - |
| | FC2 | - | 13 |
| bridge_x_3b | FC1 | 14 | - |
| | FC2 | - | 14 |
| bridge_x_4a | FC1 | 15 | - |
| | FC2 | - | 15 |
| bridge_x_4b | FC1 | 16 | - |
| | FC2 | - | 16 |

Additional bridges for a second DR group or second MetroCluster configuration can be attached using ports 33 through 40 following the same pattern.

| Cisco 9132T | | | |
|--|-------------|---------------|-----------------|
| FibreBridge 7500 using two FC ports | Port | Switch | Switch 2 |
| bridge_x_1a | FC1 | 9 | - |
| | FC2 | - | 9 |
| bridge_x_1b | FC1 | 10 | - |
| | FC2 | - | 10 |

| | | | |
|-------------|-----|----|----|
| bridge_x_2a | FC1 | 11 | - |
| | FC2 | - | 11 |
| bridge_x_2b | FC1 | 12 | - |
| | FC2 | - | 12 |

Additional bridges for a second DR group or second MetroCluster configuration can be attached using the same port numbers on the second MDS module.

| Cisco 9250i | | | |
|--|-------------|-----------------|-----------------|
| FibreBridge 7500 using two FC ports | Port | Switch 1 | Switch 2 |
| bridge_x_1a | FC1 | 14 | - |
| | FC2 | - | 14 |
| bridge_x_1b | FC1 | 15 | - |
| | FC2 | - | 15 |
| bridge_x_2a | FC1 | 17 | - |
| | FC2 | - | 17 |
| bridge_x_2b | FC1 | 18 | - |
| | FC2 | - | 18 |
| bridge_x_3a | FC1 | 19 | - |
| | FC2 | - | 19 |
| bridge_x_3b | FC1 | 21 | - |
| | FC2 | - | 21 |
| bridge_x_4a | FC1 | 22 | - |
| | FC2 | - | 22 |

| | | | |
|-------------|-----|----|----|
| bridge_x_4b | FC1 | 23 | - |
| | FC2 | - | 23 |

Additional bridges for a second DR group or second MetroCluster configuration can be attached using ports 25 through 48 following the same pattern.

The following tables show bridge port usage when using FibreBridge 6500 bridges or FibreBridge 7500 bridges using one FC port (FC1 or FC2) only. For FibreBridge 7500 bridges using one FC port, either FC1 or FC2 can be cabled to the port indicated as FC1. Additional bridges can be attached using ports 25-48.

| FibreBridge 6500 bridges or FibreBridge 7500 bridges using one FC port | | | |
|--|------|-------------|----------|
| FibreBridge 6500 bridge or FibreBridge 7500 using one FC port | Port | Cisco 9396S | |
| | | Switch 1 | Switch 2 |
| bridge_x_1a | FC1 | 9 | - |
| bridge_x_1b | FC1 | - | 9 |
| bridge_x_2a | FC1 | 10 | - |
| bridge_x_2b | FC1 | - | 10 |
| bridge_x_3a | FC1 | 11 | - |
| bridge_x_3b | FC1 | - | 11 |
| bridge_x_4a | FC1 | 12 | - |
| bridge_x_4b | FC1 | - | 12 |
| bridge_x_5a | FC1 | 13 | - |
| bridge_x_5b | FC1 | - | 13 |
| bridge_x_6a | FC1 | 14 | - |
| bridge_x_6b | FC1 | - | 14 |
| bridge_x_7a | FC1 | 15 | - |
| bridge_x_7b | FC1 | - | 15 |
| bridge_x_8a | FC1 | 16 | - |

| | | | |
|-------------|-----|---|----|
| bridge_x_8b | FC1 | - | 16 |
|-------------|-----|---|----|

Additional bridges can be attached using ports 17 through 40 and 57 through 88 following the same pattern.

| FibreBridge 6500 bridges or FibreBridge 7500 bridges using one FC port | | | |
|---|-------------|--------------------|-----------------|
| Bridge | Port | Cisco 9148S | |
| | | Switch 1 | Switch 2 |
| bridge_x_1a | FC1 | 9 | - |
| bridge_x_1b | FC1 | - | 9 |
| bridge_x_2a | FC1 | 10 | - |
| bridge_x_2b | FC1 | - | 10 |
| bridge_x_3a | FC1 | 11 | - |
| bridge_x_3b | FC1 | - | 11 |
| bridge_x_4a | FC1 | 12 | - |
| bridge_x_4b | FC1 | - | 12 |
| bridge_x_5a | FC1 | 13 | - |
| bridge_x_5b | FC1 | - | 13 |
| bridge_x_6a | FC1 | 14 | - |
| bridge_x_6b | FC1 | - | 14 |
| bridge_x_7a | FC1 | 15 | - |
| bridge_x_7b | FC1 | - | 15 |
| bridge_x_8a | FC1 | 16 | - |
| bridge_x_8b | FC1 | - | 16 |

Additional bridges for a second DR group or second MetroCluster configuration can be attached using ports 25 through 48 following the same pattern.

| |
|--------------------|
| Cisco 9250i |
|--------------------|

| FibreBridge 6500 bridge or FibreBridge 7500 using one FC port | Port | Switch 1 | Switch 2 |
|--|-------------|-----------------|-----------------|
| bridge_x_1a | FC1 | 14 | - |
| bridge_x_1b | FC1 | - | 14 |
| bridge_x_2a | FC1 | 15 | - |
| bridge_x_2b | FC1 | - | 15 |
| bridge_x_3a | FC1 | 17 | - |
| bridge_x_3b | FC1 | - | 17 |
| bridge_x_4a | FC1 | 18 | - |
| bridge_x_4b | FC1 | - | 18 |
| bridge_x_5a | FC1 | 19 | - |
| bridge_x_5b | FC1 | - | 19 |
| bridge_x_6a | FC1 | 21 | - |
| bridge_x_6b | FC1 | - | 21 |
| bridge_x_7a | FC1 | 22 | - |
| bridge_x_7b | FC1 | - | 22 |
| bridge_x_8a | FC1 | 23 | - |
| bridge_x_8b | FC1 | - | 23 |

Additional bridges can be attached using ports 25 through 48 following the same pattern.

Cisco port usage for ISLs in an eight-node configuration in a MetroCluster configuration running ONTAP 9.1 or later

The following table shows ISL port usage. ISL port usage is the same on all switches in the configuration.

| Switch model | ISL port | Switch port |
|---------------------|-----------------|--------------------|
|---------------------|-----------------|--------------------|

| | | |
|----------------------------------|-------|----------------------|
| Cisco 9396S | ISL 1 | 44 |
| | ISL 2 | 48 |
| | ISL 3 | 92 |
| | ISL 4 | 96 |
| Cisco 9250i with 24 port license | ISL 1 | 12 |
| | ISL 2 | 16 |
| | ISL 3 | 20 |
| | ISL 4 | 24 |
| Cisco 9148S | ISL 1 | 20 |
| | ISL 2 | 24 |
| | ISL 3 | 44 |
| | ISL 4 | 48 |
| Cisco 9132T | ISL 1 | MDS module 1 port 13 |
| | ISL 2 | MDS module 1 port 14 |
| | ISL 3 | MDS module 1 port 15 |
| | ISL 4 | MDS module 1 port 16 |

Copyright Information

Copyright © 2022 NetApp, Inc. All rights reserved. Printed in the U.S. No part of this document covered by copyright may be reproduced in any form or by any means-graphic, electronic, or mechanical, including photocopying, recording, taping, or storage in an electronic retrieval system- without prior written permission of the copyright owner.

Software derived from copyrighted NetApp material is subject to the following license and disclaimer:

THIS SOFTWARE IS PROVIDED BY NETAPP "AS IS" AND WITHOUT ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WHICH ARE HEREBY DISCLAIMED. IN NO EVENT SHALL NETAPP BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

NetApp reserves the right to change any products described herein at any time, and without notice. NetApp assumes no responsibility or liability arising from the use of products described herein, except as expressly agreed to in writing by NetApp. The use or purchase of this product does not convey a license under any patent rights, trademark rights, or any other intellectual property rights of NetApp.

The product described in this manual may be protected by one or more U.S. patents, foreign patents, or pending applications.

RESTRICTED RIGHTS LEGEND: Use, duplication, or disclosure by the government is subject to restrictions as set forth in subparagraph (c)(1)(ii) of the Rights in Technical Data and Computer Software clause at DFARS 252.277-7103 (October 1988) and FAR 52-227-19 (June 1987).

Trademark Information

NETAPP, the NETAPP logo, and the marks listed at <http://www.netapp.com/TM> are trademarks of NetApp, Inc. Other company and product names may be trademarks of their respective owners.