



# **Port assignments for FC switches when using ONTAP 9.0**

## **ONTAP MetroCluster**

Martin Houser, Ivana Devine  
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# 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	-

Component	Port	FC_switch_x_1	FC_switch_x_2
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_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	Port	FC_switch_x_1	FC_switch_x_2
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 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

Component	Port	FC_switch_x_1	FC_switch_x_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
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

<b>FibreBridge 7500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
		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:

	<b>6500N bridge port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
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
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	-



<b>FibreBridge 7500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
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:

<b>FibreBridge 6500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
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

<b>FibreBridge 6500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
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:

<b>ISL port</b>	<b>FC_switch_x_1 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_2 (6510 or DCX 8510-8)</b>	<b>FC_switch_x_1 (6505)</b>	<b>FC_switch_x_2 (6505)</b>
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:

<b>Component</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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	-

Component	Port	FC_switch_x_1	FC_switch_x_2
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
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.

<b>FibreBridge 6500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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:

<b>ISL ports</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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	-
bridge_x_3b	FC2	-	12
bridge_x_4a	FC1	13	-
bridge_x_4a	FC2	-	13

<b>FibreBridge 7500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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.

<b>FibreBridge 6500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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:

<b>ISL port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
ISL port 1	36	36
ISL port 2	40	40
ISL port 3	44	44

ISL port	FC_switch_x_1	FC_switch_x_2
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

<b>FibreBridge 7500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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.

<b>FibreBridge 6500 bridge</b>	<b>Port</b>	<b>FC_switch_x_1</b>	<b>FC_switch_x_2</b>
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.

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