Migrate Single Chassis to a Multi Chassis System

This chapter contains procedures which enable the user to migrate from a single chassis system to a multi chassis system.

Table 1: Feature History

Feature Name	Release Information	Feature Description
12+3 Multi-chassis configuration	Cisco IOS XR Release 6.5.32	Twelve NCS 4016 chassis are connected to three NCS 4000 fabric chassis to form a multi-chassis system. This multi-chassis system enables scalability by supporting 192 line cards using a single admin and control plane. This ensures seamless switching across the racks.

Migrating a Single Chassis System to a Multi Chassis System (1+1)

The following upgrade procedure is for migrating a SC system to a 1+1 MC system. The MC system comprises, one LCC (LCC0) and one FCC (FCC0).

Before you begin

The following tasks need to be carried out for uprading a single chassis system to a 1+1 multi chassis configuration.

- Login to Admin-VM using the root-system username and password.

- Verify the status of the LCC0. The commands to be run on the XR VM are: **show redundancy**, **show platform** , **show platform vm**. The commands to be run on the Admin VM are: **show platform**, **show chassis**, **show vm**.

- Verify the SMUs (for the upcoming release). The commands to be used are: **show version**, **show install commit**, **show install active**, **show install inactive** .

- Verify the FPD. The commands to be used in the Admin VM are: **show hw-module fpd**.

> **Note**   If any FPD state indicates NEED UPGD or RLOAD REQ, then an FPD upgrade must be performed using the FPD upgrade commands.

Procedure

Step 1   Check the FCC0.

Step 2   Connect the control ethernet cables between LCC0 and FCC0.

Step 3   Add the chassis serial number in system admin configuration mode of LCC0 using the **chassis serial** *serial-number* **rack** *rack-id* command.

Step 4   Switch on FCC0.

Step 5   Verify the 1+1 MC chassis state using the **show chassis** and **show platform** commands in admin mode and the **show platform** command in XR mode.

Step 6   Perform plane by plane upgrade of the fabric planes. The upgrade for plane 0 is discussed here in detail. Follow the same steps for plane 1, plane 2, plane 3.

    a)   Check the controller fabric state for the 1+1 MC system using the **show chassis** command.

    b)   Check if the LCC0 fabric is in single chassis mode using the **show controller fabric plane detail all** command.

    c)   Shutdown plane 0 using the   **controller fabric plane 0 shutdown** command.

    d)   Check if the plane is in the DOWN state using the command **show controller fabric plane** *plane_id* command. This may take a few minutes.

    e)   Add the 1+1 fabric instance configuration as indicated here.

```
config
controller fabric plane 0
instance 0
location F0/FC0
Instance 1
location F0/FC4
commit
exit
```

    f)   Wait for the card to reload. This may take a few minutes. Verify if the card state is indicated as OPERATIONAL.

g) Verify if the LCC fabric cards are in MC mode using the **show controller fabric plane** *plane_id* command.

h) Insert the CXP2 pluggables and wait for a few minutes. Check if the pluggables are initialized using the **show controller fabric cxp summary rack** *rack_id*

The states of the pluggables are indicated as follows:

```
sysadmin-vm:0_RP0:PE2# show controller fabric cxp summary rack 0
===========================================================================
             Fabric side CXP Port Initialization Status Summary
===========================================================================
Active functional role of the Rack [R/S] : 0/RP0
        . - CXP is not present
        p - CXP is not powered
        I - CXP is not Initialized
        U - CXP is not Supported
        T - One or more Tx channel is disabled on the CXP
        R - One or more Rx channel is disabled on the CXP
        G - CXP is Initialized properly
```

i) Perform the data path cabling between LCC0, FCC0 plane 0 fabric cards.

Verify if all the FCC fabric cards configured for this plane (the ports where the CXP2s are inserted and connected with the LCC fabric card ports) are initialised.

j) Unshut plane 0 if the CXP2s are in G state.

G state indicates that the CXP2s are initialized properly.

k) Unshut plane 0 by using the **controller fabric plane 0 no shutdown** command in system admin configuration mode.

l) Verify the datapath cabling connections using the CTC cable management tool.

m) Verify the fabric state details using the following commands:

- **show controller fabric state all detail** in system admin mode.

- **show controller fabric bundle all detail** in system admin mode.

- **show platform** in system admin and XR mode.

- **show redundancy** in XR mode.

- **show platform vm** in XR mode.

- **show install commit** in XR mode.

- **show install active** in XR mode.

- **show install inactive** in XR mode.

Figure 1: Fabric Cable Connections for 1+1 MC Configuration
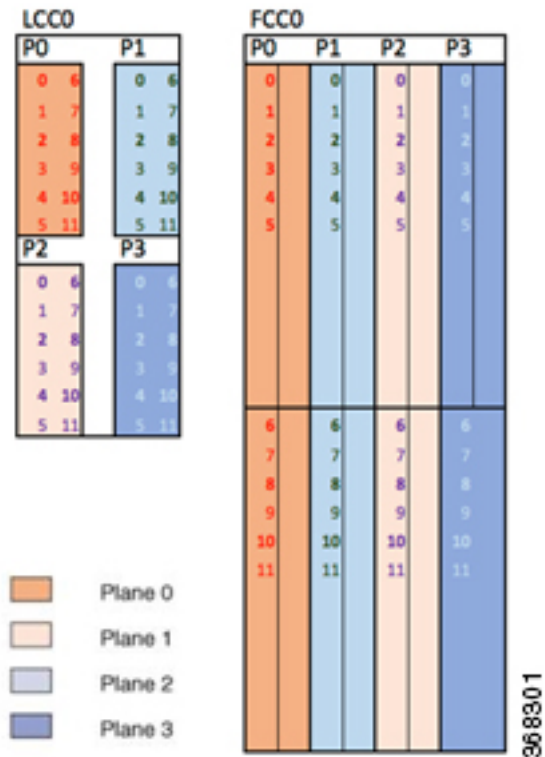
Migrating 1+1 Multi Chassis System to a 4+1 Multi Chassis System

The following upgrade procedure is for migrating a 1+1 MC system to a 4+1 MC system. The MC system comprises, four LCC's (LCC0, LCC1, LCC2, LCC3) and one FCC (FCC0).

Note   No plane by plane shutdown and un-shut is required for adding new LCC to MC.

Before you begin

Complete the 1+1 multi chassis configuration.

Note   The migration of a 1+1 system to a 2+1 or a 3+1 MC system follows the same procedure as discussed below. The 2+1 MC system includes LCC0 and LCC1; the 3+1 MC system includes LCC0, LCC1 and LCC2.

Procedure

Step 1 Check that LCC1, LCC2, LCC3 are in switched-off state.

Note The LCCs should not have any line cards on the chassis.

During the addition of an LCCs, when the line cards are not yet inserted, the display outputs showing the plane status information is different for the show fabric health and show controller fabric commands. After the line cards are inserted into the newly added LCC, the display outputs showing the plane status is identical.

Step 2 Perform the Control Cable connection between LCC1, LCC2, LCC3, FCC0 configuration

Step 3 Add the Chassis Serial Number in the Sysadmin config mode of LCC0.

Always use the appropriate Serial Numbers.

```
chassis serial FLM184322M1 rack 1
chassis serial FLM184322M2 rack 2
chassis serial FLM184322M3 rack 3
```

Step 4 Connect the datapath fabric connections for all the planes, as per the instance configuration of 4+1 MC system.

Fabric Connection can be done together for all the planes for the new LCCs.

Note For adding new LCC, there is no change required in fabric instance configuration.

Step 5 Switch on LCC1, LCC2, LCC3.

Step 6 Verify the 4+1 MC chassis state using the following commands:

- **show chassis**

- **show platform**

- **show controller fabric plane all detail**

- **show controller fabric bundle all detail**

Figure 2: Cisco NCS 4000 Multi Chassis 4+1 Configuration

Cabling Plan for the 4+1 MC Configuration

The following tables show the cabling plan for a 4+1 multi-chassis configuration.

Table 2: Cabling Plan for LCC0 in a 4+1 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
0/FC0/0	F0/FC0/0	0/FC1/0	F0/FC1/0	0/FC2/0	F0/FC2/0	0/FC3/0	F0/FC3/0
0/FC0/1	F0/FC0/1	0/FC1/1	F0/FC1/1	0/FC2/1	F0/FC2/1	0/FC3/1	F0/FC3/1
0/FC0/2	F0/FC0/2	0/FC1/2	F0/FC1/2	0/FC2/2	F0/FC2/2	0/FC3/2	F0/FC3/2
0/FC0/3	F0/FC0/3	0/FC1/3	F0/FC1/3	0/FC2/3	F0/FC2/3	0/FC3/3	F0/FC3/3
0/FC0/4	F0/FC0/4	0/FC1/4	F0/FC1/4	0/FC2/4	F0/FC2/4	0/FC3/4	F0/FC3/4
0/FC0/5	F0/FC0/5	0/FC1/5	F0/FC1/5	0/FC2/5	F0/FC2/5	0/FC3/5	F0/FC3/5
0/FC0/6	F0/FC4/0	0/FC1/6	F0/FC5/0	0/FC2/6	F0/FC6/0	0/FC3/6	F0/FC7/0
0/FC0/7	F0/FC4/1	0/FC1/7	F0/FC5/1	0/FC2/7	F0/FC6/1	0/FC3/7	F0/FC7/1
0/FC0/8	F0/FC4/2	0/FC1/8	F0/FC5/2	0/FC2/8	F0/FC6/2	0/FC3/8	F0/FC7/2
0/FC0/9	F0/FC4/3	0/FC1/9	F0/FC5/3	0/FC2/9	F0/FC6/3	0/FC3/9	F0/FC7/3
0/FC0/10	F0/FC4/4	0/FC1/10	F0/FC5/4	0/FC2/10	F0/FC6/4	0/FC3/10	F0/FC7/4
0/FC0/11	F0/FC4/5	0/FC1/11	F0/FC5/5	0/FC2/11	F0/FC6/5	0/FC3/11	F0/FC7/5

Table 3: Cabling Plan for LCC1 in a 4+1 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
1/FC0/0	F0/FC0/6	1/FC1/0	F0/FC1/6	1/FC2/0	F0/FC2/6	1/FC3/0	F0/FC3/6
1/FC0/1	F0/FC0/7	1/FC1/1	F0/FC1/7	1/FC2/1	F0/FC2/7	2/FC3/1	F0/FC3/7
1/FC0/2	F0/FC0/8	1/FC1/2	F0/FC1/8	1/FC2/2	F0/FC2/8	1/FC3/2	F0/FC3/8
1/FC0/3	F0/FC0/9	1/FC1/3	F0/FC1/9	1/FC2/3	F0/FC2/9	1/FC3/3	F0/FC3/9
1/FC0/4	F0/FC0/10	1/FC1/4	F0/FC1/10	1/FC2/4	F0/FC2/10	1/FC3/4	F0/FC3/10

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**
1/FC0/5	F0/FC0/11	1/FC1/5	F0/FC1/11	1/FC2/5	F0/FC2/11	1/FC3/5	F0/FC3/11
1/FC0/6	F0/FC4/6	1/FC1/6	F0/FC5/6	1/FC2/6	F0/FC6/6	1/FC3/6	F0/FC7/6
1/FC0/7	F0/FC4/7	1/FC1/7	F0/FC5/7	1/FC2/7	F0/FC6/7	1/FC3/7	F0/FC7/7
1/FC0/8	F0/FC4/8	1/FC1/8	F0/FC5/8	1/FC2/8	F0/FC6/8	1/FC3/8	F0/FC7/8
1/FC0/9	F0/FC4/9	1/FC1/9	F0/FC5/9	1/FC2/9	F0/FC6/9	1/FC3/9	F0/FC7/9
1/FC0/10	F0/FC4/10	1/FC1/10	F0/FC5/10	1/FC2/10	F0/FC6/10	1/FC3/10	F0/FC7/10
1/FC0/11	F0/FC4/11	1/FC1/11	F0/FC5/11	1/FC2/11	F0/FC6/11	1/FC3/11	F2/FC7/11

Table 4: Cabling Plan for LCC2 in a 4+1 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**
2/FC0/0	F0/FC0/12	2/FC1/0	F0/FC1/12	2/FC2/0	F0/FC2/12	2/FC3/0	F0/FC3/12
2/FC0/1	F0/FC0/13	2/FC1/1	F0/FC1/13	2/FC2/1	F0/FC2/13	2/FC3/1	F0/FC3/13
2/FC0/2	F0/FC0/14	2/FC1/2	F0/FC1/14	2/FC2/2	F0/FC2/14	2/FC3/2	F0/FC3/14
2/FC0/3	F0/FC0/15	2/FC1/3	F0/FC1/15	2/FC2/3	F0/FC2/15	2/FC3/3	F0/FC3/15
2/FC0/4	F0/FC0/16	2/FC1/4	F0/FC1/16	2/FC2/4	F0/FC2/16	2/FC3/4	F0/FC3/16
2/FC0/5	F0/FC0/17	2/FC1/5	F0/FC1/17	2/FC2/5	F0/FC2/17	2/FC3/5	F0/FC3/17
2/FC0/6	F0/FC4/12	2/FC1/6	F0/FC5/12	2/FC2/6	F0/FC6/12	2/FC3/6	F0/FC7/12
2/FC0/7	F0/FC4/13	2/FC1/7	F0/FC5/13	2/FC2/7	F0/FC6/13	2/FC3/7	F0/FC7/13
2/FC0/8	F0/FC4/14	2/FC1/8	F0/FC5/14	2/FC2/8	F0/FC6/14	2/FC3/8	F0/FC7/14
2/FC0/9	F0/FC4/15	2/FC1/9	F0/FC5/15	2/FC2/9	F0/FC6/15	2/FC3/9	F0/FC7/15
2/FC0/10	F0/FC4/16	2/FC1/10	F0/FC5/16	2/FC2/10	F0/FC6/16	2/FC3/10	F0/FC7/16
2/FC0/11	F0/FC4/17	2/FC1/11	F0/FC5/17	2/FC2/11	F0/FC6/17	2/FC3/11	F0/FC7/17

Table 5: Cabling Plan for LCC3 in a 4+1 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
3/FC0/0	F0/FC0/18	3/FC1/0	F0/FC1/18	3/FC2/0	F0/FC2/18	3/FC3/0	F0/FC3/18
3/FC0/1	F0/FC0/19	3/FC1/1	F0/FC1/19	3/FC2/1	F0/FC2/19	3/FC3/1	F0/FC3/19
3/FC0/2	F0/FC0/20	3/FC1/2	F0/FC1/20	3/FC2/2	F0/FC2/20	3/FC3/2	F0/FC3/20
3/FC0/3	F0/FC0/21	3/FC1/3	F0/FC1/21	3/FC2/3	F0/FC2/21	3/FC3/3	F0/FC3/21
3/FC0/4	F0/FC0/22	3/FC1/4	F0/FC1/22	3/FC2/4	F0/FC2/22	3/FC3/4	F0/FC3/22
3/FC0/5	F0/FC0/23	3/FC1/5	F0/FC1/23	3/FC2/5	F0/FC2/23	3/FC3/5	F0/FC3/23
3/FC0/6	F0/FC4/18	3/FC1/6	F0/FC5/18	3/FC2/6	F0/FC6/18	3/FC3/6	F0/FC7/18
3/FC0/7	F0/FC4/19	3/FC1/7	F0/FC5/19	3/FC2/7	F0/FC6/19	3/FC3/7	F0/FC7/19
3/FC0/8	F0/FC4/20	3/FC1/8	F0/FC5/20	3/FC2/8	F0/FC6/20	3/FC3/8	F0/FC7/20
3/FC0/9	F0/FC4/21	3/FC1/9	F0/FC5/21	3/FC2/9	F0/FC6/21	3/FC3/9	F0/FC7/21
3/FC0/10	F0/FC4/22	3/FC1/10	F0/FC5/22	3/FC2/10	F0/FC6/22	3/FC3/10	F0/FC7/22
3/FC0/11	F0/FC4/23	3/FC1/11	F0/FC5/23	3/FC2/11	F0/FC6/23	3/FC3/11	F0/FC7/23

Migrating a Single Chassis System to a Multi Chassis System (1+2)

The following upgrade procedure is for migrating a SC system to a 1+2 MC system. The MC system comprises, one LCC (LCC0) and two FCCs (FCC0 , FCC1).

Before you begin

The following tasks need to be carried out for uprading a single chassis system to a 1+2 multi chassis configuration.

- Login to Admin-VM using the root-system username and password.

- Verify the status of the LCC0. The commands to be run on the XR VM are: **show redundancy**, **show platform** , **show platform vm**. The commands to be run on the Admin VM are: **show platform**, **show chassis**, **show vm**.

- Verify the SMUs of the upcoming release. The commands to be used are: **show version**, **show install commit**, **show install active**, **show install inactive** .

- Verify the FPD. The commands to be used in the Admin VM are: **show hw-module fpd**.

Note	If any FPD state indicates NEED UPGD or RLOAD REQ, then an FPD upgrade must be performed using the FPD upgrade commands.

Procedure

Step 1   Check the FCC0 and FCC1 are not powered-on.

Step 2   Connect the control ethernet cables between LCC0, FCC0 and FCC1.

Step 3   Add the chassis serial number in system admin configuration mode of LCC0 using the **chassis serial** *serial-number* **rack** *rack-id* command.

Step 4   Switch on FCC0 and FCC1.

Step 5   Verify the 1+2 MC chassis state using the **show chassis** and **show platform** commands in admin mode and the **show platform** command in XR mode.

Step 6   Perform plane by plane upgrade of the fabric planes. The upgrade for plane 0 is discussed here in detail. Follow the same steps for plane 1, plane 2, plane 3.

    a)   Check the controller fabric state for the 1+2 MC system using the **show chassis** command.

    b)   Check if the LCC0 fabric is in single chassis mode using the **show controller fabric plane detail all** command.

    c)   Shutdown plane 0 using the **controller fabric plane 0 shutdown** command.

    d)   Check if the plane is in the DOWN state using the command **show controller fabric plane** *plane_id* command. This may take a few minutes.

    e)   Add the 1+2 fabric instance configuration as indicated here.

    f)   Wait for the card to reload. This may take a few minutes. Verify if the card state is indicated as OPERATIONAL.

    g)   Verify if the LCC fabric cards are in MC mode using the **show controller fabric plane** *plane_id* command.

    h)   Insert the CXP2 pluggables and wait for a few minutes. Check if the pluggables are initialized using the **show controller fabric cxp summary rack** *rack_id*

    The states of the pluggables are indicated as follows:

```
sysadmin-vm:0_RP0:PE2# show controller fabric cxp summary rack 0
===========================================================================
            Fabric side CXP Port Initialization Status Summary
===========================================================================
Active functional role of the Rack [R/S] : 0/RP0
        . - CXP is not present
        p - CXP is not powered
        I - CXP is not Initialized
        U - CXP is not Supported
        T - One or more Tx channel is disabled on the CXP
        R - One or more Rx channel is disabled on the CXP
        G - CXP is Initialized properly
```

    i)   Perform the data path cabling between LCC0, FCC0, FCC1 plane 0 fabric cards.

    j)   Unshut plane 0 if the CXP2s are in G state.

    G state indicates that the CXP2s are initialized properly.

    k)   Unshut plane 0 by using the **controller fabric plane 0 no shutdown** command in system admin configuration mode.

l) Verify the fabric state details using the following commands:

  • **show controller fabric state all detail** in system admin mode.

  • **show controller fabric bundle all detail** in system admin mode.

  • **show platform** in system admin and XR mode.

  • **show redundancy** in XR mode.

  • **show platform vm** in XR mode.

  • **show install commit** in XR mode.

  • **show install active** in XR mode.

  • **show install inactive** in XR mode.

Migrating a 1+2 Multi Chassis System to 2+2 Multi Chassis System

The following upgrade procedure is for migrating a 1+2 MC system to a 2+2 MC system. The MC system comprises, two LCC's (LCC0, LCC1)) and two FCCs (FCC0 , FCC1).

Note No plane by plane shutdown and un-shut is required for adding new LCC to MC.

Before you begin

Complete the 1+2 Multi Chassis (MC) configuration.

Procedure

Step 1 Check that LCC1 is switched-off state.

Note The LCC1 should not have any Line Cards on the Chassis.

Step 2 Perform the control cable connection between LCC1, FCC0 and FCC1 for a 2+2 configuration

Step 3 Add the Chassis Serial Number in SysAdmin Config of LCC0.

Always use the appropriate Serial Numbers.

Step 4 Connect the datapath fabric connections for all the planes, as per the instance configuration of 1+2 MC system.

Fabric Connection can be done together for all the planes for the new LCC.

Note For adding new LCC, there is no change required in fabric instance configuration.

Step 5   Switch on LCC1.

Step 6   Verify the 2+2 MC chassis state using the following commands:

a) **show chassis**

b) **show platform**

c) **show controller fabric plane all detail**

d) **show controller fabric bundle all detail**

e) **show platform**

Example:

```
RP/0/RP0:hostname# admin
sysadmin-vm:0_RP0# show chassis
sysadmin-vm:0_RP0# show platform
sysadmin-vm:0_RP0# show controller fabric plane all detail
sysadmin-vm:0_RP0# show controller fabric bundle all detail
sysadmin-vm:0_RP0# exit
RP/0/RP0:hostname# show platform
```

Figure 3: Cisco NCS 4000 Multi-Chassis 2+2 Configuration
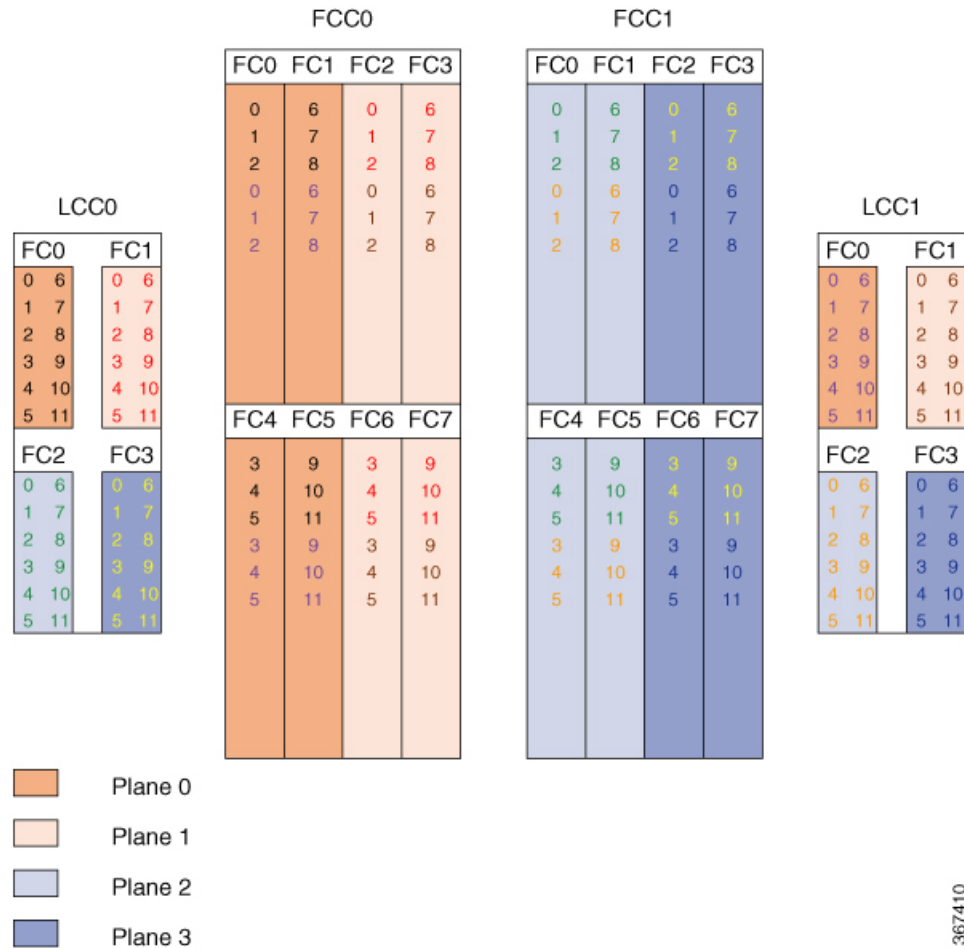
The following table shows the cabling plan for a 2+2 multi-chassis configuration. The FCC0 has the fabric instances 0 through 3 for planes 0 and 1. The FCC1 has the fabric instances 0 through 3 for planes 2 and 3.

Table 6: Cabling Plan for LCC0 in a 2+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC0 slot/port	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/0 (FCC0)		FC1/0 to FC2/0 (FCC0)		FC2/0 to FC0/0 (FCC1)		FC3/0 to FC2/0 (FCC1)	
FC0/1 to FC0/1 (FCC0)		FC1/1 to FC2/1 (FCC0)		FC2/1 to FC0/1 (FCC1)		FC3/1 to FC2/1 (FCC1)	
FC0/2 to FC0/2 (FCC0)		FC1/2 to FC2/2 (FCC0)		FC2/2 to FC0/2 (FCC1)		FC3/2 to FC2/2 (FCC1)	
FC0/3 to FC4/0 (FCC0)		FC1/3 to FC6/0 (FCC0)		FC2/3 to FC4/0 (FCC1)		FC3/3 to FC6/0 (FCC1)	
FC0/4 to FC4/1 (FCC0)		FC1/4 to FC6/1 (FCC0)		FC2/4 to FC4/1 (FCC1)		FC3/4 to FC6/1 (FCC1)	
FC0/5 to FC4/2 (FCC0)		FC1/5 to FC6/2 (FCC0)		FC2/5 to FC4/2 (FCC1)		FC3/5 to FC6/2 (FCC1)	
FC0/6 to FC1/0 (FCC0)		FC1/6 to FC3/0 (FCC0)		FC2/6 to FC1/0 (FCC1)		FC3/6 to FC3/0 (FCC1)	
FC0/7 to FC1/1 (FCC0)		FC1/7 to FC3/1 (FCC0)		FC2/7 to FC1/1 (FCC1)		FC3/7 to FC3/1 (FCC1)	
FC0/8 to FC1/2 (FCC0)		FC1/8 to FC3/2 (FCC0)		FC2/8 to FC1/2 (FCC1)		FC3/8 to FC3/2 (FCC1)	
FC0/9 to FC5/0 (FCC0)		FC1/9 to FC7/0 (FCC0)		FC2/9 to FC5/0 (FCC1)		FC3/9 to FC7/0 (FCC1)	
FC0/10 to FC5/1 (FCC0)		FC1/10 to FC7/1 (FCC0)		FC2/10 to FC5/1 (FCC1)		FC3/10 to FC7/1 (FCC1)	
FC0/11 to FC5/2 (FCC0)		FC1/11 to FC7/2 (FCC0)		FC2/11 to FC5/2 (FCC1)		FC3/11 to FC7/2 (FCC1)	

Table 7: Cabling Plan for LCC1 in a 2+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC1 slot/port	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/3 (FCC0)		FC1/0 to FC2/3 (FCC0)		FC2/0 to FC0/3 (FCC1)		FC3/0 to FC2/3 (FCC1)	
FC0/1 to FC0/4 (FCC0)		FC1/1 to FC2/4 (FCC0)		FC2/1 to FC0/4 (FCC1)		FC3/1 to FC2/4 (FCC1)	
FC0/2 to FC05 (FCC0)		FC1/2 to FC2/5 (FCC0)		FC2/2 to FC0/5 (FCC1)		FC3/2 to FC2/5 (FCC1)	
FC0/3 to FC4/3 (FCC0)		FC1/3 to FC6/3 (FCC0)		FC2/3 to FC4/3 (FCC1)		FC3/3 to FC6/3 (FCC1)	
FC0/4 to FC4/4 (FCC0)		FC1/4 to FC6/4 (FCC0)		FC2/4 to FC4/4 (FCC1)		FC3/4 to FC6/4 (FCC1)	
FC0/5 to FC4/5 (FCC0)		FC1/5 to FC6/5 (FCC0)		FC2/5 to FC4/5 (FCC1)		FC3/5 to FC6/5 (FCC1)	
FC0/6 to FC1/3 (FCC0)		FC1/6 to FC3/3 (FCC0)		FC2/6 to FC1/3 (FCC1)		FC3/6 to FC3/3 (FCC1)	
FC0/7 to FC1/4 (FCC0)		FC1/7 to FC3/4 (FCC0)		FC2/7 to FC1/4 (FCC1)		FC3/7 to FC3/4 (FCC1)	
FC0/8 to FC1/5 (FCC0)		FC1/8 to FC3/5 (FCC0)		FC2/8 to FC1/5 (FCC1)		FC3/8 to FC3/5 (FCC1)	

Plane 0		Plane 1		Plane 2		Plane 3	
LCC1 slot/port	FCC slot/port/ chassis	LCC1 slot/port	FCC slot/port/ chassis	LCC1 slot/port	FCC slot/port/ chassis	LCC1 slot/port	FCC slot/port/ chassis
FC0/9 to FC5/3 (FCC0)		FC1/9 to FC7/3 (FCC0)		FC2/9 to FC5/3 (FCC1)		FC3/9 to FC7/3 (FCC1)	
FC0/10 to FC5/4 (FCC0)		FC1/10 to FC7/4 (FCC0)		FC2/10 to FC5/4 (FCC1)		FC3/10 to FC7/4 (FCC1)	
FC0/11 to FC5/5 (FCC0)		FC1/11 to FC7/5 (FCC0)		FC2/11 to FC5/5 (FCC1)		FC3/11 to FC7/5 (FCC1)	

Vertical Plane Configuration for 2+2

This section describes how to configure a multi chassis 2+2 configuration. In this configuration, two line card chassis (LCC0 and LCC1) are connected to two fabric card chassis (FCC0 and FCC1).

Chassis Serial Configurations for 2+2

LCC0 and LCC1 are on rack0 and rack1 respectively. FCC0 and FCC1 are on rack F0 and F1 respectively. Use the **chassis serial** *serial_number* **rack** *rack_id* command. For a detailed procedure, see Assign Rack Number to Chassis

```
Chassis serial <serial number> rack 1
chassis serial <serial number> rack F0
chassis serial <serial number> rack F1
chassis serial <serial number> rack 0
```

Fabric Instance Configuration for 2+2

The following configurations indicate the instances for fabric plane 0,1,2,3. For a detailed procedure, see Associate a Fabric Card in a Fabric Card Chassis to a Fabric Plane

- Fabric instance configuration for fabric plane 0.

```
config
controller fabric plane 0
instance 0
location F0/FC0

instance 1
location F0/FC4

instance 2
location F0/FC1

instance 3
location F0/FC5

commit
exit
```

- Fabric instance configuration for fabric plane 1.

```
config
controller fabric plane 1
instance 0
location F0/FC2

instance 1
location F0/FC6

instance 2
location F0/FC3

instance 3
location F0/FC7

commit
exit
```

- Fabric instance configuration for fabric plane 2.

```
config
controller fabric plane 2
instance 0
location F1/FC0

instance 1
location F1/FC4

instance 2
location F1/FC1

instance 3
location F1/FC5

commit
exit
```

- Fabric instance configuration for fabric plane 3.

```
config
controller fabric plane 3
instance 0
location F1/FC2

instance 1
location F1/FC6

instance 2
location F1/FC3

instance 3
location F1/FC7

commit
exit
```

Migrating a 1+2 Multi Chassis System to 4+2 Multi Chassis System

The following upgrade procedure is for migrating a 1+2 MC system to a 4+2 MC system. The MC system comprises, four LCC's (LCC0, LCC1, LCC2, and LCC3) and two FCCs (FCC0 , FCC1).

Note No plane by plane shutdown and un-shut is required for adding new LCC to MC system.

Before you begin

Complete the 1+2 Multi Chassis (MC) configuration.

Note The migration of a 1+2 system to 3+2 system follows the same procedure as discussed below. The 3+2 MC system includes LCC0, LCC1 and LCC2 and FCC0 and FCC1.

Procedure

Step 1 Check that LCC1, LCC2 and LCC3 are not powered-on.

Note The LCC1, LCC2 and LCC3 should not have any line cards on the chassis.

Step 2 Perform the Control Cable connection between LCC1, LCC2, LCC3 and FCC0/FCC1 for a 4+2 configuration.

Step 3 Add the Chassis Serial Number in SysAdmin Config of LCC0.

Always use the appropriate Serial Numbers.

Step 4 Connect the datapath fabric connections for all the planes, as per the instance configuration of 2+2 MC system.

Fabric Connection can be done together for all the planes for the new LCC.

Note For adding new LCC, there is no change required in fabric instance configuration.

Step 5 Switch LCC1, LCC2 and LCC3..

Step 6 Verify the 4+2 MC chassis state using following commands:

a) show chassis
b) show platform
c) show controller fabric plane all detail
d) show controller fabric bundle all detail
e) show platform

Example:

```
RP/0/RP0:hostname# admin
sysadmin-vm:0_RP0# show chassis
```

```
sysadmin-vm:0_RP0# show platform
sysadmin-vm:0_RP0# show controller fabric plane all detail
sysadmin-vm:0_RP0# show controller fabric bundle all detail
sysadmin-vm:0_RP0# exit
RP/0/RP0:hostname# show platform
```

Figure 4: Cisco NCS 4000 Multi-Chassis 4+2 Configuration
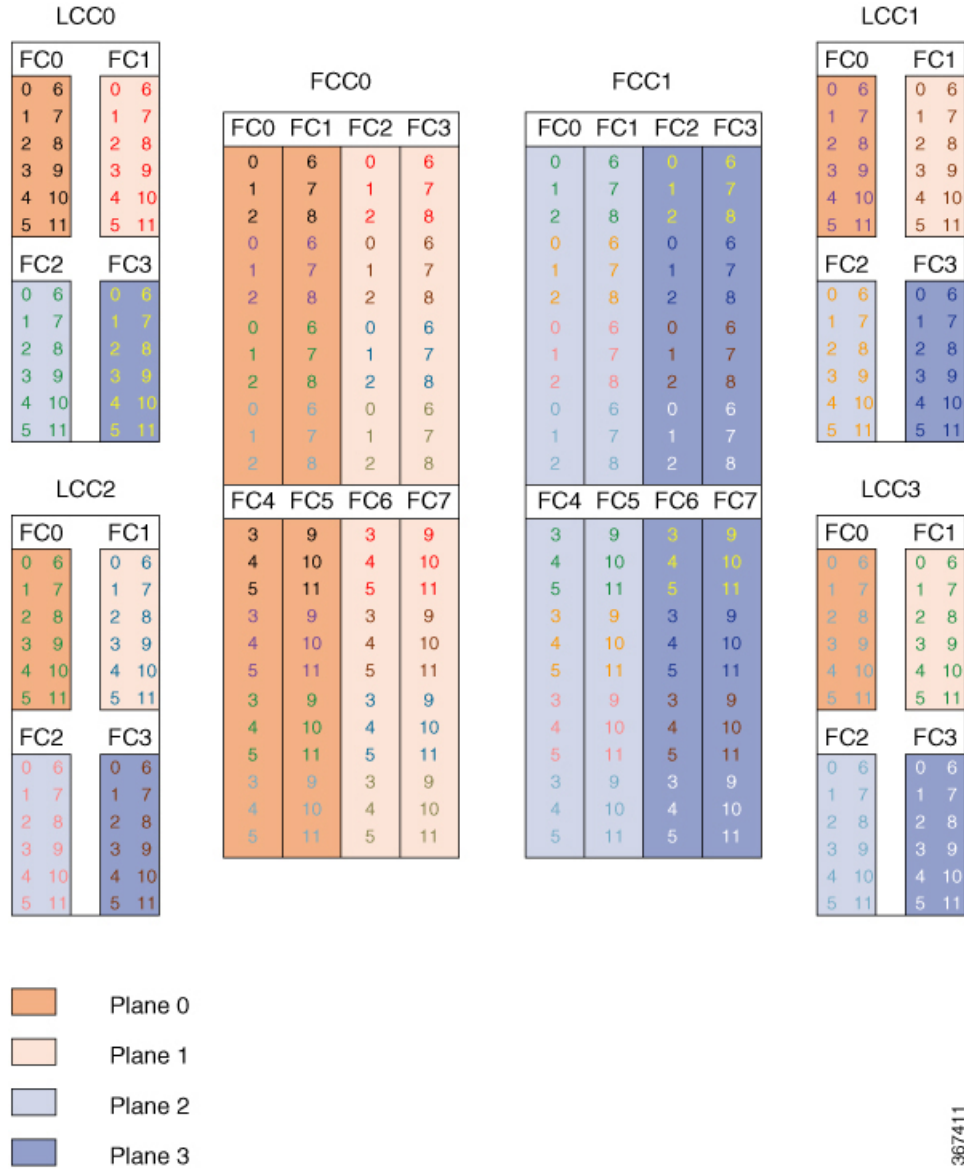
The following tables show the cabling plan for a 4+2 multi-chassis configuration. The FCC0 has the fabric instances 0 through 3 for planes 0, and 1. The FCC1 has the fabric instances 0 through 3 for planes 2 and 3.

Table 8: Cabling Plan for LCC0 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC0 slot/port	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/0 (FCC0)		FC1/0 to FC2/0 (FCC0)		FC2/0 to FC0/0 (FCC1)		FC3/0 to FC2/0 (FCC1)	
FC0/1 to FC0/1 (FCC0)		FC1/1 to FC2/1 (FCC0)		FC2/1 to FC0/1 (FCC1)		FC3/1 to FC2/1 (FCC1)	
FC0/2 to FC0/2 (FCC0)		FC1/2 to FC2/2 (FCC0)		FC2/2 to FC0/2 (FCC1)		FC3/2 to FC2/2 (FCC1)	
FC0/3 to FC4/0 (FCC0)		FC1/3 to FC6/0 (FCC0)		FC2/3 to FC4/0 (FCC1)		FC3/3 to FC6/0 (FCC1)	
FC0/4 to FC4/1 (FCC0)		FC1/4 to FC6/1 (FCC0)		FC2/4 to FC4/1 (FCC1)		FC3/4 to FC6/1 (FCC1)	
FC0/5 to FC4/2 (FCC0)		FC1/5 to FC6/2 (FCC0)		FC2/5 to FC4/2 (FCC1)		FC3/5 to FC6/2 (FCC1)	
FC0/6 to FC1/0 (FCC0)		FC1/6 to FC3/0 (FCC0)		FC2/6 to FC1/0 (FCC1)		FC3/6 to FC3/0 (FCC1)	
FC0/7 to FC1/1 (FCC0)		FC1/7 to FC3/1 (FCC0)		FC2/7 to FC1/1 (FCC1)		FC3/7 to FC3/1 (FCC1)	
FC0/8 to FC1/2 (FCC0)		FC1/8 to FC3/2 (FCC0)		FC2/8 to FC1/2 (FCC1)		FC3/8 to FC3/2 (FCC1)	
FC0/9 to FC5/0 (FCC0)		FC1/9 to FC7/0 (FCC0)		FC2/9 to FC5/0 (FCC1)		FC3/9 to FC7/0 (FCC1)	
FC0/10 to FC5/1 (FCC0)		FC1/10 to FC7/1 (FCC0)		FC2/10 to FC5/1 (FCC1)		FC3/10 to FC7/1 (FCC1)	
FC0/11 to FC5/2 (FCC0)		FC1/11 to FC7/2 (FCC0)		FC2/11 to FC5/2 (FCC1)		FC3/11 to FC7/2 (FCC1)	

Table 9: Cabling Plan for LCC1 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC1 slot/port	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/3 (FCC0)		FC1/0 to FC2/3 (FCC0)		FC2/0 to FC0/3 (FCC1)		FC3/0 to FC2/3 (FCC1)	
FC0/1 to FC0/4 (FCC0)		FC1/1 to FC2/4 (FCC0)		FC2/1 to FC0/4 (FCC1)		FC3/1 to FC2/4 (FCC1)	
FC0/2 to FC05 (FCC0)		FC1/2 to FC2/5 (FCC0)		FC2/2 to FC0/5 (FCC1)		FC3/2 to FC2/5 (FCC1)	
FC0/3 to FC4/3 (FCC0)		FC1/3 to FC6/3 (FCC0)		FC2/3 to FC4/3 (FCC1)		FC3/3 to FC6/3 (FCC1)	
FC0/4 to FC4/4 (FCC0)		FC1/4 to FC6/4 (FCC0)		FC2/4 to FC4/4 (FCC1)		FC3/4 to FC6/4 (FCC1)	
FC0/5 to FC4/5 (FCC0)		FC1/5 to FC6/5 (FCC0)		FC2/5 to FC4/5 (FCC1)		FC3/5 to FC6/5 (FCC1)	
FC0/6 to FC1/3 (FCC0)		FC1/6 to FC3/3 (FCC0)		FC2/6 to FC1/3 (FCC1)		FC3/6 to FC3/3 (FCC1)	
FC0/7 to FC1/4 (FCC0)		FC1/7 to FC3/4 (FCC0)		FC2/7 to FC1/4 (FCC1)		FC3/7 to FC3/4 (FCC1)	
FC0/8 to FC1/5 (FCC0)		FC1/8 to FC3/5 (FCC0)		FC2/8 to FC1/5 (FCC1)		FC3/8 to FC3/5 (FCC1)	

Plane 0		Plane 1		Plane 2		Plane 3	
LCC1 slot/port	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**
FC0/9 to FC5/3 (FCC0)		FC1/9 to FC7/3 (FCC0)		FC2/9 to FC5/3 (FCC1)		FC3/9 to FC7/3 (FCC1)	
FC0/10 to FC5/4 (FCC0)		FC1/10 to FC7/4 (FCC0)		FC2/10 to FC5/4 (FCC1)		FC3/10 to FC7/4 (FCC1)	
FC0/11 to FC5/5 (FCC0)		FC1/11 to FC7/5 (FCC0)		FC2/11 to FC5/5 (FCC1)		FC3/11 to FC7/5 (FCC1)	

Table 10: Cabling Plan for LCC2 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC2 slot/port	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/6 (FCC0)		FC1/0 to FC2/6 (FCC0)		FC2/0 to FC0/6 (FCC1)		FC3/0 to FC2/6 (FCC1)	
FC0/1 to FC0/7 (FCC0)		FC1/1 to FC2/7 (FCC0)		FC2/1 to FC0/7 (FCC1)		FC3/1 to FC2/7 (FCC1)	
FC0/2 to FC0/8 (FCC0)		FC1/2 to FC2/8 (FCC0)		FC2/2 to FC0/8 (FCC1)		FC3/2 to FC2/8 (FCC1)	
FC0/3 to FC4/6 (FCC0)		FC1/3 to FC6/6 (FCC0)		FC2/3 to FC4/6 (FCC1)		FC3/3 to FC6/6 (FCC1)	
FC0/4 to FC4/7 (FCC0)		FC1/4 to FC6/7 (FCC0)		FC2/4 to FC4/7 (FCC1)		FC3/4 to FC6/7 (FCC1)	
FC0/5 to FC4/8 (FCC0)		FC1/5 to FC6/8 (FCC0)		FC2/5 to FC4/8 (FCC1)		FC3/5 to FC6/8 (FCC1)	
FC0/6 to FC1/6 (FCC0)		FC1/6 to FC3/6 (FCC0)		FC2/6 to FC1/6 (FCC1)		FC3/6 to FC3/6 (FCC1)	
FC0/7 to FC1/7 (FCC0)		FC1/7 to FC3/7 (FCC0)		FC2/7 to FC1/7 (FCC1)		FC3/7 to FC3/7 (FCC1)	
FC0/8 to FC1/8 (FCC0)		FC1/8 to FC3/8 (FCC0)		FC2/8 to FC1/8 (FCC1)		FC3/8 to FC3/8 (FCC1)	
FC0/9 to FC5/6 (FCC0)		FC1/9 to FC7/6 (FCC0)		FC2/9 to FC5/6 (FCC1)		FC3/9 to FC7/6 (FCC1)	
FC0/10 to FC5/7 (FCC0)		FC1/10 to FC7/7 (FCC0)		FC2/10 to FC5/7 (FCC1)		FC3/10 to FC7/7 (FCC1)	
FC0/11 to FC5/8 (FCC0)		FC1/11 to FC7/8 (FCC0)		FC2/11 to FC5/8 (FCC1)		FC3/11 to FC7/8 (FCC1)	

Table 11: Cabling Plan for LCC3 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC3 slot/port	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/9 (FCC0)		FC1/0 to FC2/9 (FCC0)		FC2/0 to FC0/9 (FCC1)		FC3/0 to FC2/9 (FCC1)	
FC0/1 to FC0/10 (FCC0)		FC1/1 to FC2/10 (FCC0)		FC2/1 to FC0/10 (FCC1)		FC3/1 to FC2/10 (FCC1)	
FC0/2 to FC0/11 (FCC0)		FC1/2 to FC2/11 (FCC0)		FC2/2 to FC0/11 (FCC1)		FC3/2 to FC2/11 (FCC1)	

Plane 0		Plane 1		Plane 2		Plane 3	
LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis
FC0/3 to FC4/9 (FCC0)		FC1/3 to FC6/9 (FCC0)		FC2/3 to FC4/9 (FCC1)		FC3/3 to FC6/9 (FCC1)	
FC0/4 to FC4/10 (FCC0)		FC1/4 to FC6/10 (FCC0)		FC2/4 to FC4/10 (FCC1)		FC3/4 to FC6/10 (FCC1)	
FC0/5 to FC4/11 (FCC0)		FC1/5 to FC6/11 (FCC0)		FC2/5 to FC4/11 (FCC1)		FC3/5 to FC6/11 (FCC1)	
FC0/6 to FC1/9 (FCC0)		FC1/6 to FC3/9 (FCC0)		FC2/6 to FC1/9 (FCC1)		FC3/6 to FC3/9 (FCC1)	
FC0/7 to FC1/10 (FCC0)		FC1/7 to FC3/10 (FCC0)		FC2/7 to FC1/10 (FCC1)		FC3/7 to FC3/10 (FCC1)	
FC0/8 to FC1/11 (FCC0)		FC1/8 to FC3/11 (FCC0)		FC2/8 to FC1/11 (FCC1)		FC3/8 to FC3/11 (FCC1)	
FC0/9 to FC5/9 (FCC0)		FC1/9 to FC7/9 (FCC0)		FC2/9 to FC5/9 (FCC1)		FC3/9 to FC7/9 (FCC1)	
FC0/10 to FC5/10 (FCC0)		FC1/10 to FC7/10 (FCC0)		FC2/10 to FC5/10 (FCC1)		FC3/10 to FC7/10 (FCC1)	
FC0/11 to FC5/11 (FCC0)		FC1/11 to FC7/11 (FCC0)		FC2/11 to FC5/11 (FCC1)		FC3/11 to FC7/11 (FCC1)	

Migrating a 2+2 Multi Chassis System to 4+2 Multi Chassis System

The following upgrade procedure is for migrating to a 4+2 MC system. The MC system comprises, four LCCs (LCC0, LCC1, LCC2, and LCC3) and two FCCs (FCC0 , FCC1).

Note No plane by plane shutdown and un-shut is required for adding new LCC to MC system.

Before you begin

Complete the 2+2 Multi Chassis (MC) configuration.

Procedure

Step 1 Check that LCC2 and LCC3 are not powered-on.

Note The LCC2 and LCC3 should not have any Line Cards on the Chassis.

Step 2 Perform the Control Cable connection between LCC2/LCC3 and FCC0/FCC1 for a 4+2 configuration.

Step 3 Add the Chassis Serial Number in SysAdmin Config of LCC0.

Always use the appropriate Serial Numbers.

Step 4 Connect the datapath fabric connections for all the planes, as per the instance configuration of 2+2 MC system.

Fabric Connection can be done together for all the planes for the new LCC.

Note For adding new LCC, there is no change required in fabric instance configuration.

Step 5 Switch on LCC2 and LCC3..

Step 6 Verify the 4+2 MC chassis state using the following commands:
a) **show chassis**
b) **show platform**
c) **show controller fabric plane all detail**
d) **show controller fabric bundle all detail**
e) **show platform**

Example:

```
RP/0/RP0:hostname# admin
sysadmin-vm:0_RP0# show chassis
sysadmin-vm:0_RP0# show platform
sysadmin-vm:0_RP0# show controller fabric plane all detail
sysadmin-vm:0_RP0# show controller fabric bundle all detail
sysadmin-vm:0_RP0# exit
RP/0/RP0:hostname# show platform
```

Figure 5: Cisco NCS 4000 Multi-Chassis 4+2 Configuration
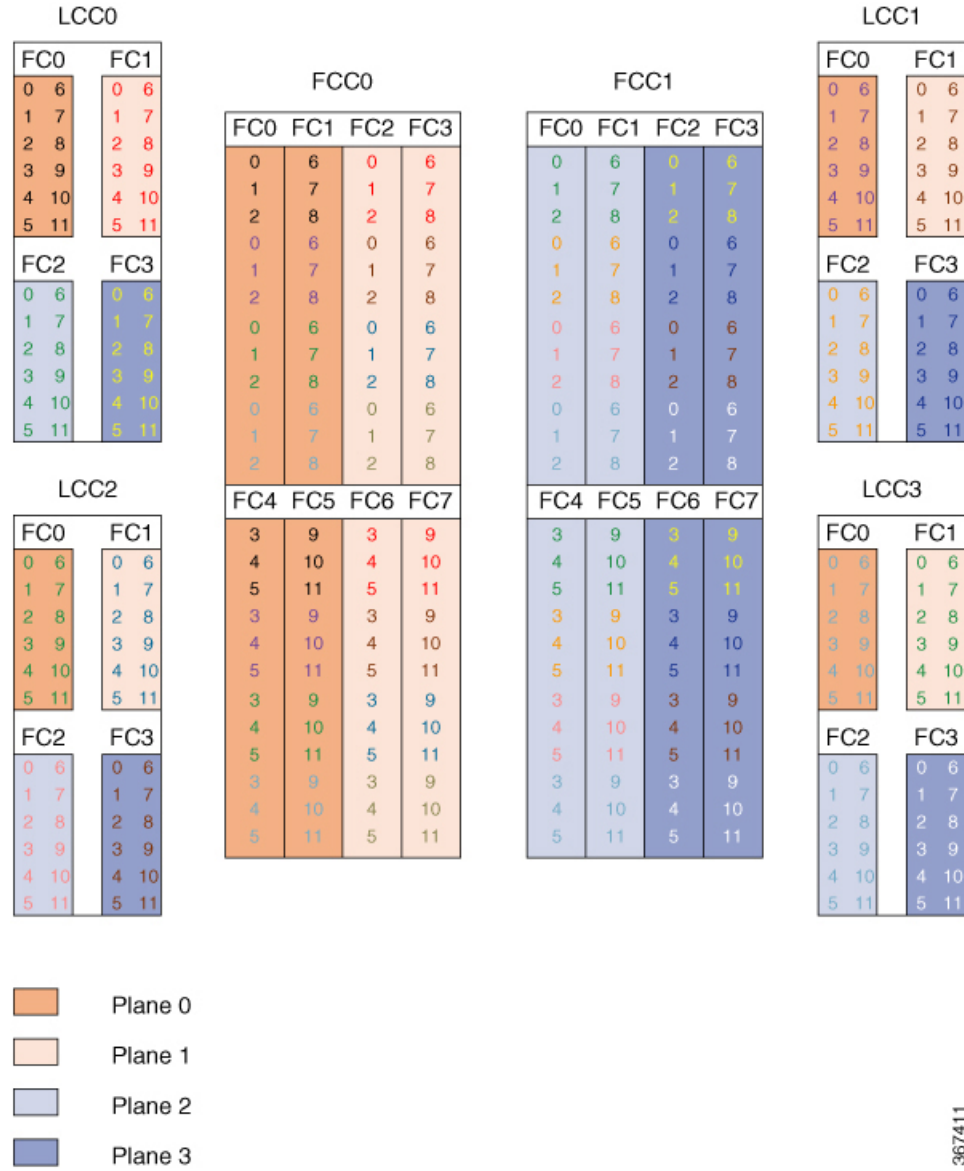
The following tables show the cabling plan for a 4+2 multi-chassis configuration. The FCC0 has the fabric instances 0 through 3 for planes 0, and 1. The FCC1 has the fabric instances 0 through 3 for planes 2 and 3.

Table 12: Cabling Plan for LCC0 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC0 slot/port	FCC slot/port/ chassis	LCC0 slot/port	FCC slot/port/ chassis	LCC0 slot/port	FCC slot/port/ chassis	LCC0 slot/port	FCC slot/port/ chassis
FC0/0 to FC0/0 (FCC0)		FC1/0 to FC2/0 (FCC0)		FC2/0 to FC0/0 (FCC1)		FC3/0 to FC2/0 (FCC1)	
FC0/1 to FC0/1 (FCC0)		FC1/1 to FC2/1 (FCC0)		FC2/1 to FC0/1 (FCC1)		FC3/1 to FC2/1 (FCC1)	

Plane 0		Plane 1		Plane 2		Plane 3	
LCC0 slot/port	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**	**LCC0 slot/port**	**FCC slot/port/ chassis**
FC0/2 to FC0/2 (FCC0)		FC1/2 to FC2/2 (FCC0)		FC2/2 to FC0/2 (FCC1)		FC3/2 to FC2/2 (FCC1)	
FC0/3 to FC4/0 (FCC0)		FC1/3 to FC6/0 (FCC0)		FC2/3 to FC4/0 (FCC1)		FC3/3 to FC6/0 (FCC1)	
FC0/4 to FC4/1 (FCC0)		FC1/4 to FC6/1 (FCC0)		FC2/4 to FC4/1 (FCC1)		FC3/4 to FC6/1 (FCC1)	
FC0/5 to FC4/2 (FCC0)		FC1/5 to FC6/2 (FCC0)		FC2/5 to FC4/2 (FCC1)		FC3/5 to FC6/2 (FCC1)	
FC0/6 to FC1/0 (FCC0)		FC1/6 to FC3/0 (FCC0)		FC2/6 to FC1/0 (FCC1)		FC3/6 to FC3/0 (FCC1)	
FC0/7 to FC1/1 (FCC0)		FC1/7 to FC3/1 (FCC0)		FC2/7 to FC1/1 (FCC1)		FC3/7 to FC3/1 (FCC1)	
FC0/8 to FC1/2 (FCC0)		FC1/8 to FC3/2 (FCC0)		FC2/8 to FC1/2 (FCC1)		FC3/8 to FC3/2 (FCC1)	
FC0/9 to FC5/0 (FCC0)		FC1/9 to FC7/0 (FCC0)		FC2/9 to FC5/0 (FCC1)		FC3/9 to FC7/0 (FCC1)	
FC0/10 to FC5/1 (FCC0)		FC1/10 to FC7/1 (FCC0)		FC2/10 to FC5/1 (FCC1)		FC3/10 to FC7/1 (FCC1)	
FC0/11 to FC5/2 (FCC0)		FC1/11 to FC7/2 (FCC0)		FC2/11 to FC5/2 (FCC1)		FC3/11 to FC7/2 (FCC1)	

Table 13: Cabling Plan for LCC1 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC1 slot/port	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**	**LCC1 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/3 (FCC0)		FC1/0 to FC2/3 (FCC0)		FC2/0 to FC0/3 (FCC1)		FC3/0 to FC2/3 (FCC1)	
FC0/1 to FC0/4 (FCC0)		FC1/1 to FC2/4 (FCC0)		FC2/1 to FC0/4 (FCC1)		FC3/1 to FC2/4 (FCC1)	
FC0/2 to FC05 (FCC0)		FC1/2 to FC2/5 (FCC0)		FC2/2 to FC0/5 (FCC1)		FC3/2 to FC2/5 (FCC1)	
FC0/3 to FC4/3 (FCC0)		FC1/3 to FC6/3 (FCC0)		FC2/3 to FC4/3 (FCC1)		FC3/3 to FC6/3 (FCC1)	
FC0/4 to FC4/4 (FCC0)		FC1/4 to FC6/4 (FCC0)		FC2/4 to FC4/4 (FCC1)		FC3/4 to FC6/4 (FCC1)	
FC0/5 to FC4/5 (FCC0)		FC1/5 to FC6/5 (FCC0)		FC2/5 to FC4/5 (FCC1)		FC3/5 to FC6/5 (FCC1)	
FC0/6 to FC1/3 (FCC0)		FC1/6 to FC3/3 (FCC0)		FC2/6 to FC1/3 (FCC1)		FC3/6 to FC3/3 (FCC1)	
FC0/7 to FC1/4 (FCC0)		FC1/7 to FC3/4 (FCC0)		FC2/7 to FC1/4 (FCC1)		FC3/7 to FC3/4 (FCC1)	
FC0/8 to FC1/5 (FCC0)		FC1/8 to FC3/5 (FCC0)		FC2/8 to FC1/5 (FCC1)		FC3/8 to FC3/5 (FCC1)	
FC0/9 to FC5/3 (FCC0)		FC1/9 to FC7/3 (FCC0)		FC2/9 to FC5/3 (FCC1)		FC3/9 to FC7/3 (FCC1)	
FC0/10 to FC5/4 (FCC0)		FC1/10 to FC7/4 (FCC0)		FC2/10 to FC5/4 (FCC1)		FC3/10 to FC7/4 (FCC1)	
FC0/11 to FC5/5 (FCC0)		FC1/11 to FC7/5 (FCC0)		FC2/11 to FC5/5 (FCC1)		FC3/11 to FC7/5 (FCC1)	

Table 14: Cabling Plan for LCC2 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC2 slot/port	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**	**LCC2 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/6 (FCC0)		FC1/0 to FC2/6 (FCC0)		FC2/0 to FC0/6 (FCC1)		FC3/0 to FC2/6 (FCC1)	
FC0/1 to FC0/7 (FCC0)		FC1/1 to FC2/7 (FCC0)		FC2/1 to FC0/7 (FCC1)		FC3/1 to FC2/7 (FCC1)	
FC0/2 to FC0/8 (FCC0)		FC1/2 to FC2/8 (FCC0)		FC2/2 to FC0/8 (FCC1)		FC3/2 to FC2/8 (FCC1)	
FC0/3 to FC4/6 (FCC0)		FC1/3 to FC6/6 (FCC0)		FC2/3 to FC4/6 (FCC1)		FC3/3 to FC6/6 (FCC1)	
FC0/4 to FC4/7 (FCC0)		FC1/4 to FC6/7 (FCC0)		FC2/4 to FC4/7 (FCC1)		FC3/4 to FC6/7 (FCC1)	
FC0/5 to FC4/8 (FCC0)		FC1/5 to FC6/8 (FCC0)		FC2/5 to FC4/8 (FCC1)		FC3/5 to FC6/8 (FCC1)	
FC0/6 to FC1/6 (FCC0)		FC1/6 to FC3/6 (FCC0)		FC2/6 to FC1/6 (FCC1)		FC3/6 to FC3/6 (FCC1)	
FC0/7 to FC1/7 (FCC0)		FC1/7 to FC3/7 (FCC0)		FC2/7 to FC1/7 (FCC1)		FC3/7 to FC3/7 (FCC1)	
FC0/8 to FC1/8 (FCC0)		FC1/8 to FC3/8 (FCC0)		FC2/8 to FC1/8 (FCC1)		FC3/8 to FC3/8 (FCC1)	
FC0/9 to FC5/6 (FCC0)		FC1/9 to FC7/6 (FCC0)		FC2/9 to FC5/6 (FCC1)		FC3/9 to FC7/6 (FCC1)	
FC0/10 to FC5/7 (FCC0)		FC1/10 to FC7/7 (FCC0)		FC2/10 to FC5/7 (FCC1)		FC3/10 to FC7/7 (FCC1)	
FC0/11 to FC5/8 (FCC0)		FC1/11 to FC7/8 (FCC0)		FC2/11 to FC5/8 (FCC1)		FC3/11 to FC7/8 (FCC1)	

Table 15: Cabling Plan for LCC3 in a 4+2 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC3 slot/port	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**	**LCC3 slot/port**	**FCC slot/port/ chassis**
FC0/0 to FC0/9 (FCC0)		FC1/0 to FC2/9 (FCC0)		FC2/0 to FC0/9 (FCC1)		FC3/0 to FC2/9 (FCC1)	
FC0/1 to FC0/10 (FCC0)		FC1/1 to FC2/10 (FCC0)		FC2/1 to FC0/10 (FCC1)		FC3/1 to FC2/10 (FCC1)	
FC0/2 to FC0/11 (FCC0)		FC1/2 to FC2/11 (FCC0)		FC2/2 to FC0/11 (FCC1)		FC3/2 to FC2/11 (FCC1)	
FC0/3 to FC4/9 (FCC0)		FC1/3 to FC6/9 (FCC0)		FC2/3 to FC4/9 (FCC1)		FC3/3 to FC6/9 (FCC1)	
FC0/4 to FC4/10 (FCC0)		FC1/4 to FC6/10 (FCC0)		FC2/4 to FC4/10 (FCC1)		FC3/4 to FC6/10 (FCC1)	
FC0/5 to FC4/11 (FCC0)		FC1/5 to FC6/11 (FCC0)		FC2/5 to FC4/11 (FCC1)		FC3/5 to FC6/11 (FCC1)	
FC0/6 to FC1/9 (FCC0)		FC1/6 to FC3/9 (FCC0)		FC2/6 to FC1/9 (FCC1)		FC3/6 to FC3/9 (FCC1)	
FC0/7 to FC1/10 (FCC0)		FC1/7 to FC3/10 (FCC0)		FC2/7 to FC1/10 (FCC1)		FC3/7 to FC3/10 (FCC1)	
FC0/8 to FC1/11 (FCC0)		FC1/8 to FC3/11 (FCC0)		FC2/8 to FC1/11 (FCC1)		FC3/8 to FC3/11 (FCC1)	

Plane 0		Plane 1		Plane 2		Plane 3	
LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis	LCC3 slot/port	FCC slot/port/ chassis
FC0/9 to FC5/9 (FCC0)		FC1/9 to FC7/9 (FCC0)		FC2/9 to FC5/9 (FCC1)		FC3/9 to FC7/9 (FCC1)	
FC0/10 to FC5/10 (FCC0)		FC1/10 to FC7/10 (FCC0)		FC2/10 to FC5/10 (FCC1)		FC3/10 to FC7/10 (FCC1)	
FC0/11 to FC5/11 (FCC0)		FC1/11 to FC7/11 (FCC0)		FC2/11 to FC5/11 (FCC1)		FC3/11 to FC7/11 (FCC1)	

Vertical Plane Configuration for 4+2

This section describes how to configure a multi-chassis 4+2 configuration. In this configuration, four line card chassis (LCC0, LCC1, LCC2, LCC3) are connected to two fabric card chassis (FCC0 and FCC1).

Chassis Serial Configurations for 4+2

Chassis Serial Configurations

LCC0, LCC1, LCC2, LCC3 are on rack0, rack1, rack 2, rack 3, respectively. FCC0 and FCC1 are on rack F0 and F1 respectively. Use the **chassis serial** *serial_number* **rack** *rack_id* command. For a detailed procedure, see Assign Rack Number to Chassis.

```
Chassis serial <serial number> rack 0
chassis serial <serial number> rack 1
Chassis serial <serial number> rack 2
chassis serial <serial number> rack 3
chassis serial <serial number> rack F1
chassis serial <serial number> rack F0
```

Fabric Instance Configuration for 4+2

The following configurations indicate the instances for fabric plane 0,1,2,3. For a detailed procedure, see Associate a Fabric Card in a Fabric Card Chassis to a Fabric Plane

- Fabric instance configuration for fabric plane 0.

```
config
controller fabric plane 0
instance 0
location F0/FC0

instance 1
location F0/FC1

instance 2
location F0/FC4

instance 3
location F0/FC5

commit
```

```
exit
```

- Fabric instance configuration for fabric plane 1.

```
config
controller fabric plane 1
instance 0
location F0/FC2

instance 1
location F0/FC6

instance 2
location F0/FC3

instance 3
location F0/FC7

commit
exit
```

- Fabric instance configuration for fabric plane 2.

```
config
controller fabric plane 2
instance 0
location F1/FC0

instance 1
location F1/FC4

instance 2
location F1/FC1

instance 3
location F1/FC5

commit
exit
```

- Fabric instance configuration for fabric plane 3.

```
config
controller fabric plane 3
instance 0
location F1/FC2

instance 1
location F1/FC6

instance 2
location F1/FC3

instance 3
location F1/FC7

commit
exit
```

Migrating a Single Chassis System to a Multi Chassis System (1+3)

The following upgrade procedure is for migrating a SC system to a 1+3 MC system. The MC system comprises, one LCC (LCC0) and three FCCs (FCC0 , FCC1, FCC2).

Before you begin

The following tasks need to be carried out for uprading a single chassis system to a 1+3 multi chassis configuration.

- Login to Admin-VM using the root-system username and password.

- Verify the status of the LCC0. The commands to be run on the XR VM are: **show redundancy**, **show platform** , **show platform vm**. The commands to be run on the Admin VM are: **show platform**, **show chassis**, **show vm**.

- Verify the SMUs of the upcoming release. The commands to be used are: **show version**, **show install commit**, **show install active**, **show install inactive** .

- Verify the FPD. The commands to be used in the Admin VM are: **show hw-module fpd**.

> ✎
>
> **Note** If any FPD state indicates NEED UPGD or RLOAD REQ, then an FPD upgrade must be performed using the FPD upgrade commands.

Procedure

Step 1 Check the FCC0, FCC1, FCC2 are not powered-on.

Step 2 Connect the control ethernet cables between LCC0, FCC0, FCC1, FCC2.

Step 3 Add the chassis serial number in system admin configuration mode of LCC0 using the **chassis serial** *serial-number* **rack** *rack-id* command.

```
chassis serial FLM18216XHV rack 0
chassis serial FLM184374H2 rack F0
chassis serial FLM184375G1 rack F1
chassis serial FLM184375G2 rack F2
```

Step 4 Switch on FCC0, FCC1, FCC2 and let the device boot till SysAdmin and XR VMs are up.

Step 5 Verify the 1+3 MC chassis state using the **show chassis** and **show platform** commands in admin mode and the **show platform** command in XR mode.

Step 6 Perform plane by plane upgrade of the fabric planes. The upgrade for plane 0 is discussed here in detail. Follow the same steps for plane 1, plane 2, plane 3.

  a) Check the controller fabric state for the 1+3 MC system using the **show chassis** command.

  b) Check if the LCC0 fabric is in single chassis mode using the **show controller fabric plane detail all** command.

c) Shutdown plane 0 using the **controller fabric plane 0 shutdown** command.

d) Check if the plane is in the DOWN state using the command **show controller fabric plane** *plane_id* command. This may take a few minutes.

e) Add the 1+3 fabric instance configuration as indicated here.

Plane 0 configuration:

```
config
controller fabric plane 0
instance 0
location F0/FC0
Instance 1
location F0/FC4
instance 2
location F0/FC1
Instance 3
location F0/FC5
instance 4
location F0/FC2
Instance 5
location F0/FC6
commit
exit
```

f) Wait for the card to reload. This may take a few minutes. Verify if the card state is indicated as OPERATIONAL.

g) Verify if the LCC fabric cards are in MC mode using the **show controller fabric plane** *plane_id* command.

h) Insert the CXP2 pluggables and wait for a few minutes. Check if the pluggables are initialized using the **show controller fabric cxp summary rack** *rack_id*

The states of the pluggables are indicated as follows:

```
sysadmin-vm:0_RP0:PE2# show controller fabric cxp summary rack 0
============================================================================
             Fabric side CXP Port Initialization Status Summary
============================================================================
Active functional role of the Rack [R/S] : 0/RP0
        . - CXP is not present
        p - CXP is not powered
        I - CXP is not Initialized
        U - CXP is not Supported
        T - One or more Tx channel is disabled on the CXP
        R - One or more Rx channel is disabled on the CXP
        G - CXP is Initialized properly
```

Verify that all the FCC fabric cards configured for this plane, the ports where the CXP2s are inserted (and connected with LCC fabric card ports) are initialized. If not, insert the CXP2s and wait for the CXP2s to initialize.

i) Perform the data path cabling between LCC0, FCC0, FCC1, FCC2 plane 0 fabric cards.

j) Unshut plane 0 if the CXP2s are in G state.

G state indicates that the CXP2s are initialized properly.

k) Unshut plane 0 by using the **controller fabric plane 0 no shutdown** command in system admin configuration mode.

l) Verify the fabric state details using the following commands:

• **show controller fabric state all detail** in system admin mode.

- **show controller fabric bundle all detail** in system admin mode.

- **show platform** in system admin and XR mode.

- **show redundancy** in XR mode.

- **show platform vm** in XR mode.

- **show install commit** in XR mode.

- **show install active** in XR mode.

- **show install inactive** in XR mode.

Plane 1 configuration:

```
config
controller fabric plane 1
instance 0
location F0/FC3
instance 1
location F0/FC7
instance 2
location F1/FC0
instance 3
location F1/FC4
instance 4
location F1/FC1
instance 5
location F1/FC5
commit
exit
```

Plane 2 configuration:

```
config
controller fabric plane 2
instance 0
location F1/FC2
instance 1
location F1/FC6
instance 2
location F1/FC3
instance 3
location F1/FC7
instance 4
location F2/FC0
instance 5
location F2/FC4
commit
exit
```

Plane 3 configuration:

```
controller fabric plane 3
instance 0
location F2/FC1
Instance 1
location F2/FC5
instance 2
location F2/FC2
Instance 3
```

```
location F2/FC6
instance 4
location F2/FC3
Instance 5
location F2/FC7
commit
exit
```

Migrating a 1+3 Multi Chassis System to 8+3 Multi Chassis System

The following upgrade procedure is for migrating a 1+3 MC system to a 8+3 MC system. The MC system comprises of eight LCCs (LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7) and three FCCs (FCC0, FCC1, FCC2).

Note No plane by plane shutdown and un-shut is required for adding new LCC to MC.

Before you begin

Complete the 1+3 Multi Chassis (MC) configuration.

Procedure

Step 1 Check that LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7 are in switched-off state.

Note The LCCs should not have any line cards on the chassis.

During the addition of an LCCs, when the line cards are not yet inserted, the display outputs showing the plane status information is different for the show fabric health and show controller fabric commands. After the line cards are inserted into the newly added LCC, the display outputs showing the plane status is identical.

Step 2 Perform the Control Cable connection between LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, FCC0, FCC1, and FCC2.

Note Make a note of all the chassis serial numbers of LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, and LCC7. Add one LCC at a time.

Step 3 Add the Chassis Serial Number in the Sysadmin config mode of LCC1.

```
chassis serial FLM184322M1 rack 1
```

Step 4 Connect the datapath fabric connections for all the planes, as per the instance configuration of 1+3 MC system.

Fabric Connection can be done together for all the planes for the new LCC.

In case of 8+3 MC system, each fabric chassis with 8 FCs, is not used by a single plane but includes one full plane and another partial plane. There are sufficient number of fabric links available. 8+3 configuration provides rack level and plane level redundancy.

Note   For adding new LCC, there is no change required in fabric instance configuration.

Note   The chassis addition is sequentially done with one rack at a time do avoid VM shutdown due to quorum error.

Step 5   Switch on LCC1.

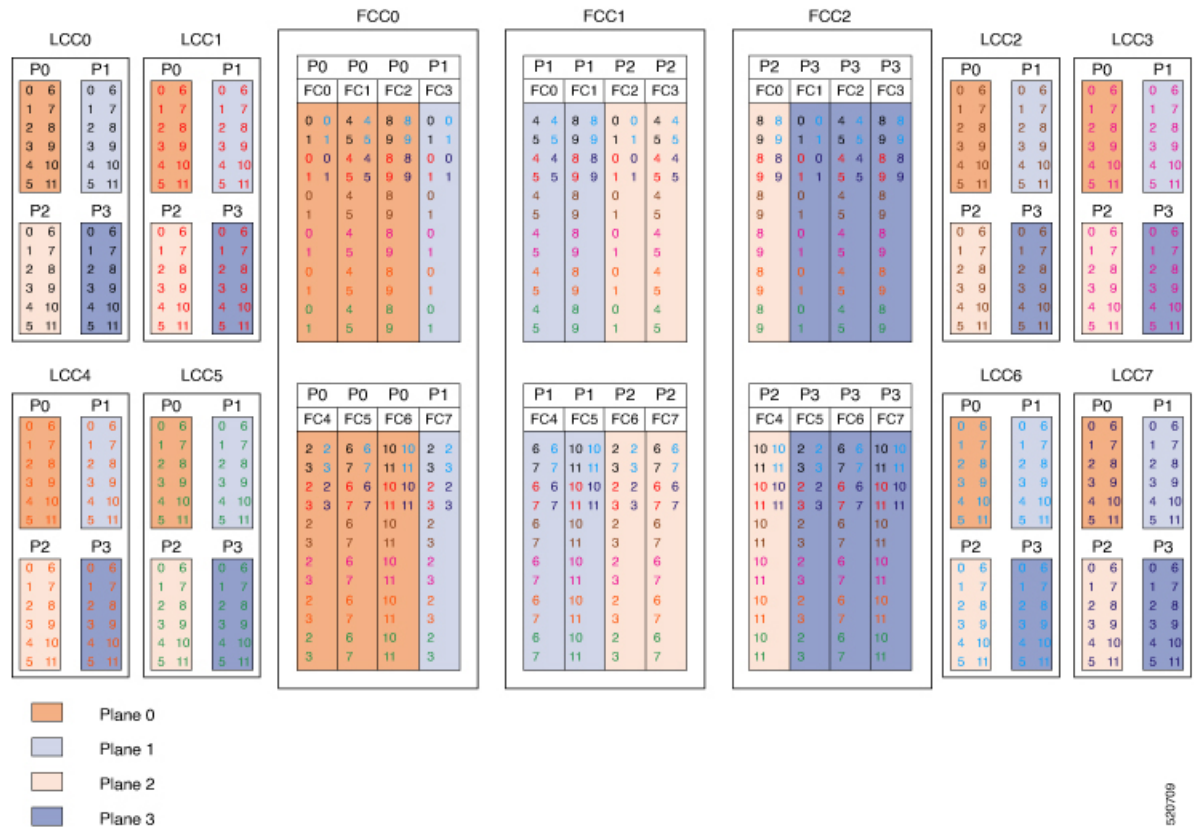**Step 6**   Repeat Step 3 through Step 5 for LCC2 to LCC7.

Step 7   Verify the 8+3 MC chassis state using the following commands:

- **show chassis**

- **show platform**

- **show controller fabric plane all detail**

- **show controller fabric bundle all detail**

The following image shows the cable connections for the 8+3 MC configuration.

Figure 6: Cisco NCS 4000 Multi Chassis 8+3 Configuration

Cabling Plan for the 8+3 MC Configuration

The following tables show the cabling plan for a 8+3 multi-chassis configuration.

Table 16: Cabling Plan for LCC0 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
0/FC0/0	F0/FC0/0	0/FC1/0	F0/FC3/0	0/FC2/0	F1/FC2/0	0/FC3/0	F2/FC1/0
0/FC0/1	F0/FC0/1	0/FC1/1	F0/FC3/1	0/FC2/1	F1/FC2/1	0/FC3/1	F2/FC1/1
0/FC0/2	F0/FC4/0	0/FC1/2	F0/FC7/0	0/FC2/2	F1/FC6/0	0/FC3/2	F2/FC5/0
0/FC0/3	F0/FC4/1	0/FC1/3	F0/FC7/1	0/FC2/3	F1/FC6/1	0/FC3/3	F2/FC5/1
0/FC0/4	F0/FC1/0	0/FC1/4	F1/FC0/0	0/FC2/4	F1/FC3/0	0/FC3/4	F2/FC2/0
0/FC0/5	F0/FC1/1	0/FC1/5	F1/FC0/1	0/FC2/5	F1/FC3/1	0/FC3/5	F2/FC2/1
0/FC0/6	F0/FC5/0	0/FC1/6	F1/FC4/0	0/FC2/6	F1/FC7/0	0/FC3/6	F2/FC6/0
0/FC0/7	F0/FC5/1	0/FC1/7	F1/FC4/1	0/FC2/7	F1/FC7/1	0/FC3/7	F2/FC6/1
0/FC0/8	F0/FC2/0	0/FC1/8	F1/FC1/0	0/FC2/8	F2/FC0/0	0/FC3/8	F2/FC3/0
0/FC0/9	F0/FC2/1	0/FC1/9	F1/FC1/1	0/FC2/9	F2/FC0/1	0/FC3/9	F2/FC3/1
0/FC0/10	F0/FC6/0	0/FC1/10	F1/FC5/0	0/FC2/10	F2/FC4/0	0/FC3/10	F2/FC7/0
0/FC0/11	F0/FC6/1	0/FC1/11	F1/FC5/1	0/FC2/11	F2/FC4/1	0/FC3/11	F2/FC7/1

Table 17: Cabling Plan for LCC1 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
1/FC0/0	F0/FC0/2	1/FC1/0	F0/FC3/2	1/FC2/0	F1/FC2/2	1/FC3/0	F2/FC1/2
1/FC0/1	F0/FC0/3	1/FC1/1	F0/FC3/3	1/FC2/1	F1/FC2/3	1/FC3/1	F2/FC1/3
1/FC0/2	F0/FC4/2	1/FC1/2	F0/FC7/2	1/FC2/2	F1/FC6/2	1/FC3/2	F2/FC5/2
1/FC0/3	F0/FC4/3	1/FC1/3	F0/FC7/3	1/FC2/3	F1/FC6/3	1/FC3/3	F2/FC5/3
1/FC0/4	F0/FC1/2	1/FC1/4	F1/FC0/2	1/FC2/4	F1/FC3/2	1/FC3/4	F2/FC2/2
1/FC0/5	F0/FC1/3	1/FC1/5	F1/FC0/3	1/FC2/5	F1/FC3/3	1/FC3/5	F2/FC2/3
1/FC0/6	F0/FC5/2	1/FC1/6	F1/FC4/2	1/FC2/6	F1/FC7/2	1/FC3/6	F2/FC6/2
1/FC0/7	F0/FC5/3	1/FC1/7	F1/FC4/3	1/FC2/7	F1/FC7/3	1/FC3/7	F2/FC6/3
1/FC0/8	F0/FC2/2	1/FC1/8	F1/FC1/2	1/FC2/8	F2/FC0/2	1/FC3/8	F2/FC3/2
1/FC0/9	F0/FC2/3	1/FC1/9	F1/FC1/3	1/FC2/9	F2/FC0/3	1/FC3/9	F2/FC3/3

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
1/FC0/10	F0/FC6/2	1/FC1/10	F1/FC5/2	1/FC2/10	F2/FC4/2	1/FC3/10	F2/FC7/2
1/FC0/11	F0/FC6/3	1/FC1/11	F1/FC5/3	1/FC2/11	F2/FC4/3	1/FC3/11	F2/FC7/3

Table 18: Cabling Plan for LCC2 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
2/FC0/0	F0/FC0/4	2/FC1/0	F0/FC3/4	2/FC2/0	F1/FC2/4	2/FC3/0	F2/FC1/4
2/FC0/1	F0/FC0/5	2/FC1/1	F0/FC3/5	2/FC2/1	F1/FC2/5	2/FC3/1	F2/FC1/5
2/FC0/2	F0/FC4/4	2/FC1/2	F0/FC7/4	2/FC2/2	F1/FC6/4	2/FC3/2	F2/FC5/4
2/FC0/3	F0/FC4/5	2/FC1/3	F0/FC7/5	2/FC2/3	F1/FC6/5	2/FC3/3	F2/FC5/5
2/FC0/4	F0/FC1/4	2/FC1/4	F1/FC0/4	2/FC2/4	F1/FC3/4	2/FC3/4	F2/FC2/4
2/FC0/5	F0/FC1/5	2/FC1/5	F1/FC0/5	2/FC2/5	F1/FC3/5	2/FC3/5	F2/FC2/5
2/FC0/6	F0/FC5/4	2/FC1/6	F1/FC4/4	2/FC2/6	F1/FC7/4	2/FC3/6	F2/FC6/4
2/FC0/7	F0/FC5/5	2/FC1/7	F1/FC4/5	2/FC2/7	F1/FC7/5	2/FC3/7	F2/FC6/5
2/FC0/8	F0/FC2/4	2/FC1/8	F1/FC1/4	2/FC2/8	F2/FC0/4	2/FC3/8	F2/FC3/4
2/FC0/9	F0/FC2/5	2/FC1/9	F1/FC1/5	2/FC2/9	F2/FC0/5	2/FC3/9	F2/FC3/5
2/FC0/10	F0/FC6/4	2/FC1/10	F1/FC5/4	2/FC2/10	F2/FC4/4	2/FC3/10	F2/FC7/4
2/FC0/11	F0/FC6/5	2/FC1/11	F1/FC5/5	2/FC2/11	F2/FC4/5	2/FC3/11	F2/FC7/5

Table 19: Cabling Plan for LCC3 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
3/FC0/0	F0/FC0/6	3/FC1/0	F0/FC3/6	3/FC2/0	F1/FC2/6	3/FC3/0	F2/FC1/6
3/FC0/1	F0/FC0/7	3/FC1/1	F0/FC3/7	3/FC2/1	F1/FC2/7	3/FC3/1	F2/FC1/7
3/FC0/2	F0/FC4/6	3/FC1/2	F0/FC7/6	3/FC2/2	F1/FC6/6	3/FC3/2	F2/FC5/6
3/FC0/3	F0/FC4/7	3/FC1/3	F0/FC7/7	3/FC2/3	F1/FC6/7	3/FC3/3	F2/FC5/7
3/FC0/4	F0/FC1/6	3/FC1/4	F1/FC0/6	3/FC2/4	F1/FC3/6	3/FC3/4	F2/FC2/6
3/FC0/5	F0/FC1/7	3/FC1/5	F1/FC0/7	3/FC2/5	F1/FC3/7	3/FC3/5	F2/FC2/7

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**
3/FC0/6	F0/FC5/6	3/FC1/6	F1/FC4/6	3/FC2/6	F1/FC7/6	3/FC3/6	F2/FC6/6
3/FC0/7	F0/FC5/7	3/FC1/7	F1/FC4/7	3/FC2/7	F1/FC7/7	3/FC3/7	F2/FC6/7
3/FC0/8	F0/FC2/6	3/FC1/8	F1/FC1/6	3/FC2/8	F2/FC0/6	3/FC3/8	F2/FC3/6
3/FC0/9	F0/FC2/7	3/FC1/9	F1/FC1/7	3/FC2/9	F2/FC0/7	3/FC3/9	F2/FC3/7
3/FC0/10	F0/FC6/6	3/FC1/10	F1/FC5/6	3/FC2/10	F2/FC4/6	3/FC3/10	F2/FC7/6
3/FC0/11	F0/FC6/7	3/FC1/11	F1/FC5/7	3/FC2/11	F2/FC4/7	3/FC3/11	F2/FC7/7

Table 20: Cabling Plan for LCC4 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**
4/FC0/0	F0/FC0/8	4/FC1/0	F0/FC3/8	4/FC2/0	F1/FC2/8	4/FC3/0	F2/FC1/8
4/FC0/1	F0/FC0/9	4/FC1/1	F0/FC3/9	4/FC2/1	F1/FC2/9	4/FC3/1	F2/FC1/9
4/FC0/2	F0/FC4/8	4/FC1/2	F0/FC7/8	4/FC2/2	F1/FC6/8	4/FC3/2	F2/FC5/8
4/FC0/3	F0/FC4/9	4/FC1/3	F0/FC7/9	4/FC2/3	F1/FC6/9	4/FC3/3	F2/FC5/9
4/FC0/4	F0/FC1/8	4/FC1/4	F1/FC0/8	4/FC2/4	F1/FC3/8	4/FC3/4	F2/FC2/8
4/FC0/5	F0/FC1/9	4/FC1/5	F1/FC0/9	4/FC2/5	F1/FC3/9	4/FC3/5	F2/FC2/9
4/FC0/6	F0/FC5/8	4/FC1/6	F1/FC4/8	4/FC2/6	F1/FC7/8	4/FC3/6	F2/FC6/8
4/FC0/7	F0/FC5/9	4/FC1/7	F1/FC4/9	4/FC2/7	F1/FC7/9	4/FC3/7	F2/FC6/9
4/FC0/8	F0/FC2/8	4/FC1/8	F1/FC1/8	4/FC2/8	F2/FC0/8	4/FC3/8	F2/FC3/8
4/FC0/9	F0/FC2/9	4/FC1/9	F1/FC1/9	4/FC2/9	F2/FC0/9	4/FC3/9	F2/FC3/9
4/FC0/10	F0/FC6/8	4/FC1/10	F1/FC5/8	4/FC2/10	F2/FC4/8	4/FC3/10	F2/FC7/8
4/FC0/11	F0/FC6/9	4/FC1/11	F1/FC5/9	4/FC2/11	F2/FC4/9	4/FC3/11	F2/FC7/9

Table 21: Cabling Plan for LCC5 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**	**LCC slot/port**	**FCC slot/port/ chassis**
5/FC0/0	F0/FC0/10	5/FC1/0	F0/FC3/10	5/FC2/0	F1/FC2/10	5/FC3/0	F2/FC1/10
5/FC0/1	F0/FC0/11	5/FC1/1	F0/FC3/11	5/FC2/1	F1/FC2/11	5/FC3/1	F2/FC1/11

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
5/FC0/2	F0/FC4/10	5/FC1/2	F0/FC7/10	5/FC2/2	F1/FC6/10	5/FC3/2	F2/FC5/10
5/FC0/3	F0/FC4/11	5/FC1/3	F0/FC7/11	5/FC2/3	F1/FC6/11	5/FC3/3	F2/FC5/11
5/FC0/4	F0/FC1/10	5/FC1/4	F1/FC0/10	5/FC2/4	F1/FC3/10	5/FC3/4	F2/FC2/10
5/FC0/5	F0/FC1/11	5/FC1/5	F1/FC0/11	5/FC2/5	F1/FC3/11	5/FC3/5	F2/FC2/11
5/FC0/6	F0/FC5/10	5/FC1/6	F1/FC4/10	5/FC2/6	F1/FC7/10	5/FC3/6	F2/FC6/10
5/FC0/7	F0/FC5/11	5/FC1/7	F1/FC4/11	5/FC2/7	F1/FC7/11	5/FC3/7	F2/FC6/11
5/FC0/8	F0/FC2/10	5/FC1/8	F1/FC1/10	5/FC2/8	F2/FC0/10	5/FC3/8	F2/FC3/10
5/FC0/9	F0/FC2/11	5/FC1/9	F1/FC1/11	5/FC2/9	F2/FC0/11	5/FC3/9	F2/FC3/11
5/FC0/10	F0/FC6/10	5/FC1/10	F1/FC5/10	5/FC2/10	F2/FC4/10	5/FC3/10	F2/FC7/10
5/FC0/11	F0/FC6/11	5/FC1/11	F1/FC5/11	5/FC2/11	F2/FC4/11	5/FC3/11	F2/FC7/11

Table 22: Cabling Plan for LCC6 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
6/FC0/0	F0/FC0/12	6/FC1/0	F0/FC3/12	6/FC2/0	F1/FC2/12	6/FC3/0	F2/FC1/12
6/FC0/1	F0/FC0/13	6/FC1/1	F0/FC3/13	6/FC2/1	F1/FC2/13	6/FC3/1	F2/FC1/13
6/FC0/2	F0/FC4/12	6/FC1/2	F0/FC7/12	6/FC2/2	F1/FC6/12	6/FC3/2	F2/FC5/12
6/FC0/3	F0/FC4/13	6/FC1/3	F0/FC7/13	6/FC2/3	F1/FC6/13	6/FC3/3	F2/FC5/13
6/FC0/4	F0/FC1/12	6/FC1/4	F1/FC0/12	6/FC2/4	F1/FC3/12	6/FC3/4	F2/FC2/12
6/FC0/5	F0/FC1/13	6/FC1/5	F1/FC0/13	6/FC2/5	F1/FC3/13	6/FC3/5	F2/FC2/13
6/FC0/6	F0/FC5/12	6/FC1/6	F1/FC4/12	6/FC2/6	F1/FC7/12	6/FC3/6	F2/FC6/12
6/FC0/7	F0/FC5/13	6/FC1/7	F1/FC4/13	6/FC2/7	F1/FC7/13	6/FC3/7	F2/FC6/13
6/FC0/8	F0/FC2/12	6/FC1/8	F1/FC1/12	6/FC2/8	F2/FC0/12	6/FC3/8	F2/FC3/12
6/FC0/9	F0/FC2/13	6/FC1/9	F1/FC1/13	6/FC2/9	F2/FC0/13	6/FC3/9	F2/FC3/13
6/FC0/10	F0/FC6/12	6/FC1/10	F1/FC5/12	6/FC2/10	F2/FC4/12	6/FC3/10	F2/FC7/12
6/FC0/11	F0/FC6/13	6/FC1/11	F1/FC5/13	6/FC2/11	F2/FC4/13	6/FC3/11	F2/FC7/13

Table 23: Cabling Plan for LCC7 in a 8+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
7/FC0/0	F0/FC0/14	7/FC1/0	F0/FC3/14	7/FC2/0	F1/FC2/14	7/FC3/0	F2/FC1/14
7/FC0/1	F0/FC0/15	7/FC1/1	F0/FC3/15	7/FC2/1	F1/FC2/15	7/FC3/1	F2/FC1/15
7/FC0/2	F0/FC4/14	7/FC1/2	F0/FC7/14	7/FC2/2	F1/FC6/14	7/FC3/2	F2/FC5/14
7/FC0/3	F0/FC4/15	7/FC1/3	F0/FC7/15	7/FC2/3	F1/FC6/15	7/FC3/3	F2/FC5/15
7/FC0/4	F0/FC1/14	7/FC1/4	F1/FC0/14	7/FC2/4	F1/FC3/14	7/FC3/4	F2/FC2/14
7/FC0/5	F0/FC1/15	7/FC1/5	F1/FC0/15	7/FC2/5	F1/FC3/15	7/FC3/5	F2/FC2/15
7/FC0/6	F0/FC5/14	7/FC1/6	F1/FC4/14	7/FC2/6	F1/FC7/14	7/FC3/6	F2/FC6/14
7/FC0/7	F0/FC5/15	7/FC1/7	F1/FC4/15	7/FC2/7	F1/FC7/15	7/FC3/7	F2/FC6/15
7/FC0/8	F0/FC2/14	7/FC1/8	F1/FC1/14	7/FC2/8	F2/FC0/14	7/FC3/8	F2/FC3/14
7/FC0/9	F0/FC2/15	7/FC1/9	F1/FC1/15	7/FC2/9	F2/FC0/15	7/FC3/9	F2/FC3/15
7/FC0/10	F0/FC6/14	7/FC1/10	F1/FC5/14	7/FC2/10	F2/FC4/14	7/FC3/10	F2/FC7/14
7/FC0/11	F0/FC6/15	7/FC1/11	F1/FC5/15	7/FC2/11	F2/FC4/15	7/FC3/11	F2/FC7/15

Note   The cable plan for the 8+3 configuration is not flexible.

Chassis Serial Configurations for 8+3

Chassis Serial Configurations

LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, and LCC7 are on rack 0, rack 1, rack 2, rack 3, rack 4, rack 5, rack 6, and rack 7 respectively. FCC0, FCC1, and FCC2 are on rack F0, rack F1, and rack F2 respectively. Use the **chassis serial** *serial_number* **rack** *rack_id* command. For a detailed procedure, see Assign Rack Number to Chassis.

```
chassis serial <serial number> rack 0
chassis serial <serial number> rack 1
chassis serial <serial number> rack 2
chassis serial <serial number> rack 3
chassis serial <serial number> rack 4
chassis serial <serial number> rack 5
chassis serial <serial number> rack 6
chassis serial <serial number> rack 7
chassis serial <serial number> rack F0
chassis serial <serial number> rack F1
chassis serial <serial number> rack F2
```

Fabric Instance Configuration for 8+3

The following configurations are for a 8+3 MC system with six FCC fabric cards per plane with FCC rack level redundancy. For a detailed procedure, see Associate a Fabric Card in a Fabric Card Chassis to a Fabric Plane

- Fabric instance configuration for fabric plane 0:

```
config
controller fabric plane 0
instance 0
location F0/FC0
instance 1
location F0/FC4
instance 2
location F0/FC1
instance 3
location F0/FC5
instance 4
location F0/FC2
instance 5
location F0/FC6
```

- Fabric instance configuration for fabric plane 1:

```
config
controller fabric plane 1
instance 0
location F0/FC3
instance 1
location F0/FC7
instance 2
location F1/FC0
instance 3
location F1/FC4
instance 4
location F1/FC1
instance 5
location F1/FC5
```

- Fabric instance configuration for plane 2:

```
config
controller fabric plane 2
instance 0
location F1/FC2
instance 1
location F1/FC6
instance 2
location F1/FC3
instance 3
location F1/FC7
instance 4
location F2/FC0
instance 5
location F2/FC4
```

- Fabric instance configuration for plane 3:

```
config
```

```
controller fabric plane 3
instance 0
location F2/FC1
Instance 1
location F2/FC5
instance 2
location F2/FC2
Instance 3
location F2/FC6
instance 4
location F2/FC3
Instance 5
location F2/FC7
```

Note   Removing a fabric plane instance configuration might impact traffic. Shutdown the relevant plane before removing or modifying a fabric instance configuration.

In the event of a plane configuration mismatch, the CXP2 LEDs for the relevant plane is shown red. This is because the bundles are down, although the plane status is shown Up. The user needs to correct the configuration error before proceeding.

Migrating a 1+3 Multi Chassis System to 12+3 Multi Chassis System

The following upgrade procedure is for migrating a 1+3 MC system to a 12+3 MC system. The MC system comprises of 12 LCCs (LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, LCC8, LCC9, LCC10, LCC11) and three FCCs (FCC0, FCC1, FCC2).

Note   No plane by plane shutdown and unshut is required for adding new LCC to MC.

Before you begin

Complete the 1+3 Multi Chassis (MC) configuration.

Procedure

Step 1   Check that LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, LCC8, LCC9, LCC10, LCC11 are in switched-off state.

Note   The LCCs must not have any line cards on the chassis.

During the addition of LCCs, when the line cards are not yet inserted, the display outputs showing the plane status information is different for the **show fabric health** and **show controller fabric** commands. After the line cards are inserted into the newly added LCC, the display outputs showing the plane status is identical.

Step 2 Perform the Control Cable connection between LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, LCC8, LCC9, LCC10, LCC11, FCC0, FCC1, and FCC2.

> **Note** Make a note of all the chassis serial numbers of LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, LCC8, LCC9, LCC10, and LCC11. Add one LCC at a time.

Step 3 Add the Chassis Serial Number in the **Sysadmin** config mode of LCC1.

```
chassis serial FLM184322M1 rack 1
```

Step 4 Connect the data path fabric connections for all the planes, as per the instance configuration of 1+3 MC system.

Fabric Connection can be done together for all the planes for the new LCC.

If there is 12+3 MC system, each fabric chassis with 12 FCs, is not used by a single plane but includes one full plane and another partial plane. There is sufficient number of fabric links available. 12+3 configuration provides rack level and plane level redundancy.

> **Note** For adding new LCC, there is no change that is required in fabric instance configuration.

> **Note** The chassis addition is sequentially done with one rack at a time to avoid VM shutdown due to the quorum error.

Step 5 Switch on LCC1.

Step 6 Repeat Step 3 through Step 5 for LCC2 to LCC11.

Step 7 Verify the 12+3 MC chassis state using the following commands:

- **show chassis**
- **show platform**
- **show controller fabric plane all detail**
- **show controller fabric bundle all detail**

The following image shows the cable connections for the 12+3 MC configuration.

Figure 7: Cisco NCS 4000 Multi Chassis 12+3 Configuration
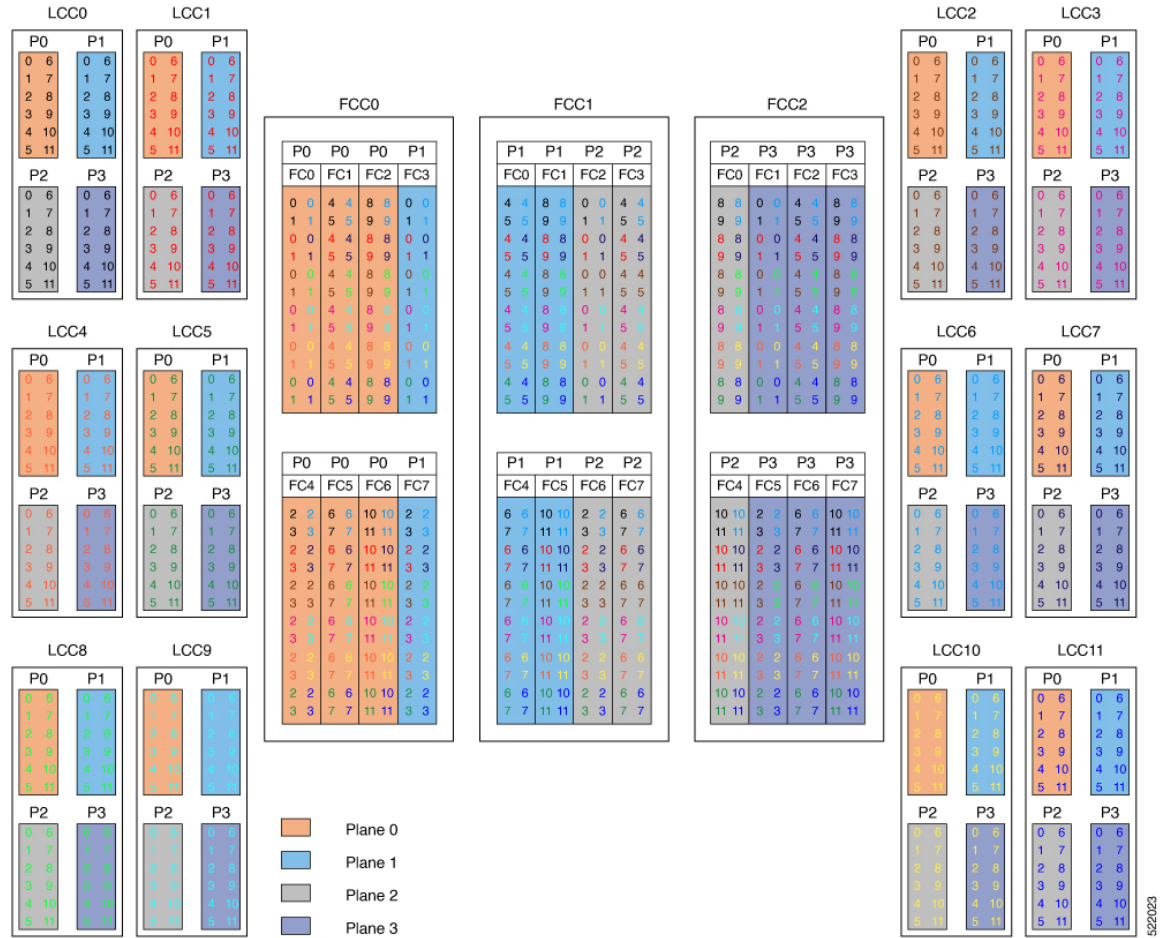
Cabling Plan for the 12+3 MC Configuration

The following tables show the cabling plan for a 12+3 multichassis configuration.

Table 24: Cabling Plan for LCC0 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
0/FC0/0	F0/FC0/0	0/FC1/0	F0/FC3/0	0/FC2/0	F1/FC2/0	0/FC3/0	F2/FC1/0
0/FC0/1	F0/FC0/1	0/FC1/1	F0/FC3/1	0/FC2/1	F1/FC2/1	0/FC3/1	F2/FC1/1
0/FC0/2	F0/FC4/0	0/FC1/2	F0/FC7/0	0/FC2/2	F1/FC6/0	0/FC3/2	F2/FC5/0
0/FC0/3	F0/FC4/1	0/FC1/3	F0/FC7/1	0/FC2/3	F1/FC6/1	0/FC3/3	F2/FC5/1

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
0/FC0/4	F0/FC1/0	0/FC1/4	F1/FC0/0	0/FC2/4	F1/FC3/0	0/FC3/4	F2/FC2/0
0/FC0/5	F0/FC1/1	0/FC1/5	F1/FC0/1	0/FC2/5	F1/FC3/1	0/FC3/5	F2/FC2/1
0/FC0/6	F0/FC5/0	0/FC1/6	F1/FC4/0	0/FC2/6	F1/FC7/0	0/FC3/6	F2/FC6/0
0/FC0/7	F0/FC5/1	0/FC1/7	F1/FC4/1	0/FC2/7	F1/FC7/1	0/FC3/7	F2/FC6/1
0/FC0/8	F0/FC2/0	0/FC1/8	F1/FC1/0	0/FC2/8	F2/FC0/0	0/FC3/8	F2/FC3/0
0/FC0/9	F0/FC2/1	0/FC1/9	F1/FC1/1	0/FC2/9	F2/FC0/1	0/FC3/9	F2/FC3/1
0/FC0/10	F0/FC6/0	0/FC1/10	F1/FC5/0	0/FC2/10	F2/FC4/0	0/FC3/10	F2/FC7/0
0/FC0/11	F0/FC6/1	0/FC1/11	F1/FC5/1	0/FC2/11	F2/FC4/1	0/FC3/11	F2/FC7/1

Table 25: Cabling Plan for LCC1 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
1/FC0/0	F0/FC0/2	1/FC1/0	F0/FC3/2	1/FC2/0	F1/FC2/2	1/FC3/0	F2/FC1/2
1/FC0/1	F0/FC0/3	1/FC1/1	F0/FC3/3	1/FC2/1	F1/FC2/3	1/FC3/1	F2/FC1/3
1/FC0/2	F0/FC4/2	1/FC1/2	F0/FC7/2	1/FC2/2	F1/FC6/2	1/FC3/2	F2/FC5/2
1/FC0/3	F0/FC4/3	1/FC1/3	F0/FC7/3	1/FC2/3	F1/FC6/3	1/FC3/3	F2/FC5/3
1/FC0/4	F0/FC1/2	1/FC1/4	F1/FC0/2	1/FC2/4	F1/FC3/2	1/FC3/4	F2/FC2/2
1/FC0/5	F0/FC1/3	1/FC1/5	F1/FC0/3	1/FC2/5	F1/FC3/3	1/FC3/5	F2/FC2/3
1/FC0/6	F0/FC5/2	1/FC1/6	F1/FC4/2	1/FC2/6	F1/FC7/2	1/FC3/6	F2/FC6/2
1/FC0/7	F0/FC5/3	1/FC1/7	F1/FC4/3	1/FC2/7	F1/FC7/3	1/FC3/7	F2/FC6/3
1/FC0/8	F0/FC2/2	1/FC1/8	F1/FC1/2	1/FC2/8	F2/FC0/2	1/FC3/8	F2/FC3/2
1/FC0/9	F0/FC2/3	1/FC1/9	F1/FC1/3	1/FC2/9	F2/FC0/3	1/FC3/9	F2/FC3/3
1/FC0/10	F0/FC6/2	1/FC1/10	F1/FC5/2	1/FC2/10	F2/FC4/2	1/FC3/10	F2/FC7/2
1/FC0/11	F0/FC6/3	1/FC1/11	F1/FC5/3	1/FC2/11	F2/FC4/3	1/FC3/11	F2/FC7/3

Table 26: Cabling Plan for LCC2 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
2/FC0/0	F0/FC0/4	2/FC1/0	F0/FC3/4	2/FC2/0	F1/FC2/4	2/FC3/0	F2/FC1/4
2/FC0/1	F0/FC0/5	2/FC1/1	F0/FC3/5	2/FC2/1	F1/FC2/5	2/FC3/1	F2/FC1/5
2/FC0/2	F0/FC4/4	2/FC1/2	F0/FC7/4	2/FC2/2	F1/FC6/4	2/FC3/2	F2/FC5/4
2/FC0/3	F0/FC4/5	2/FC1/3	F0/FC7/5	2/FC2/3	F1/FC6/5	2/FC3/3	F2/FC5/5
2/FC0/4	F0/FC1/4	2/FC1/4	F1/FC0/4	2/FC2/4	F1/FC3/4	2/FC3/4	F2/FC2/4
2/FC0/5	F0/FC1/5	2/FC1/5	F1/FC0/5	2/FC2/5	F1/FC3/5	2/FC3/5	F2/FC2/5
2/FC0/6	F0/FC5/4	2/FC1/6	F1/FC4/4	2/FC2/6	F1/FC7/4	2/FC3/6	F2/FC6/4
2/FC0/7	F0/FC5/5	2/FC1/7	F1/FC4/5	2/FC2/7	F1/FC7/5	2/FC3/7	F2/FC6/5
2/FC0/8	F0/FC2/4	2/FC1/8	F1/FC1/4	2/FC2/8	F2/FC0/4	2/FC3/8	F2/FC3/4
2/FC0/9	F0/FC2/5	2/FC1/9	F1/FC1/5	2/FC2/9	F2/FC0/5	2/FC3/9	F2/FC3/5
2/FC0/10	F0/FC6/4	2/FC1/10	F1/FC5/4	2/FC2/10	F2/FC4/4	2/FC3/10	F2/FC7/4
2/FC0/11	F0/FC6/5	2/FC1/11	F1/FC5/5	2/FC2/11	F2/FC4/5	2/FC3/11	F2/FC7/5

Table 27: Cabling Plan for LCC3 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
3/FC0/0	F0/FC0/6	3/FC1/0	F0/FC3/6	3/FC2/0	F1/FC2/6	3/FC3/0	F2/FC1/6
3/FC0/1	F0/FC0/7	3/FC1/1	F0/FC3/7	3/FC2/1	F1/FC2/7	3/FC3/1	F2/FC1/7
3/FC0/2	F0/FC4/6	3/FC1/2	F0/FC7/6	3/FC2/2	F1/FC6/6	3/FC3/2	F2/FC5/6
3/FC0/3	F0/FC4/7	3/FC1/3	F0/FC7/7	3/FC2/3	F1/FC6/7	3/FC3/3	F2/FC5/7
3/FC0/4	F0/FC1/6	3/FC1/4	F1/FC0/6	3/FC2/4	F1/FC3/6	3/FC3/4	F2/FC2/6
3/FC0/5	F0/FC1/7	3/FC1/5	F1/FC0/7	3/FC2/5	F1/FC3/7	3/FC3/5	F2/FC2/7
3/FC0/6	F0/FC5/6	3/FC1/6	F1/FC4/6	3/FC2/6	F1/FC7/6	3/FC3/6	F2/FC6/6
3/FC0/7	F0/FC5/7	3/FC1/7	F1/FC4/7	3/FC2/7	F1/FC7/7	3/FC3/7	F2/FC6/7
3/FC0/8	F0/FC2/6	3/FC1/8	F1/FC1/6	3/FC2/8	F2/FC0/6	3/FC3/8	F2/FC3/6
3/FC0/9	F0/FC2/7	3/FC1/9	F1/FC1/7	3/FC2/9	F2/FC0/7	3/FC3/9	F2/FC3/7
3/FC0/10	F0/FC6/6	3/FC1/10	F1/FC5/6	3/FC2/10	F2/FC4/6	3/FC3/10	F2/FC7/6
3/FC0/11	F0/FC6/7	3/FC1/11	F1/FC5/7	3/FC2/11	F2/FC4/7	3/FC3/11	F2/FC7/7

Table 28: Cabling Plan for LCC4 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
4/FC0/0	F0/FC0/8	4/FC1/0	F0/FC3/8	4/FC2/0	F1/FC2/8	4/FC3/0	F2/FC1/8
4/FC0/1	F0/FC0/9	4/FC1/1	F0/FC3/9	4/FC2/1	F1/FC2/9	4/FC3/1	F2/FC1/9
4/FC0/2	F0/FC4/8	4/FC1/2	F0/FC7/8	4/FC2/2	F1/FC6/8	4/FC3/2	F2/FC5/8
4/FC0/3	F0/FC4/9	4/FC1/3	F0/FC7/9	4/FC2/3	F1/FC6/9	4/FC3/3	F2/FC5/9
4/FC0/4	F0/FC1/8	4/FC1/4	F1/FC0/8	4/FC2/4	F1/FC3/8	4/FC3/4	F2/FC2/8
4/FC0/5	F0/FC1/9	4/FC1/5	F1/FC0/9	4/FC2/5	F1/FC3/9	4/FC3/5	F2/FC2/9
4/FC0/6	F0/FC5/8	4/FC1/6	F1/FC4/8	4/FC2/6	F1/FC7/8	4/FC3/6	F2/FC6/8
4/FC0/7	F0/FC5/9	4/FC1/7	F1/FC4/9	4/FC2/7	F1/FC7/9	4/FC3/7	F2/FC6/9
4/FC0/8	F0/FC2/8	4/FC1/8	F1/FC1/8	4/FC2/8	F2/FC0/8	4/FC3/8	F2/FC3/8
4/FC0/9	F0/FC2/9	4/FC1/9	F1/FC1/9	4/FC2/9	F2/FC0/9	4/FC3/9	F2/FC3/9
4/FC0/10	F0/FC6/8	4/FC1/10	F1/FC5/8	4/FC2/10	F2/FC4/8	4/FC3/10	F2/FC7/8
4/FC0/11	F0/FC6/9	4/FC1/11	F1/FC5/9	4/FC2/11	F2/FC4/9	4/FC3/11	F2/FC7/9

Table 29: Cabling Plan for LCC5 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
5/FC0/0	F0/FC0/10	5/FC1/0	F0/FC3/10	5/FC2/0	F1/FC2/10	5/FC3/0	F2/FC1/10
5/FC0/1	F0/FC0/11	5/FC1/1	F0/FC3/11	5/FC2/1	F1/FC2/11	5/FC3/1	F2/FC1/11
5/FC0/2	F0/FC4/10	5/FC1/2	F0/FC7/10	5/FC2/2	F1/FC6/10	5/FC3/2	F2/FC5/10
5/FC0/3	F0/FC4/11	5/FC1/3	F0/FC7/11	5/FC2/3	F1/FC6/11	5/FC3/3	F2/FC5/11
5/FC0/4	F0/FC1/10	5/FC1/4	F1/FC0/10	5/FC2/4	F1/FC3/10	5/FC3/4	F2/FC2/10
5/FC0/5	F0/FC1/11	5/FC1/5	F1/FC0/11	5/FC2/5	F1/FC3/11	5/FC3/5	F2/FC2/11
5/FC0/6	F0/FC5/10	5/FC1/6	F1/FC4/10	5/FC2/6	F1/FC7/10	5/FC3/6	F2/FC6/10
5/FC0/7	F0/FC5/11	5/FC1/7	F1/FC4/11	5/FC2/7	F1/FC7/11	5/FC3/7	F2/FC6/11
5/FC0/8	F0/FC2/10	5/FC1/8	F1/FC1/10	5/FC2/8	F2/FC0/10	5/FC3/8	F2/FC3/10
5/FC0/9	F0/FC2/11	5/FC1/9	F1/FC1/11	5/FC2/9	F2/FC0/11	5/FC3/9	F2/FC3/11
5/FC0/10	F0/FC6/10	5/FC1/10	F1/FC5/10	5/FC2/10	F2/FC4/10	5/FC3/10	F2/FC7/10
5/FC0/11	F0/FC6/11	5/FC1/11	F1/FC5/11	5/FC2/11	F2/FC4/11	5/FC3/11	F2/FC7/11

Table 30: Cabling Plan for LCC6 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
6/FC0/0	F0/FC0/12	6/FC1/0	F0/FC3/12	6/FC2/0	F1/FC2/12	6/FC3/0	F2/FC1/12
6/FC0/1	F0/FC0/13	6/FC1/1	F0/FC3/13	6/FC2/1	F1/FC2/13	6/FC3/1	F2/FC1/13
6/FC0/2	F0/FC4/12	6/FC1/2	F0/FC7/12	6/FC2/2	F1/FC6/12	6/FC3/2	F2/FC5/12
6/FC0/3	F0/FC4/13	6/FC1/3	F0/FC7/13	6/FC2/3	F1/FC6/13	6/FC3/3	F2/FC5/13
6/FC0/4	F0/FC1/12	6/FC1/4	F1/FC0/12	6/FC2/4	F1/FC3/12	6/FC3/4	F2/FC2/12
6/FC0/5	F0/FC1/13	6/FC1/5	F1/FC0/13	6/FC2/5	F1/FC3/13	6/FC3/5	F2/FC2/13
6/FC0/6	F0/FC5/12	6/FC1/6	F1/FC4/12	6/FC2/6	F1/FC7/12	6/FC3/6	F2/FC6/12
6/FC0/7	F0/FC5/13	6/FC1/7	F1/FC4/13	6/FC2/7	F1/FC7/13	6/FC3/7	F2/FC6/13
6/FC0/8	F0/FC2/12	6/FC1/8	F1/FC1/12	6/FC2/8	F2/FC0/12	6/FC3/8	F2/FC3/12
6/FC0/9	F0/FC2/13	6/FC1/9	F1/FC1/13	6/FC2/9	F2/FC0/13	6/FC3/9	F2/FC3/13
6/FC0/10	F0/FC6/12	6/FC1/10	F1/FC5/12	6/FC2/10	F2/FC4/12	6/FC3/10	F2/FC7/12
6/FC0/11	F0/FC6/13	6/FC1/11	F1/FC5/13	6/FC2/11	F2/FC4/13	6/FC3/11	F2/FC7/13

Table 31: Cabling Plan for LCC7 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
7/FC0/0	F0/FC0/14	7/FC1/0	F0/FC3/14	7/FC2/0	F1/FC2/14	7/FC3/0	F2/FC1/14
7/FC0/1	F0/FC0/15	7/FC1/1	F0/FC3/15	7/FC2/1	F1/FC2/15	7/FC3/1	F2/FC1/15
7/FC0/2	F0/FC4/14	7/FC1/2	F0/FC7/14	7/FC2/2	F1/FC6/14	7/FC3/2	F2/FC5/14
7/FC0/3	F0/FC4/15	7/FC1/3	F0/FC7/15	7/FC2/3	F1/FC6/15	7/FC3/3	F2/FC5/15
7/FC0/4	F0/FC1/14	7/FC1/4	F1/FC0/14	7/FC2/4	F1/FC3/14	7/FC3/4	F2/FC2/14
7/FC0/5	F0/FC1/15	7/FC1/5	F1/FC0/15	7/FC2/5	F1/FC3/15	7/FC3/5	F2/FC2/15
7/FC0/6	F0/FC5/14	7/FC1/6	F1/FC4/14	7/FC2/6	F1/FC7/14	7/FC3/6	F2/FC6/14
7/FC0/7	F0/FC5/15	7/FC1/7	F1/FC4/15	7/FC2/7	F1/FC7/15	7/FC3/7	F2/FC6/15
7/FC0/8	F0/FC2/14	7/FC1/8	F1/FC1/14	7/FC2/8	F2/FC0/14	7/FC3/8	F2/FC3/14
7/FC0/9	F0/FC2/15	7/FC1/9	F1/FC1/15	7/FC2/9	F2/FC0/15	7/FC3/9	F2/FC3/15
7/FC0/10	F0/FC6/14	7/FC1/10	F1/FC5/14	7/FC2/10	F2/FC4/14	7/FC3/10	F2/FC7/14
7/FC0/11	F0/FC6/15	7/FC1/11	F1/FC5/15	7/FC2/11	F2/FC4/15	7/FC3/11	F2/FC7/15

Table 32: Cabling Plan for LCC8 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
8/FC0/0	F0/FC0/16	8/FC1/0	F0/FC3/16	8/FC2/0	F1/FC2/16	8/FC3/0	F2/FC1/16
8/FC0/1	F0/FC0/17	8/FC1/1	F0/FC3/17	8/FC2/1	F1/FC2/17	8/FC3/1	F2/FC1/17
8/FC0/2	F0/FC4/16	8/FC1/2	F0/FC7/16	8/FC2/2	F1/FC6/16	8/FC3/2	F2/FC5/16
8/FC0/3	F0/FC4/17	8/FC1/3	F0/FC7/17	8/FC2/3	F1/FC6/17	8/FC3/3	F2/FC5/17
8/FC0/4	F0/FC1/16	8/FC1/4	F1/FC0/16	8/FC2/4	F1/FC3/16	8/FC3/4	F2/FC2/16
8/FC0/5	F0/FC1/17	8/FC1/5	F1/FC0/17	8/FC2/5	F1/FC3/17	8/FC3/5	F2/FC2/17
8/FC0/6	F0/FC5/16	8/FC1/6	F1/FC4/16	8/FC2/6	F1/FC7/16	8/FC3/6	F2/FC6/16
8/FC0/7	F0/FC5/17	8/FC1/7	F1/FC4/17	8/FC2/7	F1/FC7/17	8/FC3/7	F2/FC6/17
8/FC0/8	F0/FC2/16	8/FC1/8	F1/FC1/16	8/FC2/8	F2/FC0/16	8/FC3/8	F2/FC3/16
8/FC0/9	F0/FC2/17	8/FC1/9	F1/FC1/17	8/FC2/9	F2/FC0/17	8/FC3/9	F2/FC3/17
8/FC0/10	F0/FC6/16	8/FC1/10	F1/FC5/16	8/FC2/10	F2/FC4/16	8/FC3/10	F2/FC7/16
8/FC0/11	F0/FC6/17	8/FC1/11	F1/FC5/17	8/FC2/11	F2/FC4/17	8/FC3/11	F2/FC7/17

Table 33: Cabling Plan for LCC9 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
9/FC0/0	F0/FC0/18	9/FC1/0	F0/FC3/18	9/FC2/0	F1/FC2/18	9/FC3/0	F2/FC1/18
9/FC0/1	F0/FC0/19	9/FC1/1	F0/FC3/19	9/FC2/1	F1/FC2/19	9/FC3/1	F2/FC1/19
9/FC0/2	F0/FC4/18	9/FC1/2	F0/FC7/18	9/FC2/2	F1/FC6/18	9/FC3/2	F2/FC5/18
9/FC0/3	F0/FC4/19	9/FC1/3	F0/FC7/19	9/FC2/3	F1/FC6/19	9/FC3/3	F2/FC5/19
9/FC0/4	F0/FC1/18	9/FC1/4	F1/FC0/18	9/FC2/4	F1/FC3/18	9/FC3/4	F2/FC2/18
9/FC0/5	F0/FC1/19	9/FC1/5	F1/FC0/19	9/FC2/5	F1/FC3/19	9/FC3/5	F2/FC2/19
9/FC0/6	F0/FC5/18	9/FC1/6	F1/FC4/18	9/FC2/6	F1/FC7/18	9/FC3/6	F2/FC6/18
9/FC0/7	F0/FC5/19	9/FC1/7	F1/FC4/19	9/FC2/7	F1/FC7/19	9/FC3/7	F2/FC6/19
9/FC0/8	F0/FC2/18	9/FC1/8	F1/FC1/18	9/FC2/8	F2/FC0/18	9/FC3/8	F2/FC3/18
9/FC0/9	F0/FC2/19	9/FC1/9	F1/FC1/19	9/FC2/9	F2/FC0/19	9/FC3/9	F2/FC3/19
9/FC0/10	F0/FC6/18	9/FC1/10	F1/FC5/18	9/FC2/10	F2/FC4/18	9/FC3/10	F2/FC7/18
9/FC0/11	F0/FC6/19	9/FC1/11	F1/FC5/19	9/FC2/11	F2/FC4/19	9/FC3/11	F2/FC7/19

Table 34: Cabling Plan for LCC10 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
10/FC0/0	F0/FC0/20	10/FC1/0	F0/FC3/20	10/FC2/0	F1/FC2/20	10/FC3/0	F2/FC1/20
10/FC0/1	F0/FC0/21	10/FC1/1	F0/FC3/21	10/FC2/1	F1/FC2/21	10/FC3/1	F2/FC1/21
10/FC0/2	F0/FC4/20	10/FC1/2	F0/FC7/20	10/FC2/2	F1/FC6/20	10/FC3/2	F2/FC5/20
10/FC0/3	F0/FC4/21	10/FC1/3	F0/FC7/21	10/FC2/3	F1/FC6/21	10/FC3/3	F2/FC5/21
10/FC0/4	F0/FC1/20	10/FC1/4	F1/FC0/20	10/FC2/4	F1/FC3/20	10/FC3/4	F2/FC2/20
10/FC0/5	F0/FC1/21	10/FC1/5	F1/FC0/21	10/FC2/5	F1/FC3/21	10/FC3/5	F2/FC2/21
10/FC0/6	F0/FC5/20	10/FC1/6	F1/FC4/20	10/FC2/6	F1/FC7/20	10/FC3/6	F2/FC6/20
10/FC0/7	F0/FC5/21	10/FC1/7	F1/FC4/21	10/FC2/7	F1/FC7/21	10/FC3/7	F2/FC6/21
10/FC0/8	F0/FC2/20	10/FC1/8	F1/FC1/20	10/FC2/8	F2/FC0/20	10/FC3/8	F2/FC3/20
10/FC0/9	F0/FC2/21	10/FC1/9	F1/FC1/21	10/FC2/9	F2/FC0/21	10/FC3/9	F2/FC3/21
10/FC0/10	F0/FC6/20	10/FC1/10	F1/FC5/20	10/FC2/10	F2/FC4/20	10/FC3/10	F2/FC7/20
10/FC0/11	F0/FC6/21	10/FC1/11	F1/FC5/21	10/FC2/11	F2/FC4/21	10/FC3/11	F2/FC7/21

Table 35: Cabling Plan for LCC11 in a 12+3 Multi-Chassis Configuration

Plane 0		Plane 1		Plane 2		Plane 3	
LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis	LCC slot/port	FCC slot/port/ chassis
11/FC0/0	F0/FC0/22	11/FC1/0	F0/FC3/22	11/FC2/0	F1/FC2/22	11/FC3/0	F2/FC1/22
11/FC0/1	F0/FC0/23	11/FC1/1	F0/FC3/23	11/FC2/1	F1/FC2/23	11/FC3/1	F2/FC1/23
11/FC0/2	F0/FC4/22	11/FC1/2	F0/FC7/22	11/FC2/2	F1/FC6/22	11/FC3/2	F2/FC5/22
11/FC0/3	F0/FC4/23	11/FC1/3	F0/FC7/23	11/FC2/3	F1/FC6/23	11/FC3/3	F2/FC5/23
11/FC0/4	F0/FC1/22	11/FC1/4	F1/FC0/22	11/FC2/4	F1/FC3/22	11/FC3/4	F2/FC2/22
11/FC0/5	F0/FC1/23	11/FC1/5	F1/FC0/23	11/FC2/5	F1/FC3/23	11/FC3/5	F2/FC2/23
11/FC0/6	F0/FC5/22	11/FC1/6	F1/FC4/22	11/FC2/6	F1/FC7/22	11/FC3/6	F2/FC6/22
11/FC0/7	F0/FC5/23	11/FC1/7	F1/FC4/23	11/FC2/7	F1/FC7/23	11/FC3/7	F2/FC6/23
11/FC0/8	F0/FC2/22	11/FC1/8	F1/FC1/22	11/FC2/8	F2/FC0/22	11/FC3/8	F2/FC3/22
11/FC0/9	F0/FC2/23	11/FC1/9	F1/FC1/23	11/FC2/9	F2/FC0/23	11/FC3/9	F2/FC3/23
11/FC0/10	F0/FC6/22	11/FC1/10	F1/FC5/22	11/FC2/10	F2/FC4/22	11/FC3/10	F2/FC7/22
11/FC0/11	F0/FC6/23	11/FC1/11	F1/FC5/23	11/FC2/11	F2/FC4/23	11/FC3/11	F2/FC7/23

> **Note** The cable plan for the 12+3 configuration is not flexible.

Chassis Serial Configurations for 12+3

Chassis Serial Configurations

LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, LCC7, LCC8, LCC9, LCC10, and LCC11 are on rack 0, rack 1, rack 2, rack 3, rack 4, rack 5, rack 6, rack 7, rack 8, rack 9, rack 10, and rack 11 respectively. FCC0, FCC1, and FCC2 are on rack F0, rack F1, and rack F2 respectively. Use the **chassis serial** *serial_number* **rack** *rack_id* command. For a detailed procedure, see Assign Rack Number to Chassis.

```
chassis serial <serial number> rack 0
chassis serial <serial number> rack 1
chassis serial <serial number> rack 2
chassis serial <serial number> rack 3
chassis serial <serial number> rack 4
chassis serial <serial number> rack 5
chassis serial <serial number> rack 6
chassis serial <serial number> rack 7
chassis serial <serial number> rack 8
chassis serial <serial number> rack 9
chassis serial <serial number> rack 10
chassis serial <serial number> rack 11
chassis serial <serial number> rack F0
chassis serial <serial number> rack F1
chassis serial <serial number> rack F2
```

Fabric Instance Configuration for 12+3

The following configurations are for a 12+3 MC system with six FCC fabric cards per plane with FCC rack level redundancy. For a detailed procedure, see Associate a Fabric Card in a Fabric Card Chassis to a Fabric Plane.

- Fabric instance configuration for fabric plane 0:

```
config
controller fabric plane 0
instance 0
location F0/FC0
instance 1
location F0/FC4
instance 2
location F0/FC1
instance 3
location F0/FC5
instance 4
location F0/FC2
instance 5
location F0/FC6
```

- Fabric instance configuration for fabric plane 1:

```
config
controller fabric plane 1
```

```
instance 0
location F0/FC3
instance 1
location F0/FC7
instance 2
location F1/FC0
instance 3
location F1/FC4
instance 4
location F1/FC1
instance 5
location F1/FC5
```

• Fabric instance configuration for plane 2:

```
config
controller fabric plane 2
instance 0
location F1/FC2
instance 1
location F1/FC6
instance 2
location F1/FC3
instance 3
location F1/FC7
instance 4
location F2/FC0
instance 5
location F2/FC4
```

• Fabric instance configuration for plane 3:

```
config
controller fabric plane 3
instance 0
location F2/FC1
Instance 1
location F2/FC5
instance 2
location F2/FC2
Instance 3
location F2/FC6
instance 4
location F2/FC3
Instance 5
location F2/FC7
```

Note   Removing a fabric plane instance configuration might impact traffic. Shut down the relevant plane before removing or modifying a fabric instance configuration.

If there is a plane configuration mismatch, the CXP2 LEDs for the relevant plane are shown red. This is because the bundles are down, although the plane status is shown Up. You must correct the configuration error before proceeding.

Verify CE Links

The following commands are used to verify the control ethernet (CE) links. These commands are common for all MC systems.

Procedure

Step 1 **show controller switch reachable**

Checks reachability for all LC, RP, and SC.

Example:

```
sysadmin-vm:F0_SC0# show controller switch reachable
Wed Jun  24 22:43:13.302 UTC.
Rack  Card  Switch
-------------------
0     RP0   RP-SW
0     RP1   RP-SW
0     LC0   LC-SW
0     LC1   LC-SW
0     LC2   LC-SW
0     LC3   LC-SW
0     LC4   LC-SW
0     LC5   LC-SW
0     LC6   LC-SW
0     LC7   LC-SW
1     RP0   RP-SW
1     RP1   RP-SW
1     LC0   LC-SW
1     LC1   LC-SW
1     LC2   LC-SW
1     LC3   LC-SW
1     LC4   LC-SW
1     LC5   LC-SW
1     LC6   LC-SW
1     LC7   LC-SW
2     RP0   RP-SW
2     RP1   RP-SW
F0    SC0   SC-SW
F0    SC0   F-SW0
F0    SC1   SC-SW
F1    SC0   SC-SW
F1    SC1   SC-SW
F1    SC1   F-SW0
```

Step 2 **show controller switch mlap reachable**

Checks reachability for switch mlap.

Example:

```
sysadmin-vm:F0_SC0# show controller switch mlap reachable
Wed Jun  24 22:54:33.351 UTC
Rack  Card  Switch
-------------------
0     RP0   RP-SW
0     RP1   RP-SW
```

```
1     RP0    RP-SW
1     RP1    RP-SW
2     RP0    RP-SW
2     RP1    RP-SW
F0    SC0    SC-SW
F0    SC0    F-SW0
F0    SC1    SC-SW
F1    SC0    SC-SW
F1    SC1    SC-SW
F1    SC1    F-SW0
```

Step 3   **show controller switch mlap location**

Checks CE connectivity.

Note   Port information information is internal port info. i.e. port 58 is RP port 0 and 59 is RP port 1.

```
sysadmin-vm:F1_SC0# show controller switch mlap location ?
Description: Location information for MLAP switch summary data
Possible completions:
  0/RP0/RP-SW
  0/RP1/RP-SW
  1/RP0/RP-SW
  1/RP1/RP-SW
  F0/SC0/SC-SW
  F0/SC1/F-SW0
  F0/SC1/SC-SW
  F1/SC0/F-SW0
  F1/SC0/SC-SW
  F1/SC1/SC-SW


show controller switch mlap location 0/RP0/RP-SW | i External
show controller switch mlap location 0/RP1/RP-SW | i External
show controller switch mlap location 1/RP0/RP-SW | i External
show controller switch mlap location 1/RP1/RP-SW | i External


show controller switch mlap location F0/SC0/SC-SW | i External
show controller switch mlap location F0/SC1/SC-SW  | i External
show controller switch mlap location F0/SC1/F-SW0 | i Active (If this fails, capture below
 command with F0/SC0-SW0 location)
show controller switch mlap location F0/SC0/F-SW0 | i Active
show controller switch mlap location F0/SC1/F-SW0 | i Standby(If this fails, capture below
 command with F0/SC0-SW0 location)
show controller switch mlap location F0/SC0/F-SW0 | i Standby


show controller switch mlap location F1/SC0/SC-SW | i External
show controller switch mlap location F1/SC1/SC-SW | i External
show controller switch mlap location F1/SC1/F-SW0 | i Active(If this fails, capture below
command with F1/SC0-SW0 location)
show controller switch mlap location F1/SC0/F-SW0 | i Active
show controller switch mlap location F1/SC1/F-SW0 | i Standby(If this fails, capture below
 command with F1/SC0-SW0 location)
show controller switch mlap location F1/SC0/F-SW0 | i Standby
```

Example:

2+2 MC system.

```
sysadmin-vm:F1_SC0# show controller switch mlap location 0/RP0/RP-SW | i External
```

```
Wed Aug  5  13:51:08.598 UTC
58    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 17
59    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 17
sysadmin-vm:F1_SC0# show controller switch mlap location 0/RP1/RP-SW | i External
Wed Aug  5  13:51:16.227 UTC
58    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 16
59    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 16
sysadmin-vm:F1_SC0# show controller switch mlap location 1/RP0/RP-SW | i External
Wed Aug  5  13:51:24.746 UTC
58    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 20
59    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 21
sysadmin-vm:F1_SC0# show controller switch mlap location 1/RP1/RP-SW | i External
Wed Aug  5  13:51:31.577 UTC
58    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 21
59    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 20
sysadmin-vm:F1_SC0#


sysadmin-vm:F1_SC0# show controller switch mlap location F0/SC0/SC-SW | i External
Wed Aug  5  13:54:45.342 UTC
22    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 1
24    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 1
sysadmin-vm:F1_SC0# show controller switch mlap location F0/SC1/F-SW0 | i Active
Wed Aug  5  13:54:52.803 UTC
0     Up    Up    Active    Forwarding  External  Exp Eth1: F1/SC0/SC-SW 24
1     Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC0/SC-SW 24
4     Up    Up    Active    Forwarding  External  Exp Eth3: F1/SC1/SC-SW 24
5     Up    Up    Active    Forwarding  External  Exp Eth2: F0/SC1/SC-SW 24
16    Up    Up    Active    Forwarding  External  Exp Eth5: 0/RP1/RP-SW 58
17    Up    Up    Active    Forwarding  External  Exp Eth4: 0/RP0/RP-SW 58
20    Up    Up    Active    Forwarding  External  Exp Eth7: 1/RP0/RP-SW 58
21    Up    Up    Active    Forwarding  External  Exp Eth6: 1/RP1/RP-SW 58
112   Up    Up    Active    Forwarding  External  HS 0: F1/SC0/F-SW0 112
116   Up    Up    Active    Forwarding  External  HS 1: F1/SC0/F-SW0 116
sysadmin-vm:F1_SC0# show controller switch mlap location F0/SC1/F-SW0 | i Standby
Wed Aug  5  13:55:07.597 UTC
sysadmin-vm:F1_SC0# show controller switch mlap location F0/SC1/SC-SW  | i External
Wed Aug  5  13:55:17.642 UTC
22    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 5
24    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 5
sysadmin-vm:F1_SC0#


sysadmin-vm:F1_SC0# show controller switch mlap location F1/SC0/SC-SW | i External
Wed Aug  5  13:57:57.519 UTC
22    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 0
24    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW
sysadmin-vm:F1_SC0# show controller switch mlap location F1/SC0/F-SW0 | i Active
Wed Aug  5  13:58:25.308 UTC
112   Up    Up    Active    Forwarding External  HS 0: F0/SC1/F-SW0 112
116   Up    Up    Active    Forwarding External  HS 1: F0/SC1/F-SW0 116
sysadmin-vm:F1_SC0# show controller switch mlap location F1/SC0/F-SW0 | i Standby
Wed Aug  5  13:58:43.633 UTC
0     Up    Up    Standby   Blocking   External  Exp Eth1: F1/SC0/SC-SW 22
1     Up    Up    Standby   Blocking   External  Exp Eth0: F0/SC0/SC-SW 22
4     Up    Up    Standby   Blocking   External  Exp Eth3: F1/SC1/SC-SW 22
5     Up    Up    Standby   Blocking   External  Exp Eth2: F0/SC1/SC-SW 22
16    Up    Up    Standby   Blocking   External  Exp Eth5: 0/RP1/RP-SW 59
17    Up    Up    Standby   Blocking   External  Exp Eth4: 0/RP0/RP-SW 59
20    Up    Up    Standby   Blocking   External  Exp Eth7: 1/RP1/RP-SW 59
21    Up    Up    Standby   Blocking   External  Exp Eth6: 1/RP0/RP-SW 59
sysadmin-vm:F1_SC0# show controller switch mlap location F1/SC1/SC-SW | i External
Wed Aug  5  14:00:18.450 UTC
22    Up    Up    Standby   Blocking    External  Exp Eth1: F1/SC0/F-SW0 4
```

```
24    Up    Up    Active    Forwarding  External  Exp Eth0: F0/SC1/F-SW0 4
sysadmin-vm:F1_SC0#
```

Step 4   **show controller fabric link port s2 rx state down**

Verifies fabric links.

Note   No links should be down.

Example:

```
sysadmin-vm:F0_SC0# sh controller fabric link port s2 rx state down
Wed Jun  17 21:01:31.361 UTC

Description:
Ch - Channel,   Sx - Slice/bus #,    Px - Port # within slice/bus
DN - Down,      LI - Lane into CDR,  LO - Lane out of CDR
SFE port        Admin Near-end     Near    Far     Far-end     Other End
R/S/A/P         /Oper  CDR         -end    -end    CDR         R/S/A/P
                state LO-Sx-Px-LI  CXP/Ch  CXP/Ch  LO-Sx-Px-LI
----------------------------------------------------------------------------
F0/FC5/2/15     UP/DN  03-S1-P2-03  07/09   07/09               1/FC1/0/70

Description:
Ch - Channel,   Sx - Slice/bus #,    Px - Port # within slice/bus
DN - Down,      LI - Lane into CDR,  LO - Lane out of CDR

SFE port        Admin Near-end     Near    Far     Far-end     Other End
R/S/A/P         /Oper  CDR         -end    -end    CDR         R/S/A/P
                state LO-Sx-Px-LI  CXP/Ch  CXP/Ch  LO-Sx-Px-LI
----------------------------------------------------------------------------
F1/FC5/1/14     UP/DN  01-S1-P0-01  07/04   07/04   04-S1-P0-04  1/FC4/0/68


Shows F0/FC5/7 connected to 1/FC1/7 and FC1/FC5/7 connected to 1/FC4/7 should be cleaned
```