



## Cabling a Multi-chassis Configuration

This chapter describes how to physically cable the fabric planes between each LCC and FCC in the system. The Cisco NCS 4000 Multi-Chassis system currently supports these multi-chassis configurations:

- 2+2—Two LCCs + one FCC
- 4+2—Four LCCs + two FCC
- 8+3—Eight LCCs + three FCCs

**Table 1: Feature History**

Feature Name	Release Information	Feature Description
8+3 Multi-chassis configuration	Cisco IOS XR Release 6.5.31	Eight 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 128-line cards using a single admin and control plane. This ensures seamless switching across the racks.

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## About the Cisco NCS 4000 Multi-Chassis System

This section provides an overview of the Cisco NCS 4000 Multi-Chassis system and describes what is required to interconnect the system components. The Cisco NCS 4000 Multi-Chassis system is also referred to as the “multi-chassis system” throughout this chapter.

The Cisco NCS 4000 Multi-Chassis system is a highly scalable routing platform designed for service providers to build next generation multi-service networks that provide video, data and voice services. The multi-chassis

system consists of two major components: The line card chassis (LCC) and fabric card chassis (FCC). The LCC has 16 line card (LC) slots, four fabric card slots, and two RP slots. The FCC eight fabric card slots and two slots for the RPMC cards.

The timing connections between multiple LCCs is a must in a multi-chassis configuration. For information on the ECU2 and timing, see the *Hardware Installation Guide for the Cisco NCS 4000 Series*.

## Prerequisites

Before cabling the system, install each line card chassis (LCC) and fabric card chassis (FCC) in the planned location. Ensure that you have adequate floor space to cable the multi-chassis system and an environment that meets the recommended specifications.

The maximum distance between an FCC and LCC or a LCC and LCC is 100 meters.

## Cabling Requirements

The following cables and optics are required to interconnect the LCC and FCC in a Cisco NCS 4000 Multi-Chassis system.




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**Note** Cisco provides the optical modules but does not provide the cables specified below. To obtain the optics, please contact your Cisco sales representative for further information.

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For connections from each RP (in the LCC) and RPMC (in the FCC):

- Four 10G-SFP modules and two cables

Use SFP-10G-SR transceiver modules and 62.5/125 or 50/125 multi-mode fiber (MPO) cables or SFP-10G-LR transceiver module SSF single mode fiber.

For connections between RPMC cards in the FCC:




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**Note** For one FCC based configurations, the connections are between the RPMC0 and RPMC1 cards within the same FCC.

For configurations with two or more FCCs, the RPMC0 card in one FCC is connected to the RPMC0 card in another chassis. For example, the RPMC0 cards in FCC0 is connected to the RPMC0 card in FCC1.

Similarly, the RPMC1 card in one FCC is connected to the RPMC1 card in another chassis.

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- QSFP-40GE-SR4 (short-reach) MMF optical modules and MPO-12 ribbon cables
  - QSFP-40GE-LR4 (long-reach) optical modules and standard SMF cables (recommended optic)

For connecting the fabric:

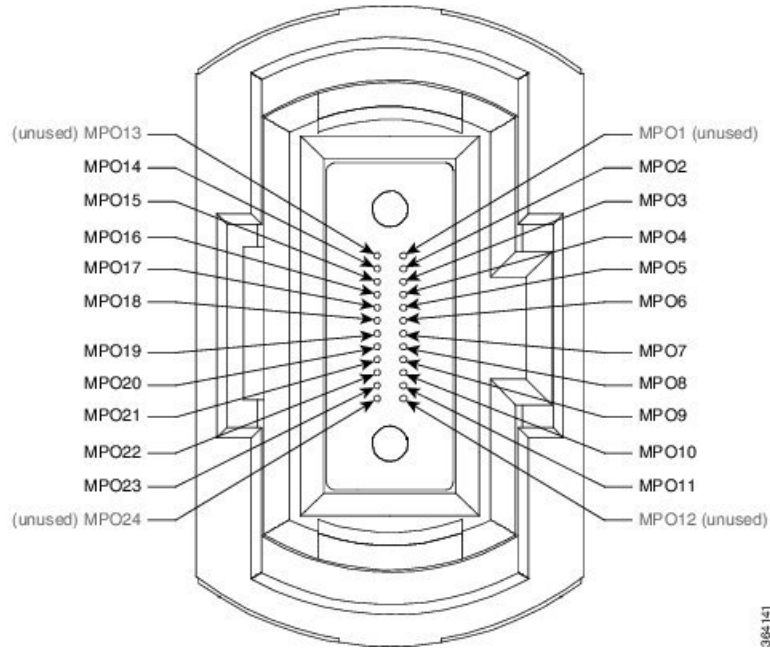
- 48 MPO-24, OM4, key-up key down, female-female, 3.8 mm, multimode, optical fiber cables for each LCC

- CXP2 modules (Cisco PID ONS-CXP2-SR25): 48 modules per LCC and 48 modules for the FCC (for peer connections)

## MPO-24 Cable Specifications

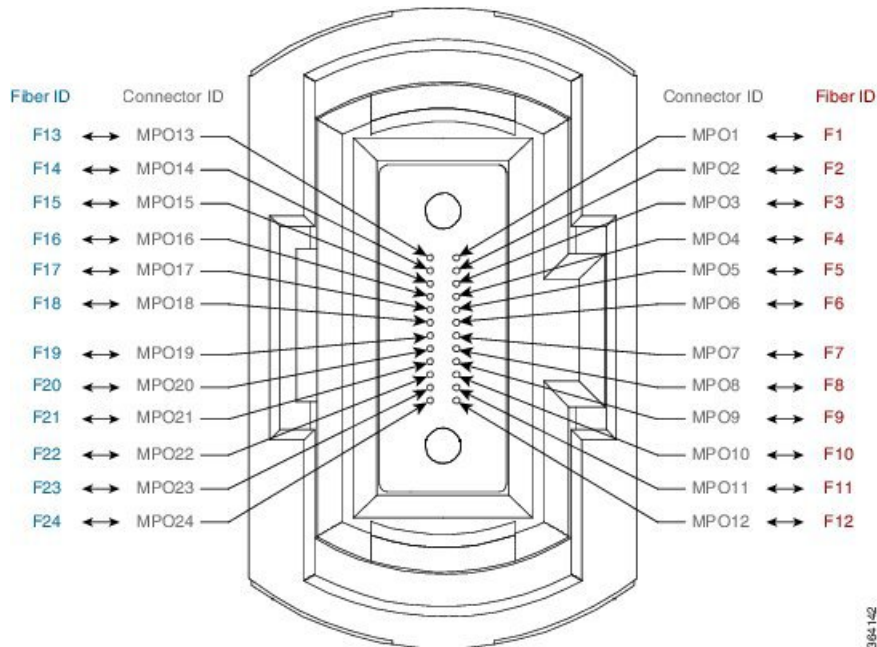
The following figure shows the MPO-24 connector pinouts.

**Figure 1: MPO-24 Connector Pinouts**



The following figure shows the MPO-24 connector fiber assignments.

Figure 2: MPO-24 Connector Fiber Assignments



The following table lists the 100G to 100G crossover cable connections.

Table 2: Crossover Cable Connections

MPO Connector		CXP Module		Connector		CXP Module	
Connector ID	Fiber ID	Pin	Transmit (TX) Receive (RX)	Connector ID	Fiber ID	Pin	Transmit (TX) Receive (RX)
MPO1	F1	1	RX	MPO1	F13	1	RX
MPO2	F2	2	RX	MPO2	F14	2	RX
MPO3	F3	3	RX	MPO3	F15	3	RX
MPO4	F4	4	RX	MPO4	F16	4	RX
MPO5	F5	5	RX	MPO5	F17	5	RX
MPO6	F6	6	RX	MPO6	F18	6	RX
MPO7	F7	7	RX	MPO7	F19	7	RX
MPO8	F8	8	RX	MPO8	F20	8	RX
MPO9	F9	9	RX	MPO9	F21	9	RX
MPO10	F10	10	RX	MPO10	F22	10	RX
MPO11	F11	11	RX	MPO11	F23	11	RX
MPO12	F12	12	RX	MPO12	F24	12	RX

MPO Connector		CXP Module		Connector		CXP Module	
Connector ID	Fiber ID	Pin	Transmit (TX) Receive (RX)	Connector ID	Fiber ID	Pin	Transmit (TX) Receive (RX)
MPO13	F13	13	TX	MPO13	F1	13	TX
MPO14	F14	14	TX	MPO14	F2	14	TX
MPO15	F15	15	TX	MPO15	F3	15	TX
MPO16	F16	16	TX	MPO16	F4	16	TX
MPO17	F17	17	TX	MPO17	F5	17	TX
MPO18	F18	18	TX	MPO18	F6	18	TX
MPO19	F19	19	TX	MPO19	F7	19	TX
MPO20	F20	20	TX	MPO20	F8	20	TX
MPO21	F21	21	TX	MPO21	F9	21	TX
MPO22	F22	22	TX	MPO22	F10	22	TX
MPO23	F23	23	TX	MPO23	F11	23	TX
MPO24	F24	24	TX	MPO24	F12	24	TX

## Required Tools and Equipment

- ESD (Electrostatic Discharge) wrist strap (for inserting a CXP or SFP module)
- Number-2 Phillips screwdriver
- (Optional) Medium flat-blade screwdriver (1/4 inch [60 to 70 mm]) used for opening the bale latches on small form-factor pluggable [SFP] or Gigabit Interface Converter [GBIC] transceivers
- Supply of Velcro tie wraps (to bundle cables)
- Ladder

## Cabling Overview

### General Cabling Procedures

Observe these procedures as you attach every cable:

- Strap the bundles to the horizontal cable management brackets on the chassis.

Two horizontal cable management brackets are preinstalled on both the LCC and FCC.

- Handle all fiber-optic cables carefully.
  - Do not allow a fiber-optic cable to bend in a radius smaller than the allowable bend radius specified for that cable type.
  - Fiber-optic cables are glass. Do not step on fiber-optic cables or handle them roughly. Do not twist or stretch the cables.
  - To keep optical connections clean, do not remove the cable dust cover until immediately before you install the cable.
  - After you install a cable, immediately reserve each dust cover for storage by office personnel in a dust-free storage area. After all of the cables have been installed ensure that all the reserved dust covers are stored by office personnel in a dust free area for future use.
  - Install clean dust covers on every unused connection.
  - Consider labeling the chassis interconnection cables or creating a diagram of the cabling to ensure that the cables are connected correctly during system installation.
  - Consider labeling the chassis. Consider whether each chassis need to be physically positioned in sequence. Label each cable with the location of each termination as you install each cable

## Safety Guidelines

Before you perform any procedures, review the safety guidelines in this section to avoid injuring yourself or damaging the equipment. The following guidelines are for your safety and to protect equipment. The guidelines do not include all hazards. Be alert.

- Review the safety warnings listed in the Regulatory and Compliance Guide for the Cisco NCS 4000 Series Routers before installing, configuring, or troubleshooting any installed card.
- Never attempt to lift an object that might be too heavy for you to lift by yourself.
- Keep the work area clear and dust free during and after installation. Do not allow dirt or debris to enter into any laser-based components.
- Keep tools and router components away from walk areas.
- Do not wear loose clothing, jewelry, or other items that could get caught in the router while working with cards, modules, and their associated components.
- Cisco equipment operates safely when used in accordance with its specifications and product-usage instructions.
- Do not work alone if potentially hazardous conditions exist.
- The installation must follow national and local electrical codes: in the United States, National Fire Protection Association (NFPA) 70, United States National Electrical Code; in Canada, Canadian Electrical Code, part I, CSA C22.1; in other countries, International Electrotechnical Commission (IEC) 60364, part 1 through part 7.

# Cabling the Ethernet Control Plane Network

This section describes how to cable the control plane network for the Cisco NCS 4000 Multi-Chassis system. These connections control the network connectivity for the multi-chassis system. The following cabling configurations are described:

The control plane network carries all the signaling, routing updates, system configuration and management packets for the NCS 4000. The control network must be cabled before the NCS 4000 system can become fully operational.

The control plane of the multi-chassis system is connected between the LCC and FCC with four paths per LCC (two per RP). The ports between the LCC and FCC are connected with SFP+ modules. Each RP on the LCC has 10GE connections that connect to each of the two RPMC cards in the FCCs. The RPMC cards provide the control plane network between all chassis.

Each RPMC card has 56 10GE connections and two 40GE connections. Two RPMC cards are used for redundancy purposes. For the multi-chassis system setup, the expansion ports on each RP in the LCCs and each RPMC (SC) in FCCs need to be connected to the SFP+ ports on the RPMC faceplate. SFP+ ports are ports 0 through 55. A few ports on the RPMC faceplate are blocked with dust caps without handles.

## Cabling the Control Plane for a 2+2, 4+2, and 8+3 Multi-Chassis System

The following figure shows the control plane cabling for a 2+2 multi-chassis system.



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**Note** The cabling may differ depending on the type of SFP modules that you use. For SFP-10G-SR (short-reach) transceiver modules, use 65/125 or 50/125 multi-mode cables. To connect the QSFP 40GE optical modules between the RPMC cards, we recommend that you use QSFP supported cables.

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Figure 3: Control Plane Cabling for a 2+2 Multi-Chassis System

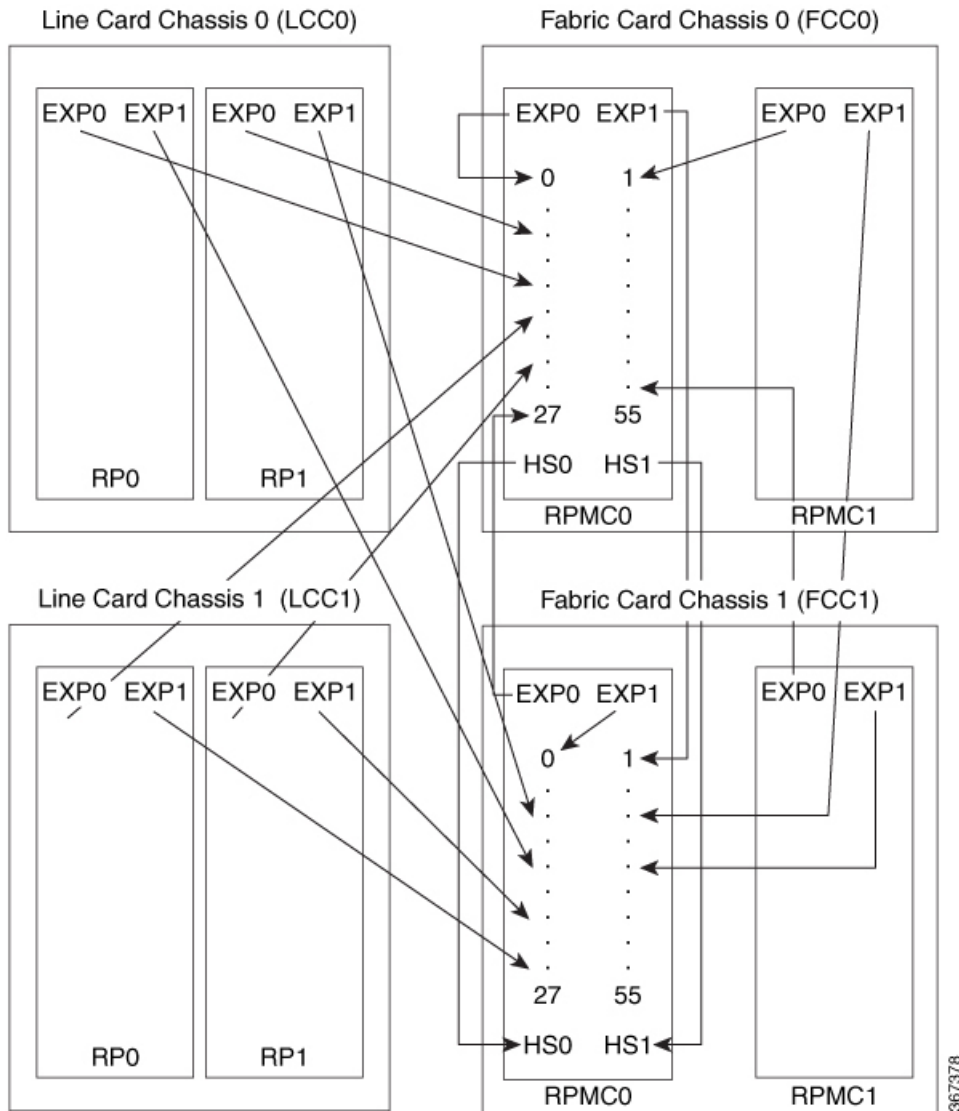


Table 3: RP Cards to RPMC Card Connections (2+2 Configuration)

From Line Card Chassis	LCC RP Port	To RPMC Cards in Fabric Card Chassis
LCC0	RP0, EXP0	FCC0, RPMC0/port 4
	RP1, EXP0	FCC0, RPMC0/port 5
	RP0, EXP1	FCC1, RPMC0/port 4
	RP1, EXP1	FCC1, RPMC0/port 5



From Line Card Chassis	LCC RP Port	To RPMC Cards in Fabric Card Chassis
LCC1	RP0, EXP0	FCC0, RPMC0/port 35
	RP1, EXP0	FCC0, RPMC0/port 36
	RP0, EXP1	FCC1, RPMC0/port 35
	RP1, EXP1	FCC1, RPMC0/port 36

**Table 4: RP Cards to RPMC Card Connections (8+3 Configuration)**

From Line Card Chassis	LCC RP Port	To RPMC Cards in Fabric Card Chassis
LCC0	RP0, EXP0	FCC0, RPMC0/port 4
	RP1, EXP0	FCC0, RPMC0/port 5
	RP0, EXP1	FCC1, RPMC0/port 4
	RP1, EXP1	FCC1, RPMC0/port 5
LCC1	RP0, EXP0	FCC0, RPMC0/port 35
	RP1, EXP0	FCC0, RPMC0/port 36
	RP0, EXP1	FCC1, RPMC0/port 35
	RP1, EXP1	FCC1, RPMC0/port 36
LCC2	RP0, EXP0	FCC0, RPMC0/port 10
	RP1, EXP0	FCC0, RPMC0/port 11
	RP0, EXP1	FCC1, RPMC0/port 10
	RP1, EXP1	FCC1, RPMC0/port 11
LCC3	RP0, EXP0	FCC0, RPMC0/port 41
	RP1, EXP0	FCC0, RPMC0/port 42
	RP0, EXP1	FCC1, RPMC0/port 41
	RP1, EXP1	FCC1, RPMC0/port 42
LCC4	RP0, EXP0	FCC0, RPMC0/port 16
	RP1, EXP0	FCC0, RPMC0/port 17
	RP0, EXP1	FCC1, RPMC0/port 16
	RP1, EXP1	FCC1, RPMC0/port 17

From Line Card Chassis	LCC RP Port	To RPMC Cards in Fabric Card Chassis
LCC5	RP0, EXP0	FCC0, RPMC0/port 47
	RP1, EXP0	FCC0, RPMC0/port 48
	RP0, EXP1	FCC1, RPMC0/port 47
	RP1, EXP1	FCC1, RPMC0/port 48
LCC6	RP0, EXP0	FCC0, RPMC0/port 22
	RP1, EXP0	FCC0, RPMC0/port 23
	RP0, EXP1	FCC1, RPMC0/port 22
	RP1, EXP1	FCC1, RPMC0/port 23
LCC7	RP0, EXP0	FCC0, RPMC0/port 52
	RP1, EXP0	FCC0, RPMC0/port 53
	RP0, EXP1	FCC1, RPMC0/port 52
	RP1, EXP1	FCC1, RPMC0/port 53

**Table 5: Connections Between Expansion Ports of the RPMC0 and RPMC1 Card (2+2 or 4+2 Configuration)**

From RPMC Card	To RPMC Card
FCC0, RPMC0 EXP0	FCC0, RPMC0 port 0
FCC0, RPMC0 EXP1	FCC1, RPMC0 port 28
FCC0, RPMC1 EXP0	FCC0, RPMC0 port 28
FCC0, RPMC1 EXP1	FCC1, RPMC0 port 29
FCC1, RPMC0 EXP0	FCC0, RPMC0 port 26
FCC1, RPMC0 EXP1	FCC1, RPMC0 port 0
FCC1, RPMC1 EXP0	FCC0, RPMC0 port 54
FCC1, RPMC1 EXP1	FCC1, RPMC0 port 30

**Table 6: Connections Between Expansion Ports of the RPMC0 and RPMC1 Card (8+3 Configuration)**

From RPMC Card	To RPMC Card
FCC0, RPMC0 EXP0	FCC0, RPMC0 port 0
FCC0, RPMC0 EXP1	FCC1, RPMC0 port 28

FCC0, RPMC1 EXP0	FCC0, RPMC0 port 28
FCC0, RPMC1 EXP1	FCC1, RPMC0 port 29
FCC1, RPMC0 EXP0	FCC0, RPMC0 port 26
FCC1, RPMC0 EXP1	FCC1, RPMC0 port 0
FCC1, RPMC1 EXP0	FCC0, RPMC0 port 54
FCC1, RPMC1 EXP1	FCC1, RPMC0 port 30
FCC2, RPMC0 EXP0	FCC0, RPMC0 port 1
FCC2, RPMC0 EXP1	FCC1, RPMC0 port 1
FCC2, RPMC1 EXP0	FCC0, RPMC0 port 2
FCC2, RPMC1 EXP1	FCC1, RPMC0 port 2

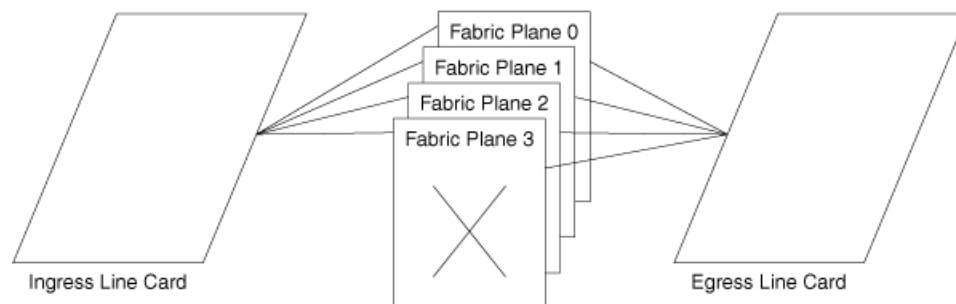
## Cabling the Fabric

This section describes how to connect the fabric cabling between the LCCs and the fabric components in the FCCs. The fabric provides the data connection for router traffic between all the CXP optical ports in the LCCs. The fabric cabling must be completed to enable data communications through the Cisco NCS 4000 multi-chassis system.

## Fabric Overview

The Cisco NCS 4000 switch fabric is a three-stage cell based architecture with four fabric planes. The fabric planes are numbered 0 through 3. Stage 1 and Stage 3 of the fabric are implemented in the Cisco NCS 4000 Line Card Chassis (LCC). Stage 2 of the fabric is implemented in the Cisco NCS 4000 Fabric Card Chassis (FCC). Inter-stage connections between the LCC the FCC are implemented through a number of bi-directional optical links. The following figure shows a simplified view of the relationship between the line cards and the fabric.

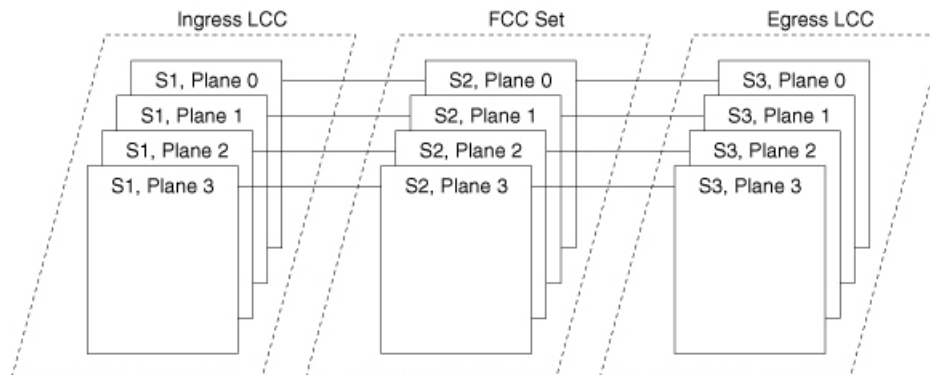
**Figure 4: Relationship of Line Cards and Fabric Cards**



For multi-chassis systems, each fabric plane is divided into three components or stages, which are numbered S1, S2, and S3. Data arrives at the S1 stage in an LCC, passes over the optical cables to the S2 stage in the

FCC, and then passes over the optical cables again to the S3 stage in the destination LCC. The following figure shows a simplified view between the LCC and the FCC.

**Figure 5: Fabric Plane Stages**



The Line Card Chassis (LCC) has 16 line cards (LCs), four S13 MC fabric cards (FCs). Each S13 FC can connect to S2 fabric cards on the FCC through 12 CXP2 modules. In each LCC the S13 FCs provide Stage 1 and stage-3 for each of the four fabric planes. The planes do not interconnect with each other but operate independently. Because there are a total of four S13 FCs in the LCC. Each FC is referred as a fabric plane. For example: FC0 in LCC0, LCC1, and so forth are all part of plane 0.

The Fabric Card Chassis (FCC) supports eight S2 fabric cards. Depending on the maximum number of LCC in the multi-chassis system, each Stage 2 fabric plane consists of one or more S2 fabric cards. Each S2 fabric card supports up to 24 CXP2 modules. The S2 FC's that belong to a plane can be placed in any FCC but it is recommended to distribute the planes evenly among all the FCCs. As more FCCs are added, the planes are distributed among the FCCs.

Depending on the size of the system (i.e the number of LCCs you want to connect to), a number of S2 FCs can be grouped together as part of the plane. It is mandatory to have all the eight S2 cards in the FCC at all times.

## Multi-Chassis 2+2 Configuration

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).

### Prerequisites

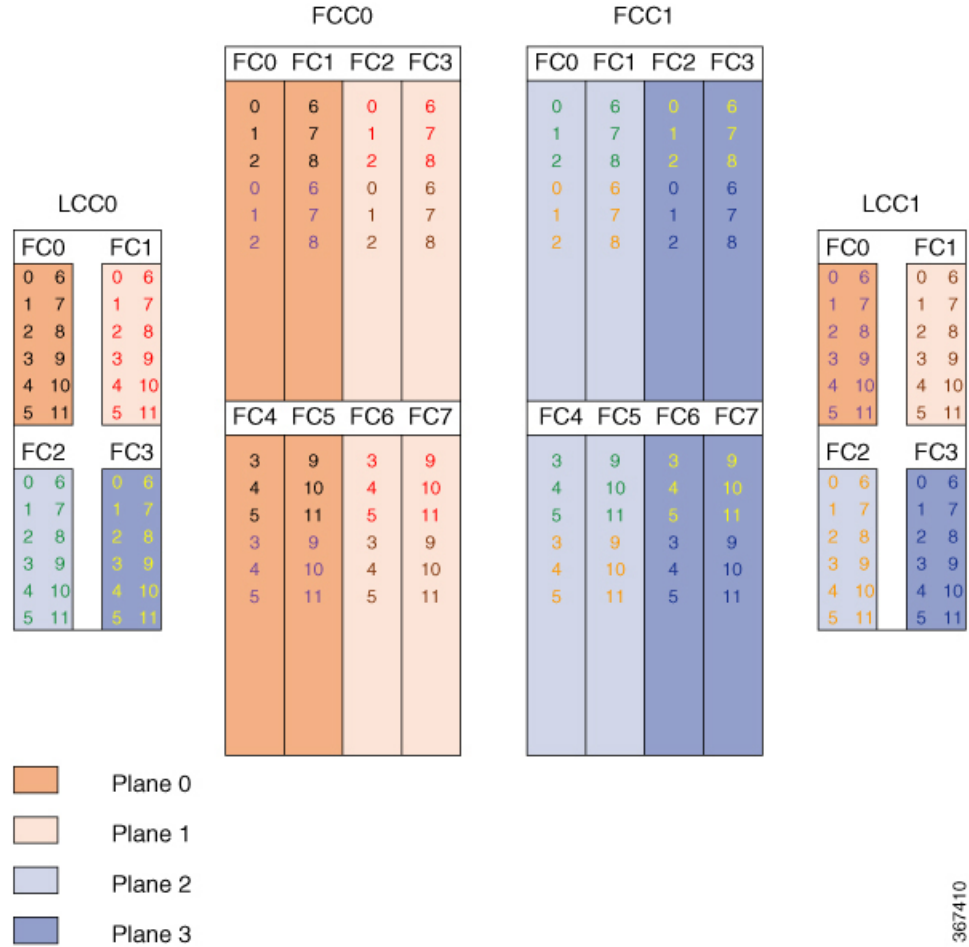
For connecting the fabric, you need the following:

- 96 MPO-24 fiber cables (48 per LCC).
- 192 CXP2 modules (Cisco PID ONS-CXP2-SR25).

### Configuring a 2+2 Configuration with 16 S2 Fabric Cards

The following figure shows two line card chassis (LCC0 and LCC1) connected to two fabric card chassis (FCC0 and FCC1). In this configuration, there are eight FCs in each fabric card chassis; in total 16 S2 FCs are installed. The figure shows the multi-chassis 2+2 configuration.

Figure 6: Cisco NCS 4000 Multi-Chassis 2+2 Configuration



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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 7: 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)

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
FC0/6 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 8: 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 FC0/5 (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)	

## 2+2 Software Configuration (16 S2 Cards)

An explicit admin configuration is required to specify an ordered list of S2 connections assigned for a plane. Each S2 connection is specified as an instance. The instances are contiguous, starting from 0.

```
controller fabric plane 0
instance 0
location F0/FC0
instance 1
location F0/FC1
instance 2
location F0/FC4
instance 3
location F0/FC5

controller fabric plane 1
instance 0
location F0/FC2
instance 1
location F0/FC3
instance 2
location F0/FC6
instance 3
location F0/FC7

controller fabric plane 2
instance 0
location F1/FC0
instance 1
location F1/FC1
instance 2
location F1/FC4
instance 3
location F1/FC5

controller fabric plane 3
instance 0
location F1/FC2
instance 1
location F1/FC3
instance 2
location F1/FC6
instance 3
location F1/FC7
```

## Multi-Chassis 4+2 Configuration

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

### Prerequisites

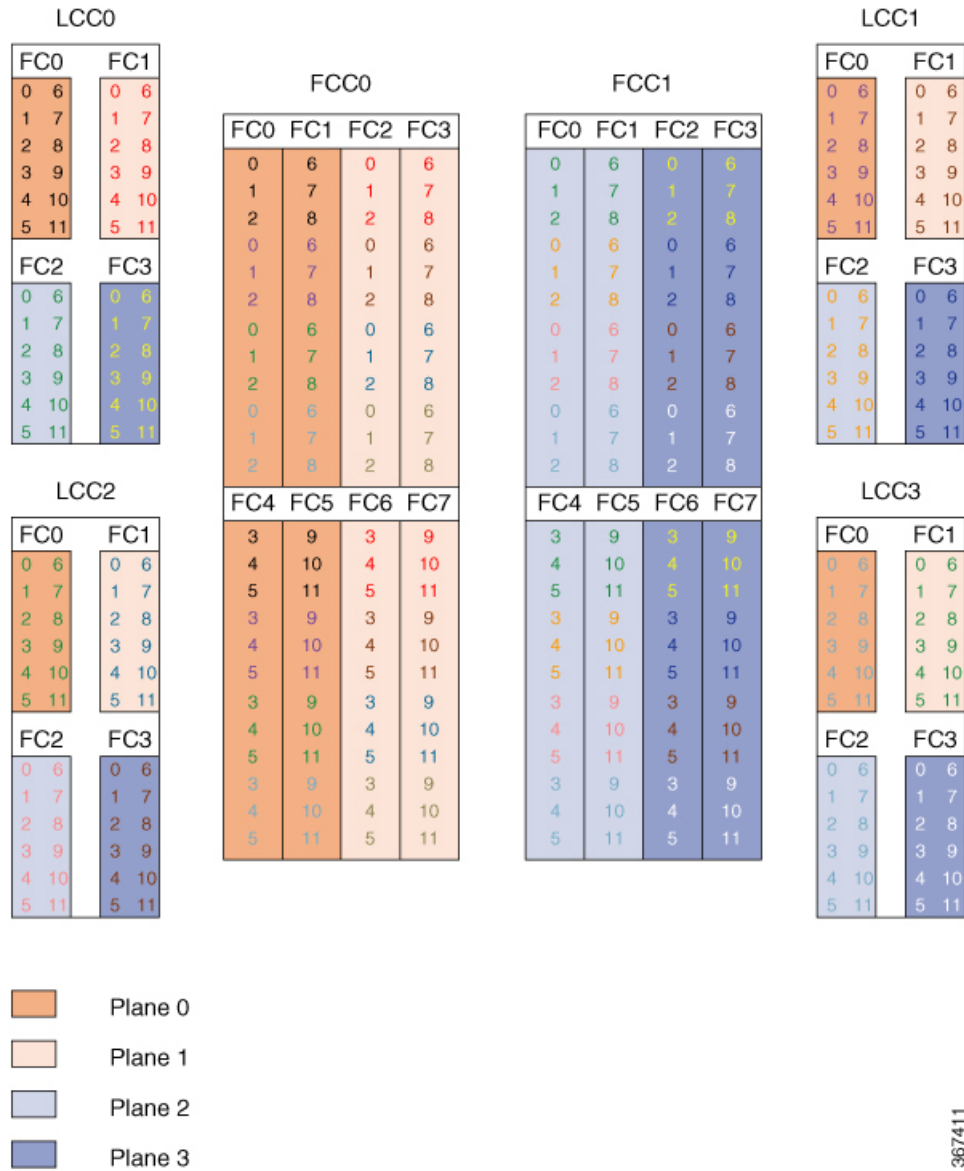
For connecting the fabric, you need the following:

- 192 MPO-24 fiber cables (48 per LCC)
- 384 CXP2 modules (Cisco PID ONS-CXP2-SR25).

### Configuring a 4+2 Configuration with 16 S2 Fabric Cards

The following figure shows four line card chassis (LCC0, LCC1, LCC2, and LCC3) connected to two fabric card chassis (FCC0 and FCC1). In this configuration, there are eight FCs in each fabric card chassis; in total 16 S2 FCs are installed. The figure shows the multi-chassis 4+2 configuration,

Figure 7: Cisco NCS 4000 Multi-Chassis 4+2 Configuration



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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 9: 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 10: 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 11: 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 12: 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)	

## 4+2 Software Configuration (16 S2 Fabric Cards)

An explicit admin configuration is required to specify an ordered list of S2 connections assigned for a plane. Each S2 connection is specified as an instance. The instances are contiguous, starting from 0.

```

controller fabric plane 0
instance 0
location F0/FC0
instance 1
location F0/FC1
instance 2
location F0/FC4
instance 3
location F0/FC5

controller fabric plane 1
instance 0
location F0/FC2
instance 1
location F0/FC3
instance 2
location F0/FC6
instance 3
location F0/FC7

controller fabric plane 2
instance 0
location F1/FC0
instance 1
location F1/FC1
instance 2
location F1/FC4
instance 3
location F1/FC5

controller fabric plane 3
instance 0
location F1/FC2
instance 1
location F1/FC3
instance 2
location F1/FC6
instance 3
location F1/FC7

```

# Multi-Chassis 8+3 Configuration

This section describes how to configure a multi-chassis 8+3 configuration. In this configuration, eight line card chassis (LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, and LCC7) are connected to three fabric card chassis (FCC0, FCC1, and FCC2).

## Prerequisites

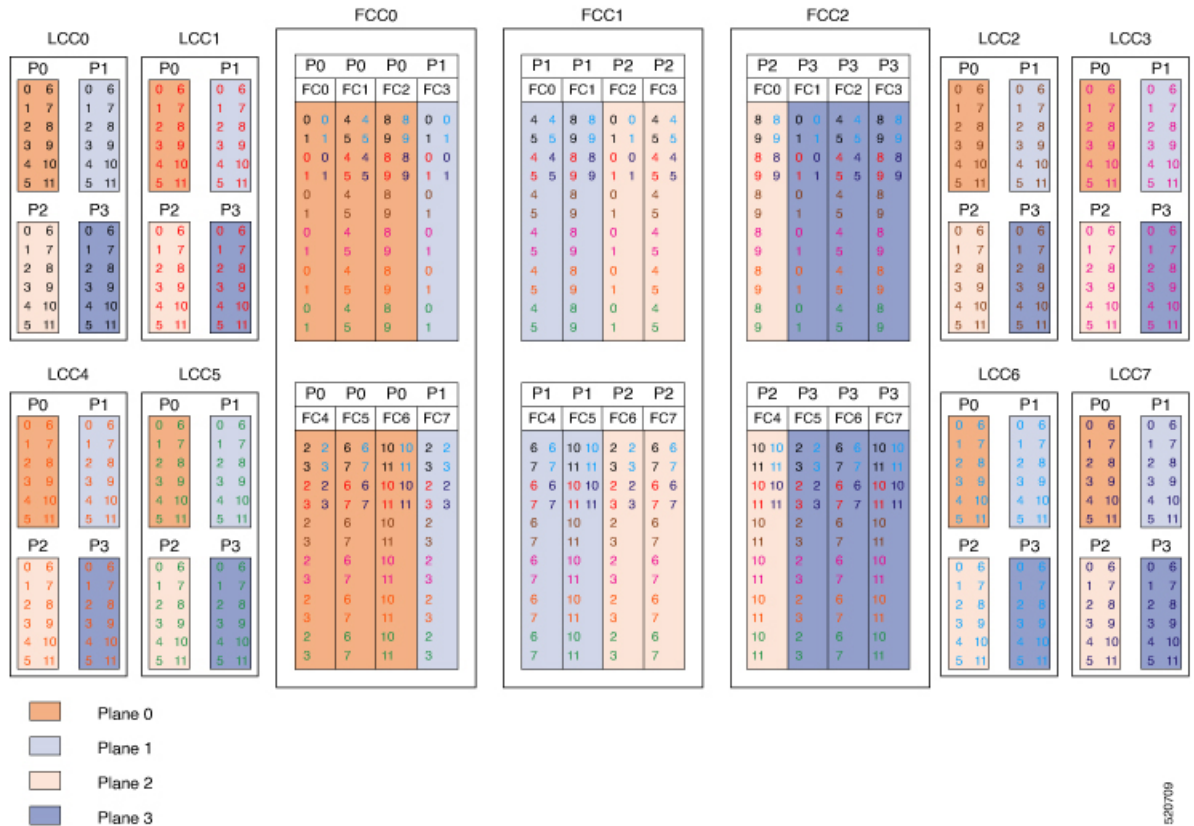
For connecting the fabric, you need the following:

- 384 MPO-24 fiber cables (48 per LCC).
- 768 CXP2 modules (Cisco PID ONS-CXP2-SR25).

## Configuring a 8+3 Configuration with 24 S2 Fabric Cards

The following figure shows eight line card chassis (LCC0, LCC1, LCC2, LCC3, LCC4, LCC5, LCC6, and LCC7) connected to three fabric card chassis (FCC0, FCC1, and FCC2). In this configuration, there are eight FCs in each fabric card chassis; in total 24 FCs are installed. The figure shows the multi-chassis 8+3 configuration.

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



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

Table 13: 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 14: 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
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 15: 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 16: 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
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 17: 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 18: 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
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 19: 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 20: 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





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

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## 8+3 Software Configuration (24 S2 Fabric Cards)

An explicit admin configuration is required to specify an ordered list of S2 connections assigned for a plane. Each S2 connection is specified as an instance. The instances are contiguous, starting from 0.

The following configurations are for a 8+3 MC system with six FCC fabric cards per plane with FCC rack level redundancy.

```
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
```

```
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
```

```
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
```

```
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
```