



Fabric Overview

This chapter provides an overview of the Cisco NCS 6000 switch fabric and the fabric planes in Back-to-Back and Multi-Chassis systems.

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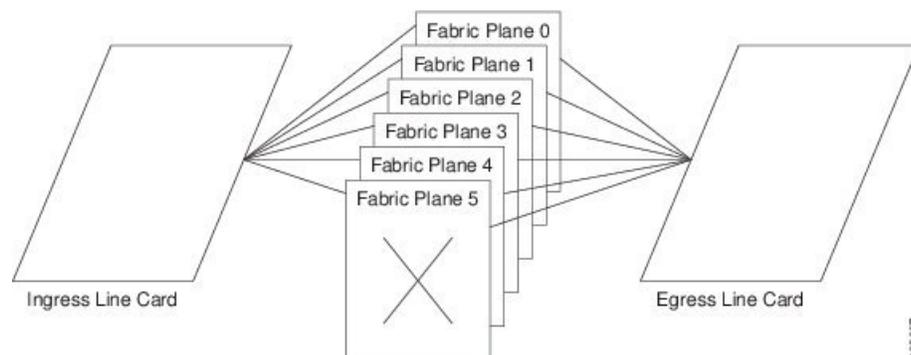
The Cisco NCS 6000 switch fabric is a three-stage cell based architecture with six fabric planes.

In a back-to-back system, the Universal Fabric Card (UFC) in the Cisco NCS 6008 Line Card Chassis (LCC) implements all 3 stage. The Cisco NCS 6000 back-to-back system has six fabric planes that support data traffic between the lines connected to the LCCs. The fabric planes are numbered 0 through 5.

In a multi-chassis system, Stage 1 and Stage 3 (S13) of the fabric are implemented in the Cisco NCS 6008 Line Card Chassis (LCC). Stage 2 (S2) of the fabric is implemented in the Cisco NCS 6000 Fabric Card Chassis (FCC). Inter-stage connections between the LCC the FCC are implemented through a number of bi-directional optical links.

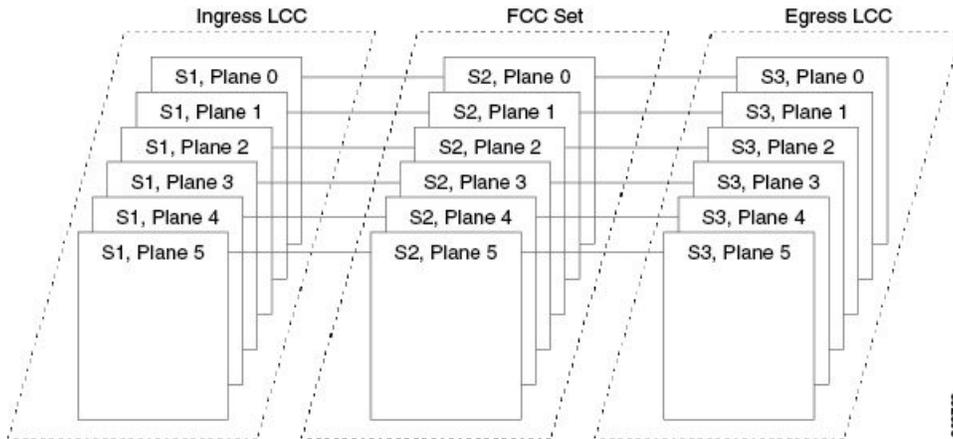
The following figure shows a simplified view of the relationship between the line cards and the fabric. The fabric planes are numbered 0 through 5.

Figure 1: 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 fabric cables to the S2 stage in the FCC, and then passes over the fabric cables again to the S3 stage in the destination LCC. The following figure shows a simplified view between the LCC and the FCC.

Figure 2: Fabric Plane Stages



LCC

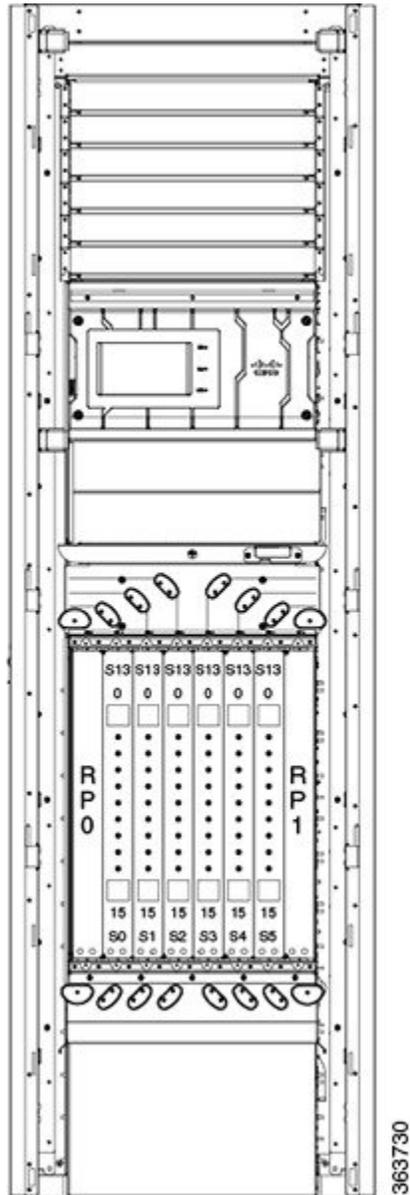
In a back-to-back configuration, each LCC uses six Universal Fabric Cards (UFCs) with 16 CXP modules each.

In a multi-chassis configuration, the LCC uses either six S13 multi-chassis (MC) fabric cards with 16 CXP modules each that connect to the S2 fabric cards on the FCC (for 1T mode), or six Universal Fabric Cards (UFCs) with 16 CXP2 modules each that connect to the 2nd generation S2 fabric cards on the FCC (for 2T mode).

The planes do not interconnect with each other but operate independently. Because there are a total of six fabric cards in the LCC, the fabric is referred to as having six planes. For example: Slot 0 in LCC0, LCC1, and so forth are all part of plane 0.

The following figure shows the location of the fabric cards in the LCC and how the CXP connectors are labeled. The fabric planes are numbered S0 through S5 and are installed in slot numbers 0 through 5. Each fabric cable connects to one of the FC connectors (0 through 15), and to a single S2 FC in an FCC.

Figure 3: How S13/UFC Cards are Numbered in the LCC (0 through 5)



FCC

The Fabric Card Chassis (FCC) supports up to 12 S2 fabric cards. When multiple FCCs are installed in a multi-chassis system, the S2 fabric cards are distributed across the FCCs. 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 32 CXP modules. Each 2nd generation S2 fabric card (S2 FC2) supports up to 32 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. You can have as few as six S2 fabric cards installed in the FCC (only 6 FC slots populated), or as many as 12 S2 fabric cards for a fully populated chassis.

The following figure shows 12 SC FCs installed in an FCC and how the CXP connectors are labeled. Unlike the fabric planes in an LCC, the FCC slots are not preconfigured for specific plane numbers. The plane number served by a slot is defined during the system configuration. This approach provides the flexibility to distribute the fabric planes between FCCs.

Figure 4: How S2 Cards are Numbered in the FCC (0 through 11)

