

Cisco UCS 9108 25G Intelligent Fabric Module

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<https://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-x-series-modular-system/datasheet-listing.html>



UCSX-I-9108-25G INTELLIGENT FABRIC MODULE (IFM)

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Overview

The Cisco UCS 9108 25G Intelligent Fabric Module (IFM) brings the unified fabric into the blade server enclosure, providing connectivity between the blade servers and the fabric interconnect, simplifying diagnostics, cabling, and management.

The Cisco UCS 9108 25G IFM connects the I/O fabric between the Cisco UCS 6454 Fabric Interconnect and Cisco UCS 64108 Fabric Interconnect and the Cisco UCS X9508 Chassis, enabling a lossless and deterministic converged fabric to connect all blades and chassis together. Because the fabric extender is similar to a distributed line card, it does not perform any switching and is managed as an extension of the fabric interconnects. This approach removes switching from the chassis, reducing overall infrastructure complexity and enabling Cisco UCS to scale to many chassis without multiplying the number of switches needed, reducing TCO, and allowing all chassis to be managed as a single, highly available management domain.

The Cisco UCS 9108 25G IFM also manages the chassis environment (power supply, fans, and blades) in conjunction with the fabric interconnect. Therefore, separate chassis-management modules are not required.

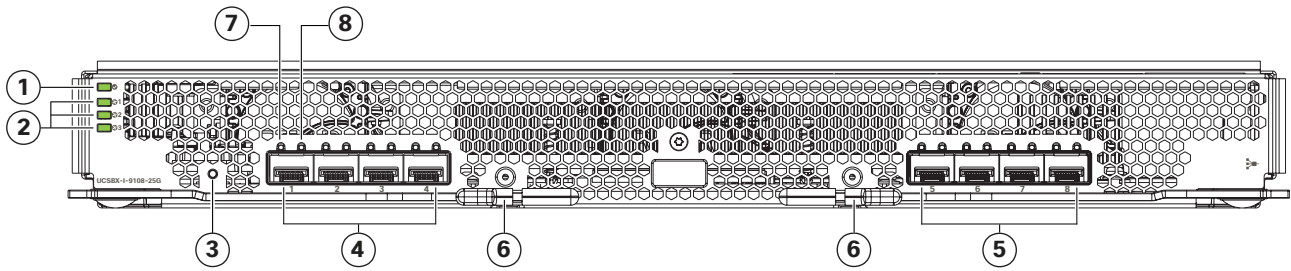
The IFM plugs into the rear side of the Cisco UCS X9508 chassis. The IFM provides a data path from the chassis compute nodes to the Cisco UCS 6400 series Fabric Interconnect. Up to two Intelligent Fabric Modules (IFMs) plug into the back of the Cisco UCS X9508 chassis.

The IFMs serve as line cards in the chassis and multiplex data from the compute nodes to the Fabric Interconnect (FI). They also monitor and manage chassis components such as fan units, power supplies, environmental data, LED status panel, and other chassis resources. The server compute node Keyboard-Video-Mouse (KVM) data, Serial over LAN (SoL) data, and Intelligent Platform Management Interface (IPMI) data also travel to the IFMs for monitoring and management purposes. In order to provide redundancy and failover, the IFMs are always used in pairs.

There are 8 x SFP28 external connectors on an IFM to interface with a FI 6400 series Fabric Interconnect. The IFM internally provides 4 x 25 Gbps connections towards each UCS X210c Compute Node in the Cisco X9508 chassis.

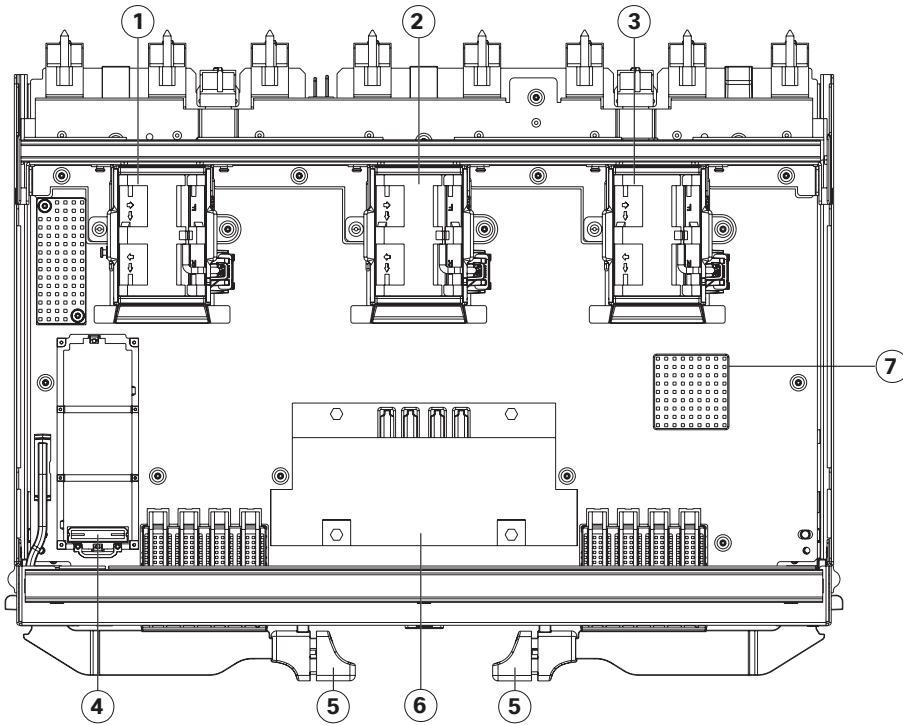
When a compute node is inserted into the chassis, the compute node's mezzanine card (mLOM) connects to the IFMs using orthogonal direct connectors. [Figure 1](#) shows the IFM front view characteristics.

Figure 1 Cisco UCS 9108 25G IFM (front view)



1	IFM status LED	5	SFP28 ports 5 - 8 (25 Gbps per port)
2	Fan #1 - #3 status LEDs	6	Ejector handle
3	Reset button	7	Link/port status LED (one per port)
4	SFP28 ports 1 - 4 (25 Gbps per port)	8	Port activity LED (one per port)

Figure 2 Cisco UCS 9108 25G IFM (top view)



1	Fan #1	5	Ejector handle
2	Fan #2	6	Cisco switch ASIC
3	Fan #3	7	CPU (Intel Denverton, 4-core, 2.1 GHz)
4	Mini storage connector	-	-

LED Indicators

The LED indicators are described in [Table 1](#) (see [Figure 1 on page 4](#) for LED locations)

Table 1 IFM LED States

LED	State	Description
IFM Status	OFF	Power OFF
	GREEN	Normal Operation
	AMBER	Booting or minor Temperature Alarm
	BLINKING AMBER	Stopped in uboot or unable to come online, or major temperature alarm
FAN status LED # 1, 2, 3	OFF	Power OFF
	GREEN	Normal Operation
	AMBER	Fan fault (low fan speed or fan not running)
SFP Port LED status 1 LED per port per color	OFF	Link enabled but not connected
	GREEN	Link connected
	AMBER	Operator disabled
	BLINKING AMBER	Disabled due to error

Capabilities and Features

Table 2 lists the capabilities and features of the Cisco UCS 9108 25G Intelligent Fabric Module. Details about how to configure the IFM for a particular feature or capability are provided in [CONFIGURING the INTELLIGENT FABRIC MODULE on page 9](#).

Table 2 Capabilities and Features

Capability/Feature	Description
Server data path bandwidth	800 Gb/s for 8 compute nodes (4 x 25Gb/s lanes per compute node, for a total of 100 Gb/s per compute node)
Network data path bandwidth	200Gb/s 25 Gb/s per port x 8 SFP28 ports
CPU complex	<ul style="list-style-type: none"> ■ Intel Atom® Processor C3558 (4 core, 2.1GHz, 15W) ■ DDR4 memory: 8GB max @ 2133 MHz
Fibre Channel	FCoE
Fans	<p>The IFM has three dual-rotor on board fans. The air flow direction is aligned with chassis air flow direction, which is front to rear.</p> <p>The IFM Fans have minimum RPM requirements to be compatible with the chassis/system main fans. The fans are powered from 54VDC/48VDC. Fan speed is controlled and monitored by the IFM CPU using a fan controller IC.</p>
Power Supply	Power supplied by chassis
Power consumption	237W
Cisco Intersight Management	<ul style="list-style-type: none"> ■ Allows all elements connected to the interconnects to participate in a single, highly available management domain
Unified Fabric	<ul style="list-style-type: none"> ■ Decreases total cost of ownership (TCO) by reducing the number of NICs, HBAs, switches, and cables needed ■ Transparently encapsulates Fibre Channel packets into Ethernet ■ Increases flexibility with a range of interconnect solutions, including copper Twinax cable for short runs and fiber for long runs ■ Consumes less power per port than traditional solution
Fabric Extender Architecture	<ul style="list-style-type: none"> ■ Scales without adding complexity by eliminating the need for dedicated chassis management and compute nodes and by reducing the number of cables needed ■ Provides deterministic latency for optimized application performance
SFP28-compatible ports	Allows the 8 fixed ports to operate in 25 Gigabit Ethernet mode with the transceiver options specified for use with SFP28-compatible ports in Table 4 on page 11 . The SFP28 ports on the IFM are bound to a port-channel towards the fabric-interconnect and any number of links between 1 thru 8 could be active on this port-channel between FI and IFM.

Table 2 Capabilities and Features (continued)

Capability/Feature	Description
Transceivers	The Cisco UCS 9108 25G IFM supports a 25 Gigabit Ethernet connectivity options using Cisco 25 Gbps modules.
Performance	<ul style="list-style-type: none"> ■ Provides high-speed, low-latency connectivity to the chassis ■ Provides approximately 50% reduction in end-to-end system latency (latency is less than 1 microseconds)
Lossless Fabric	Provides a reliable, robust foundation for unifying LAN and SAN traffic on a single transport
Priority Flow Control (PFC)	<ul style="list-style-type: none"> ■ Simplifies management of multiple traffic flows over a single network link ■ Supports different classes of service, helping enable both lossless and classic Ethernet on the same fabric
Systemwide Bandwidth Management	Helps enable consistent and coherent quality of service (QoS) throughout the system

CONFIGURING the INTELLIGENT FABRIC MODULE

Follow these steps to configure the Cisco UCS 9108 25G IFM:

- *STEP 1 VERIFY INTELLIGENT FABRIC MODULE SKU, page 10*
- *STEP 2 CHOOSE TRANSCEIVERS (OPTIONAL), page 11*
- *The supported transceivers are for the UCS 9108 25G IFM are listed in Table 4., page 11*

STEP 1 VERIFY INTELLIGENT FABRIC MODULE SKU

Verify the product ID (PID) of the IFM as shown in [Table 3](#).

Table 3 Available Intelligent Fabric Modules

Product ID (PID)	Description	Number of 25 GbE/FCoE Ports to ToR	Number of Internal GbE/FCoE Ports	Total Chassis I/O per IFM
M6				
UCSX-I-9108-25G	UCS 9108 25G IFM for X9508 chassis	8	32	2 Tbps
M7				
UCSX-I-9108-25G-D	UCS 9108 25G IFM for X9508 chassis	8	32	2 Tbps



NOTE: Use the steps on the following pages to order the desired Intelligent Fabric Module with the components that you want configured in your order.

STEP 2 CHOOSE TRANSCEIVERS (OPTIONAL)

The Cisco UCS 9108 25G IFM supports a wide variety of 25 Gigabit Ethernet connectivity options using Cisco 25 Gbps modules.

Choose Transceivers

The supported transceivers for the UCS 9108 25G IFM are listed in [Table 4](#).

Table 4 UCS 9108 25G Supported Transceivers

Product ID (PID)	Description
SFP28 25-Gbps Transceivers	
SFP-25G-SR-S	25GBASE-SR SFP+, 850nm, MMF, 300m, S-Clas
SFP-10/25G-LR-S	10/25GBASE-LR SFP28 Module for SMF
SFP-10/25G-CSR-S	Dual-rate 10/25GBASE-CSR SFP module
SFP-25G-SL	25GBASE-SL SFP module
SFP28 25G Copper Cables with Integrated Transceivers	
SFP-H25G-CU1M	25GBASE-CU SFP28 Cable 1 Meter
SFP-H25G-CU2M	25GBASE-CU SFP28 Cable 2 Meter
SFP-H25G-CU3M	25GBASE-CU SFP28 Cable 3 Meter
SFP-H25G-CU4M	25GBASE-CU SFP28 Cable 4 Meter
SFP-H25G-CU5M	25GBASE-CU SFP28 Cable 5 Meter
SFP-25G-AOC1M	25GBASE Active Optical SFP28 Cable, 1M
SFP-25G-AOC2M	25GBASE Active Optical SFP28 Cable, 2M
SFP-25G-AOC3M	25GBASE Active Optical SFP28 Cable, 3M
SFP-25G-AOC4M	25GBASE Active Optical SFP28 Cable, 4M
SFP-25G-AOC5M	25GBASE Active Optical SFP28 Cable, 5M
SFP-25G-AOC7M	25GBASE Active Optical SFP28 Cable, 7M
SFP-25G-AOC10M	25GBASE Active Optical SFP28 Cable, 10M
QSFP 100GBASE	
QSFP-4SFP25G-CU1M	100GBASE QSFP to 4xSFP25G passive copper splitter cable, 1M
QSFP-4SFP25G-CU2M	100GBASE QSFP to 4xSFP25G passive copper splitter cable, 2M
QSFP-4SFP25G-CU3M	100GBASE QSFP to 4xSFP25G passive copper splitter cable, 3M
QSFP-4SFP25G-CU5M	100GBASE QSFP to 4xSFP25G passive copper splitter cable, 5M

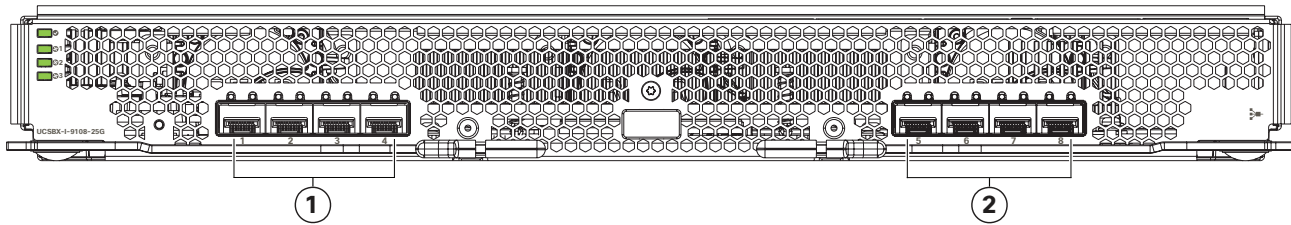
SUPPLEMENTAL MATERIAL

Port Numbering

Each port on the Cisco UCS 9108 25G IFM is numbered. The ports are numbered left to right.

Figure 3 shows how ports are numbered and the table below explains how each port functions.

Figure 3 Port Numbering of the Cisco UCS 9108 25G IFM



1	Port 1-4 (operate as 25 Gbps SFP28 fabric ports)	2	Port 5-8 (operate as 25 Gbps SFP28 fabric ports)
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Fabric Interconnect Compatibility

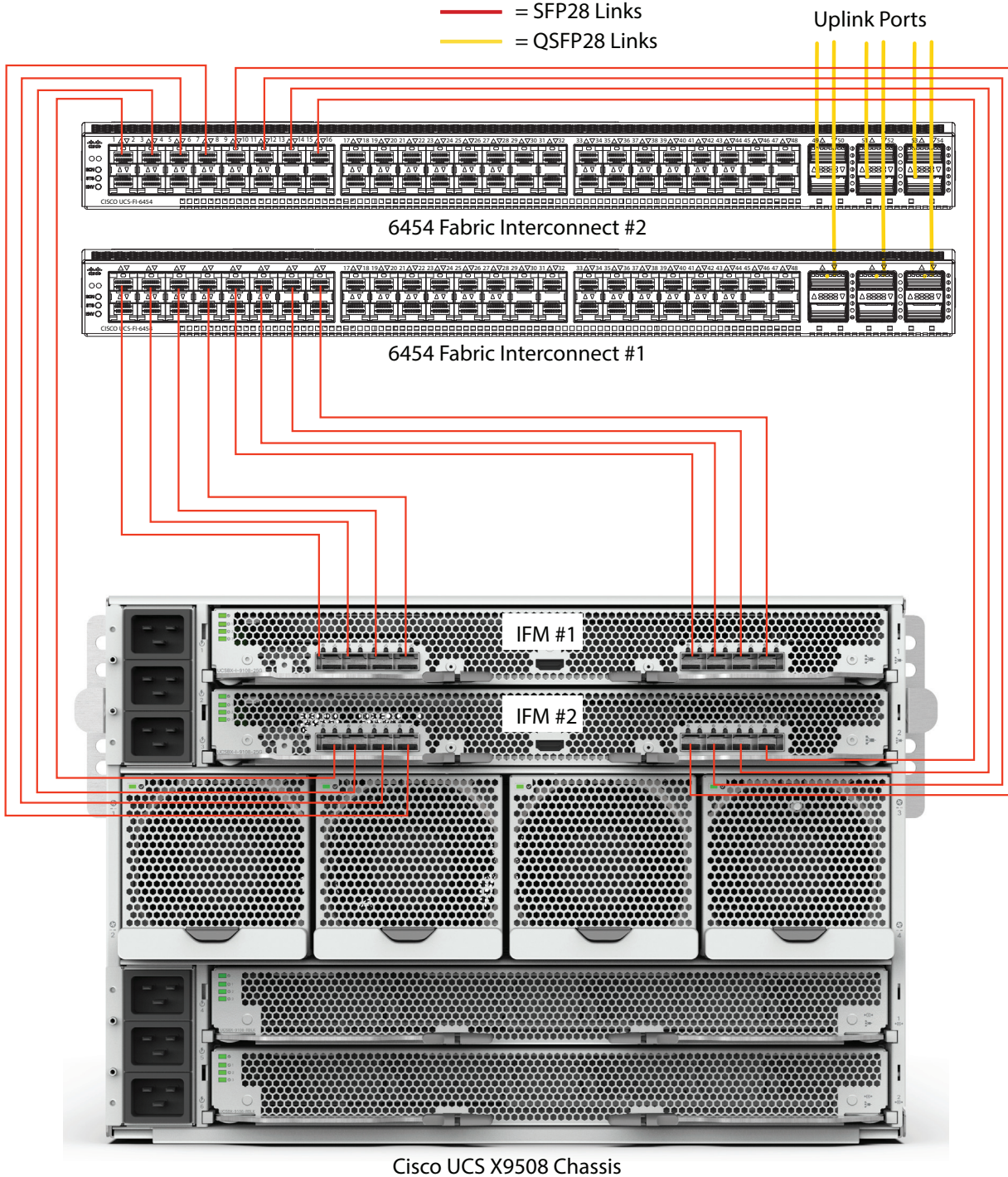
The Cisco UCS 9108 25G IFM is designed to work with both the Cisco UCS 6454 and Cisco UCS 64108 Fabric Interconnects only at 25 Gbps

Connectivity

This section shows the connectivity from the Cisco UCS 9108 25G IFM to an external Fabric Interconnect (FI).

The connectivity from the IFMs to a 6400 series Fabric Interconnect is shown in [Figure 4](#).

Figure 4 IFM to 6400 Series Fabric Interconnect Connectivity



TECHNICAL SPECIFICATIONS

Physical and Environmental Specifications

Table 5 Physical and Environmental Specifications

Description	Specification
Cisco UCS 9108 25G IFM	
Dimensions (H x W x D)	1.67 in. x 14.93 in x 11.76 in. (4.2 cm x 37.9 cm x 29.9 cm)
Weight	8.42 lb (3.82 kg)
Temperature, operating	32 to 104° F (0 to 40° C)
Temperature, non-operating	-40 to 158° F (-40 to 70° C)
Humidity (RH), non-condensing	5 to 95%
Altitude	0 to 13,123 ft (0 to 4000 m)



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