

# Cisco UCS-X440P PCIe Node

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



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## OVERVIEW

The Cisco UCS X-Series Modular System simplifies your data center, adapting to the unpredictable needs of modern applications while also providing for traditional scale-out and enterprise workloads. It reduces the number of server types to maintain, helping to improve operational efficiency and agility as it helps reduce complexity. Powered by the Cisco Intersight™ cloud operations platform, it shifts your thinking from administrative details to business outcomes with hybrid cloud infrastructure that is assembled from the cloud, shaped to your workloads, and continuously optimized.

The Cisco UCS X440p Gen4 PCIe Node is a new node type that is now supported in the UCS X9508 chassis. This can be attached to UCS X210c compute node in the UCS X9508 chassis to provide GPU accelerators support using the UCS 9416 X-Fabric modules for UCS X9508 chassis.

The Cisco UCS X440p PCIe Node is the first PCIe resource node to integrate into the Cisco UCS X-Series Modular System. Up to four PCIe Nodes can reside in the 7-Rack-Unit (7RU) Cisco UCS X9508 Chassis and can be paired with one compute node each, offering up to four GPUs to a Cisco UCS X210c Compute Node with Cisco UCS X-Fabric Technology.

The UCS X-Fabric Technology solution is a combination of two products: the Cisco UCS X9416 X-Fabric Module which provides a PCIe Gen 4 fabric and the UCS X440p PCIe Node which hosts the GPUs.

The Cisco UCS X9508 Chassis has eight node slots, up to four of which can be X440p PCIe Nodes when paired with a Cisco UCS X210c M6 Compute Node. This provides up to 16 GPUs per chassis to accelerate your applications. If your application needs even more GPU acceleration, up to two additional GPUs can be added on each compute node using optional GPU front mezz on X210c compute node

X440p supports following GPU:

- NVIDIA A100 Tensor Core GPU
- NVIDIA A16 GPU
- NVIDIA A40 GPU
- NVIDIA T4 Tensor Core GPU

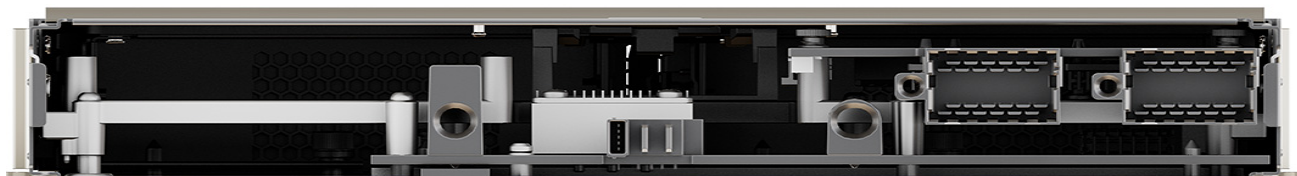
*Figure 1 on page 4* shows a front views of the Cisco UCSX-440P PCIe Node.

**Figure 1 Front views of cisco UCSX-440P PCIe Node**

Front View



Rear View



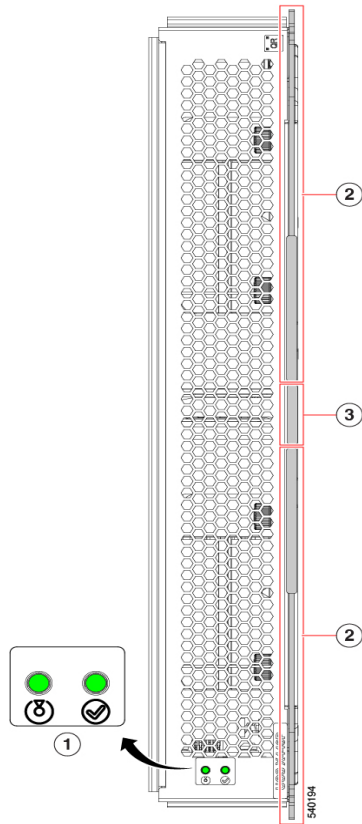
# DETAILED VIEWS

## Cisco UCS X440p PCIe Node Front View

Figure 2 is a front view of the Cisco UCSX-440P PCIe Node.

Figure 2 Cisco UCSX-440P PCIe Node Front View

GPUs Option




1	Locate LED & Status LED	3	PCI Node Ejector Button
2	PCI Node Ejector Handles	-	-

## PCIe Node STANDARD CAPABILITIES and FEATURES

**Table 1** lists the capabilities and features of the base Cisco UCSX-440P PCIe Node. Details about how to configure the PCIe Node for a listed feature or capability (for example, number of processors, disk drives, or amount of memory) are provided in [CONFIGURING the Cisco UCSX-440P PCIe Node on page 6](#).

**Table 1** Capabilities and Features

Capability/Feature	Description
Chassis	The Cisco UCSX-440P PCIe Node mounts in a Cisco UCS X9508 chassis.
GPU slots	<ul style="list-style-type: none"> <li>■ Riser Type A (1 PCIe slots) for 1x dual slot GPU per riser</li> <li>■ Riser Type B (2 PCIe slots) for 2x single slot GPUs per riser</li> </ul>  <p><b>Note:</b> Not all risers are available in every server configuration option.</p>
Available GPUs	<ul style="list-style-type: none"> <li>■ NVIDIA A100 Tensor Core GPU (dual slot)</li> <li>■ NVIDIA A16 GPU (dual slot)</li> <li>■ NVIDIA A40 GPU (dual slot)</li> <li>■ NVIDIA T4 Tensor Core GPU (single slot)</li> </ul>
Power subsystem	Power is supplied from the Cisco UCS X9508 chassis power supplies. The Cisco UCSX-440P PCIe Node consumes a maximum of 1300 W.
Fans	Integrated in the Cisco UCS X9508 chassis.
Integrated management processor	The built-in Cisco Integrated Management Controller enables monitoring of Cisco UCSX-440P PCIe Node inventory, health, and system event logs.
ACPI	Advanced Configuration and Power Interface (ACPI) 4.0 Standard Supported. ACPI states S0 and S5 are supported. There is no support for states S1 through S4.
Front Indicators	<ul style="list-style-type: none"> <li>■ Status indicator</li> <li>■ Location indicator</li> </ul>
Management	<a href="#">Cisco Intersight software</a> (SaaS, Virtual Appliance and Private Virtual Appliance)
Chassis	Compatible with the Cisco UCS 9508 X-Series Server Chassis

## CONFIGURING the Cisco UCSX-440P PCIe Node

Follow these steps to configure the Cisco UCSX-440P PCIe Node:

- *STEP 1 CHOOSE BASE Cisco UCSX-440P PCIe Node SKU, page 7*
- *STEP 2 SELECT RISER CARDS (REQUIRED), page 8*
- *STEP 3 ORDER GPU CARDS, page 9*
- *STEP 4 ORDER CISCO UCS X9416 X-FABRIC MODULES, page 10*
- *STEP 5 CHOOSE REAR MEZZANINE VIC/BRIDGE ADAPTERS, page 11*

## STEP 1 CHOOSE BASE Cisco UCSX-440P PCIe Node SKU

Verify the product ID (PID) of the Cisco UCSX-440P PCIe Node as shown in [Table 2](#).

Table 2 PIDs of the Base Cisco UCSX-440P PCIe Node

Product ID (PID)	Description
UCSX-440P	UCS X-Series Gen4 PCIe node
UCSX-440P-U	UCS X-Series Gen4 PCIe node

A base Cisco UCSX-440P PCIe Node ordered in [Table 2](#) does not include any components or options. They must be selected during product ordering.

Please follow the steps on the following pages to order components such as the following, which are required in a functional PCIe Node:

- GPUs
- Riser Cards
- Cisco UCS X9416 X-Fabric Modules

## STEP 2 SELECT RISER CARDS (REQUIRED)

Select risers from [Table 3](#).

Table 3 PIDs of the Risers

Product ID (PID)	Description
UCSX-RIS-A-440P	Riser A for 1x dual slot GPU per riser, 440P PCIe node <ul style="list-style-type: none"><li>■ Riser1A (controlled with CPU1 on UCS X210c)</li><li>■ Riser2A (controlled with CPU2 on UCS X210c)</li></ul>
UCSX-RIS-B-440P	Riser B for 2x single slot GPUs per riser, 440P PCIe node <ul style="list-style-type: none"><li>■ Riser1B (controlled with CPU1 on UCS X210c)</li><li>■ Riser2B (controlled with CPU2 on UCS X210c)</li></ul>



**NOTE:** The PCIe Node requires both the risers to be configured and doesn't support orderability without both risers included. Riser cards include all required power cables for supported GPUs.



## STEP 3 ORDER GPU CARDS

### Select GPU Options

The available GPU PCIe options and their riser slot compatibilities are listed in [Table 4](#).

**Table 4 Available PCIe GPU Cards**

GPU Product ID (PID)	PID Description	Riser Slot Compatibility
UCSX-GPU-T4-16 <sup>1</sup>	NVIDIA T4 PCIE 75W 16GB	Riser 1B (Gen 4), Riser 2B (Gen 4)
UCSX-GPU-A16 <sup>2</sup>	NVIDIA A16 PCIE 250W 4X16GB	Riser 1A (Gen 4), Riser 2A (Gen 4)
UCSX-GPU-A40 <sup>2</sup>	TESLA A40 RTX, PASSIVE, 300W, 48GB	Riser 1A (Gen 4), Riser 2A (Gen 4)
UCSX-GPU-A100-80 <sup>2</sup>	TESLA A100, PASSIVE, 300W, 80GB	Riser 1A (Gen 4), Riser 2A (Gen 4)

**Notes:**

1. The maximum number of GPUs per node is 4
2. The maximum number of GPUs per node is 2
3. Required power cables are included with the riser cards

### Caveats

Riser cards and GPUs cannot be mixed.



**NOTE:** Following [Step 4](#) and [Step 5](#) are optional only if the Cisco UCS X9508 Chassis already has the UCS X9416 X-Fabric modules installed and the UCS X210c compute node has one of the supported mezzanine adapters to connect to UCS X440p PCIe node

## STEP 4 ORDER CISCO UCS X9416 X-FABRIC MODULES

The Cisco UCS X-440P connectivity to the Cisco UCS X210c compute node is enabled with the X Fabric Module. When a compute node is inserted into the chassis, the compute node's mezzanine card plugs directly into the two Fabric Module slots (with no midplane) for PCIe connectivity to the UCS X-440p PCIe Node.

Select X-Fabric Modules on the UCS X9508 chassis [Table 5](#).

Table 5 PIDs of the Risers

Product ID (PID) <sup>1</sup>	Description
UCSX-F-9416	UCS 9416 X-Fabric module for 9508 chassis

**Notes:**

1. The X-Fabric modules are required on the X9508 chassis

## STEP 5 CHOOSE REAR MEZZANINE VIC/BRIDGE ADAPTERS

The UCS X210c compute node can connect to the UCS X440p PCIe node with the compute node's mezzanine card, the mezzanine card can be either the Cisco UCS PCI Mezz card for the X-Fabric connectivity or the UCS VIC 14825. The UCS VIC 14825 requires a bridge connector to connect the UCS X210c compute node to Intelligent fabric modules UCSX 9108-25G for network connectivity.

The Cisco UCS X210c Compute Node has one rear mezzanine adapter connector. Refer to [Table 6](#) for supported adapters.

**Table 6 Available Rear Mezzanine Adapters**

Product ID(PID)	PID Description	CPUs Required	Connector Type
<b>Cisco VIC Card</b>			
UCSX-V4-Q25GME	UCS VIC 14825 4x25G Mezz card for the X210c Compute Node	2 CPUs required	Rear Mezzanine connector on motherboard
UCSX-V4-PCIME <sup>1</sup>	UCS PCI Mezz card for X-Fabric connectivity	2 CPUs required	Rear Mezzanine connector on motherboard
<b>Cisco VIC Bridge Card<sup>2</sup></b>			
UCSX-V4-BRIDGE	UCS VIC 14000 bridge to connect the Cisco VIC 14425 mLOM and Cisco VIC 14825 Mezz for the X210c Compute Node	2 CPUs required	One connector on Mezz card and one connector on mLOM card

**Notes:**

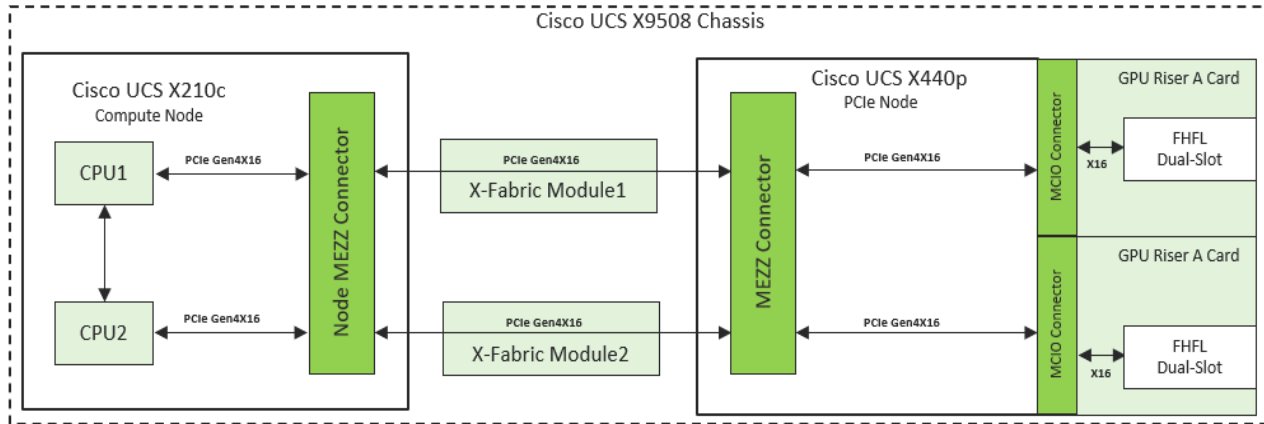
1. The rear mezzanine options provide one x16 PCIe connection each from CPU1 to XFM1 and from CPU2 to XFM2.
2. Included with the Cisco VIC 14825

# SUPPLEMENTAL MATERIAL

## Simplified Block Diagram

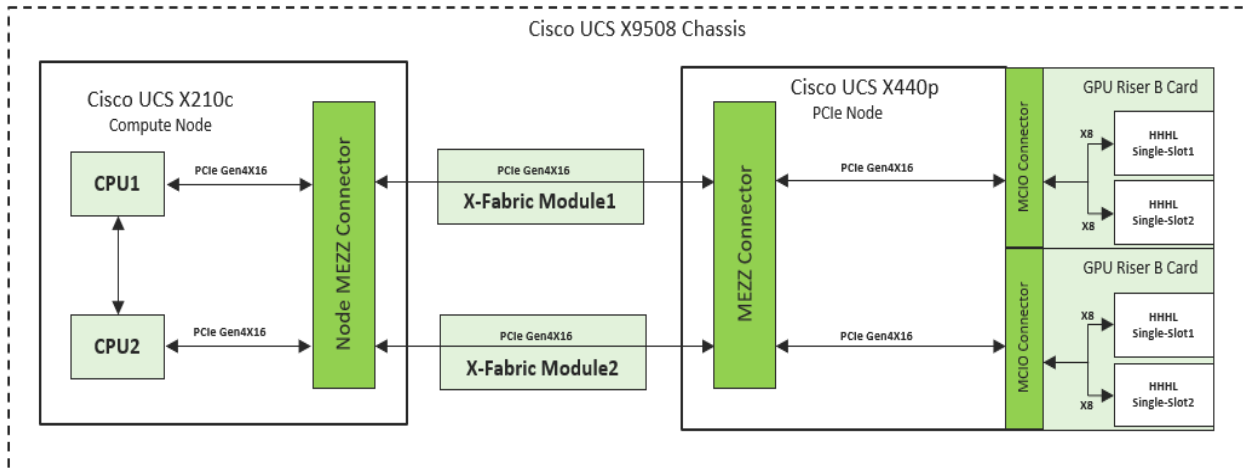
A simplified block diagram of the Cisco UCSX-440P PCIe Node system board is shown in [Figure 3](#).

**Figure 3 Cisco UCSX-440P PCIe Node Simplified Block Diagram with Riser A**



A simplified block diagram of the Cisco UCSX-440P PCIe Node system board is shown in [Figure 3](#).

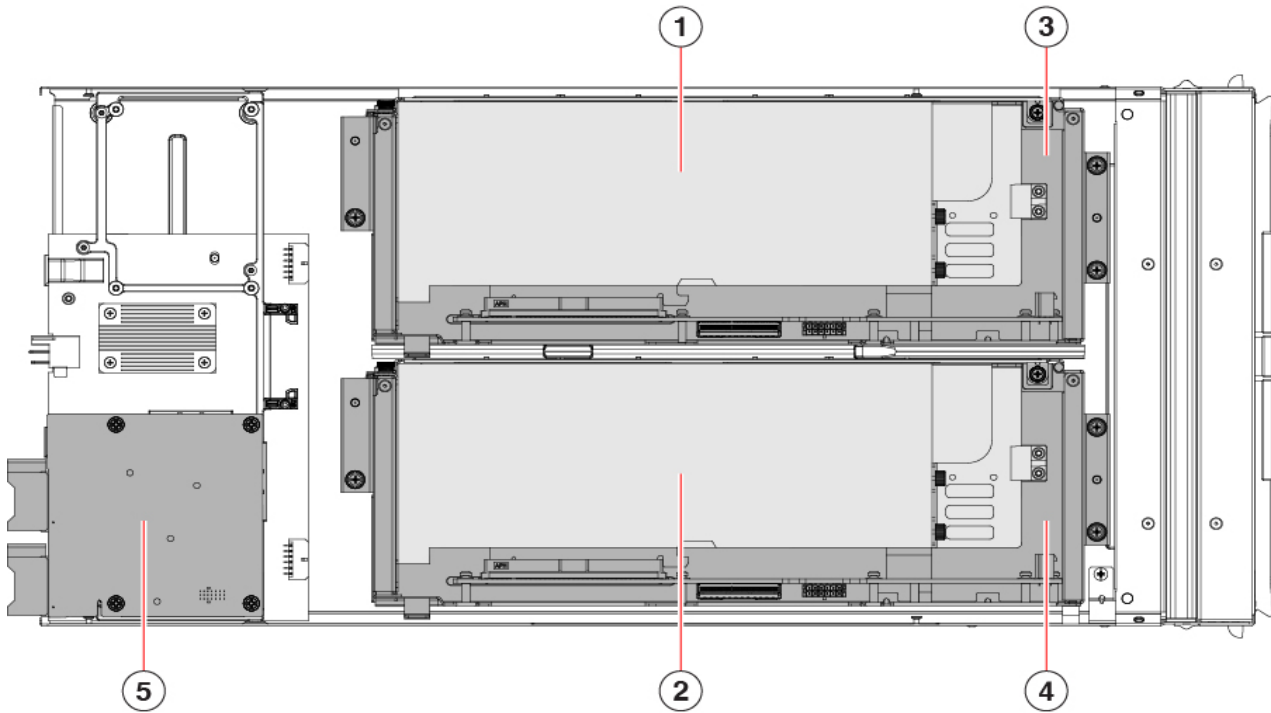
**Figure 4 Cisco UCSX-440P PCIe Node Simplified Block Diagram with Riser B**



## System Board

A top view of the Cisco UCSX-440P PCIe Node system board is shown in [Figure 5](#).

Figure 5 Cisco UCSX-440P PCIe Node System Board



1	Riser slot 1 Supports both Type A and Type B risers.	2	Riser slot 2 Supports both Type A and Type B risers.
3	GPU slot 1 (FHFL GPU shown) Supports either FHFL or HHHL GPU depending on the riser type.	4	GPU slot 2 (FHFL GPU shown) Supports either FHFL or HHHL GPU depending on the riser type.
5	mezzanine connector (included)	-	-

## SPARE PARTS

This section lists the upgrade and service-related parts for the Cisco UCSX-440P PCIe Node.

**Table 7 Spare Parts**

Product ID (PID)	PID Description
<b>Riser Blank</b>	
UCSX-RIS-BLK-440P=	PCIe blank for UCS X-series 440P PCIe node
<b>X-Fabric Module</b>	
UCSX-F-9416=	UCS 9416 X-Fabric module for 9508 chassis
<b>GPU Cards</b>	
UCSX-GPU-T4-16=	NVIDIA T4 PCIE 75W 16GB
UCSX-GPU-A16=	NVIDIA A16 PCIE 250W 4X16GB
UCSX-GPU-A40=	TESLA A40 RTX, PASSIVE, 300W, 48GB
UCSX-GPU-A100-80=	TESLA A100, PASSIVE, 300W, 80GB

# TECHNICAL SPECIFICATIONS

## Dimensions and Weight

Table 8 Cisco UCSX-440P PCIe Node Dimensions and Weight

Parameter	Value
Height	1.80 in. (45.7 mm)
Width	11.28 in.(286.5 mm)
Depth	24 in. (602 mm)
Weight	<ul style="list-style-type: none"> <li>■ Minimally configured node weight = 12.84 lbs (5.83 kg)</li> <li>■ Fully loaded PCIe Node with T4 GPU = 14.9 lb; minimum config with 1x T4 GPU = 12.9 lb</li> <li>■ Fully loaded PCIe Node with A16 GPU = 17.1 lb; minimum config with 1X A16 GPU = 14.6 lb</li> <li>■ Fully loaded PCIe Node with A40 GPU = 16.6 lb; minimum config with 1X A40 GPU = 14.4 lb</li> <li>■ Fully loaded PCIe Node with A100 GPU = 17.9 lb; minimum config with 1X A100 GPU = 15 lb</li> </ul>

## Environmental Specifications

Table 9 Cisco UCSX-440P PCIe Node Environmental Specifications

Parameter	Value
Operating temperature	50° to 95° F (10° to 35° C)
Non-operating temperature	-40° to 149° F (-40° to 65° C)
Operating humidity	5% to 90% noncondensing
Non-operating humidity	5% to 93% noncondensing
Operating altitude	0 to 10,000 ft (0 to 3000m); maximum ambient temperature decreases by 1° C per 300m
Non-operating altitude	40,000 ft (12,000m)

For configuration-specific power specifications, use the Cisco UCS Power Calculator at:

<http://ucspowercalc.cisco.com>



**NOTE:** The Cisco UCSX-440P PCIe Node has a power cap of 1300 Watts for all combinations of components. Also, the ambient temperature must be less than 35 °C (95 °F).



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**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA

**Asia Pacific Headquarters**  
Cisco Systems (USA) Pte. Ltd.  
Singapore

**Europe Headquarters**  
Cisco Systems International BV Amsterdam,  
The Netherlands

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