Spec Sheet

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 X-Series 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 X-Series 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 Cisco 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 X-Series 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 X-Series Compute Node.

Cisco UCS X440p supports several GPUs please refer to **STEP 3 ORDER GPU CARDS, page 9** for the available GPUs

Figure 1 Front views of Cisco UCS X440p PCIe Node

Front View

Rear View

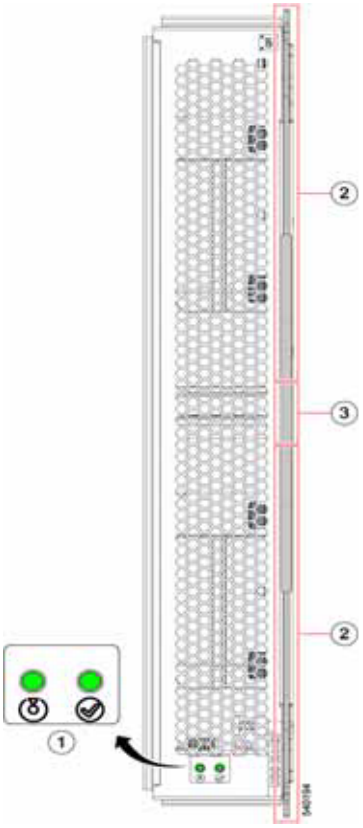
DETAILED VIEWS

Cisco UCS X440p PCIe Node Front View

Figure 2 is a front view of the Cisco UCS X440p PCIe Node.

Figure 2 Cisco UCS X440p 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 UCS X440p 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 UCS X440p PCIe Node on page 6.

Table 1 Capabilities and Features

Capability/Feature	Description
Chassis	The Cisco UCS X440p PCIe Node mounts in a Cisco UCS X9508 chassis.
GPU slots	■ Riser Type A (1 PCIe slots) for 1x dual slot GPU per riser ■ Riser Type B (2 PCIe slots) for 2x single slot GPU per riser **Note:** Not all risers are available in every server configuration option. Please refer *Table 3* for the complete GPU Cards PID lists
Available GPUs	■ NVIDIA ■ TESLA ■ Intel ■ AMD Please refer *Table 4* for the complete GPU Cards PID lists
Power subsystem	Power is supplied from the Cisco UCS X9508 chassis power supplies. The Cisco UCS X440p 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 UCS X440p 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	■ Status indicator ■ Location indicator
Management	■ Cisco Intersight software (SaaS, Virtual Appliance and Private Virtual Appliance) ■ UCS Manager (UCSM) 4.3(4) or later
Chassis	Compatible with the Cisco UCS 9508 X-Series Server Chassis

CONFIGURING the Cisco UCS X440p PCIe Node

Follow these steps to configure the Cisco UCS X440p PCIe Node:

STEP 1 CHOOSE BASE CISCO UCS X440p PCIe NODE SKU

Verify the product ID (PID) of the Cisco UCS X440p PCIe Node as shown in *Table 2*.

Table 2 PIDs of the Base Cisco UCS X440p PCIe Node

Product ID (PID)	Description
UCSX-M6-MLB (Top Level Ordering PID)	
UCSX-440P-U	UCS X-Series Gen4 PCIe node
UCSX-M7-MLB (Top Level Ordering PID)	
UCSX-440P-D-U	UCS X-Series Gen4 PCIe node
UCSX-M8-MLB (Top Level Ordering PID)	
UCSX-440P-D-U	UCS X-Series Gen4 PCIe node

A base Cisco Gen4 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-M6-MLB (Top Level Ordering PID)	
UCSX-RIS-A-440P	Riser A for 1x dual slot GPU per riser, 440P PCIe node ■ Riser1A (controlled with CPU1) ■ Riser2A (controlled with CPU2)
UCSX-RIS-B-440P	Riser B for 2x single slot GPUs per riser, 440P PCIe node ■ Riser1B (controlled with CPU1) ■ Riser2B (controlled with CPU2)
UCSX-M7-MLB (Top Level Ordering PID)	
UCSX-RIS-A-440P-D	Riser A for 1x dual slot GPU per riser, 440P PCIe node ■ Riser1A (controlled with CPU1) ■ Riser2A (controlled with CPU2)
UCSX-RIS-B-440P-D	Riser B for 2x single slot GPUs per riser, 440P PCIe node ■ Riser1B (controlled with CPU1) ■ Riser2B (controlled with CPU2)
UCSX-M8-MLB (Top Level Ordering PID)	
UCSX-RIS-A-440P-D	Riser A for 1x dual slot GPU per riser, 440P PCIe node ■ Riser1A (controlled with CPU1) ■ Riser2A (controlled with CPU2)
UCSX-RIS-B-440P-D	Riser B for 2x single slot GPUs per riser, 440P PCIe node ■ Riser1B (controlled with CPU1) ■ Riser2B (controlled with CPU2)

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	Maximum Number of GPUs Per node
UCSX-440P (M6 Servers)			
UCSX-GPU-T4-16	NVIDIA T4 PCIE 75W 16GB	Riser 1B (Gen 4), Riser 2B (Gen 4)	4
UCSX-GPU-A16	NVIDIA A16 PCIE 250W 4X16GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-A100-80	TESLA A100, PASSIVE, 300W, 80GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-440P-D (M7 Severs)			
UCSX-GPU-A16-D	NVIDIA A16 PCIE 250W 4X16GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPUA100-80-D	TESLA A100, PASSIVE, 300W, 80GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-H100-80	TESLA H100, PASSIVE, 350W, 80GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-L4	NVIDIA L4 Tensor Core, 70W, 24GB	Riser 1B (Gen 4), Riser 2B (Gen 4)	4
UCSX-GPU-L40	NVIDIA L40 300W, 48GB wPWR CBL	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-L40S	NVIDIA L40S: 350W, 48GB, 2-slot FHFL GPU	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-FLEX140[1]	Intel GPU Flex 140, Gen4x8, HHHL, 75W PCIe	Riser 1B (Gen 4), Riser 2B (Gen 4)	4
UCSX-GPU-FLEX170[1]	Intel GPU Flex 170, Gen4x16, HHFL, 150W PCIe	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-H100-NVL	NVIDIA H100 NVL, 400W, 94GB, 2-slot FHFL GPU	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-440P-D (M8 Severs)			
UCSX-GPU-A16-D	NVIDIA A16 PCIE 250W 4X16GB	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-L4	NVIDIA L4 Tensor Core, 70W, 24GB	Riser 1B (Gen 4), Riser 2B (Gen 4)	4
UCSX-GPU-L40[2]	NVIDIA L40 300W, 48GB wPWR CBL	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-L40S	NVIDIA L40S: 350W, 48GB, 2-slot FHFL GPU	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-H100-NVL[3]	NVIDIA H100 NVL, 400W, 94GB, 2-slot FHFL GPU	Riser 1A (Gen 4), Riser 2A (Gen 4)	2
UCSX-GPU-MI210[2]	AMD Instinct MI210:300W, 64GB, 2-slot FHFL GPU	Riser 1A (Gen 4), Riser 2A (Gen 4)	2

Notes:

1. Windows Server 2019 is not supported on 210C M7 and 410C M7 servers with Intel Flex 140 and 170 GPUs.

2. Not supported with X210c compute node
3. Not supported with X410c compute node

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 X-Series compute node has one of the supported mezzanine adapters to connect to Cisco UCS X440p PCIe node

STEP 4 ORDER CISCO UCS X9416 X-FABRIC MODULES

The Cisco UCS X440p connectivity to the Cisco UCS X-Series 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 Cisco UCS X440p PCIe Node.

Select X-Fabric Modules on the UCS X9508 chassis *Table 5*.

Table 5 PIDs of the Risers

Product ID (PID)[1]	Description
UCSX-F-9416-D	UCS 9416 X-Fabric module for 9508 chassis

Notes:

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

STEP 5 CHOOSE OPTIONAL REAR MEZZANINE VIC/BRIDGE ADAPTERS

Cisco UCS X440p PCIe node under UCSX-M7-MLB:

The Cisco UCS X210c M7 Compute Node has one rear mezzanine adapter connector which can have a UCS VIC 15422 Mezz card that can be used as a second VIC card on the compute node for network connectivity or as a connector to the X440p PCIe node via X-Fabric modules. The same mezzanine slot on the compute node can also accommodate a pass-through mezzanine adapter for X-Fabric which enables compute node connectivity to the X440p PCIE node. Refer to **Table 6** for supported adapters.

Table 6 Available Rear Mezzanine Adapters

Product ID(PID)	PID Description	CPUs Required	Connector Type
Cisco VIC Card			
UCSX-V4-PCIME-D	UCS PCI Mezz Card for X-Fabric	2 CPUs required	Rear Mezzanine connector on motherboard
UCSX-ME-V5Q50G-D	UCS VIC 15422 4x25G secure boot mezz for X Compute Node	2 CPUs required	Rear Mezzanine connector on motherboard
Cisco VIC Bridge Card[1]			
UCSX-V5-BRIDGE-D	UCS VIC 15000 bridge to connect mLOM and mezz X Compute Node (This bridge to connect the Cisco VIC 15420 mLOM and Cisco VIC 15422 Mezz for the X210c M7 Compute Node)	2 CPUs required	One connector on Mezz card and one connector on mLOM card

Notes:

1. Included with the Cisco VIC 15422 mezzanine adapter.

Cisco UCS X440p PCIe node under UCSX-M6-MLB:

The Cisco UCS X210c M6 Compute Node has one rear mezzanine adapter connector which can have a UCS VIC 14825/15422 Mezz card that can be used as a second VIC card on the compute node for network connectivity or as a connector to the X440p PCIe node via X-Fabric modules. The same mezzanine slot on the compute node can also accommodate a pass-through mezzanine adapter for X-Fabric which enables compute node connectivity to the X440p PCIE node. Refer to Table 6 for supported adapters.

Table 7 Available Rear Mezzanine Adapters

Product ID(PID)	PID Description	CPUs Required	Connector Type
Cisco VIC Card			
UCSX-V4-Q25GME	UCS VIC 14825[1] 4x25G mezz for X Compute Node	2 CPUs required	Rear Mezzanine connector on motherboard
UCSX-ME-V5Q50G	UCS VIC 15420[2] 4x25G secure boot mLOM for X Compute Node	2 CPUs required	Rear Mezzanine connector on motherboard
UCSX-V4-PCIME	UCS PCI Mezz Card for X-Fabric	2 CPUs required	Rear Mezzanine connector on motherboard
Cisco VIC Bridge Card			
UCSX-V4-BRIDGE[3]	UCS VIC 14000 bridge connect mLOM and mezz X Compute Node	2 CPUs required	One connector on Mezz card and one connector on mLOM card
UCSX-V5-BRIDGE[4]	UCS VIC 15000 bridge to connect mLOM and mezz X Compute Node (This bridge to connect the Cisco VIC 15420 mLOM and Cisco VIC 15422 Mezz for the X210c M6 Compute Node)	2 CPUs required	One connector on Mezz card and one connector on mLOM card

Notes:

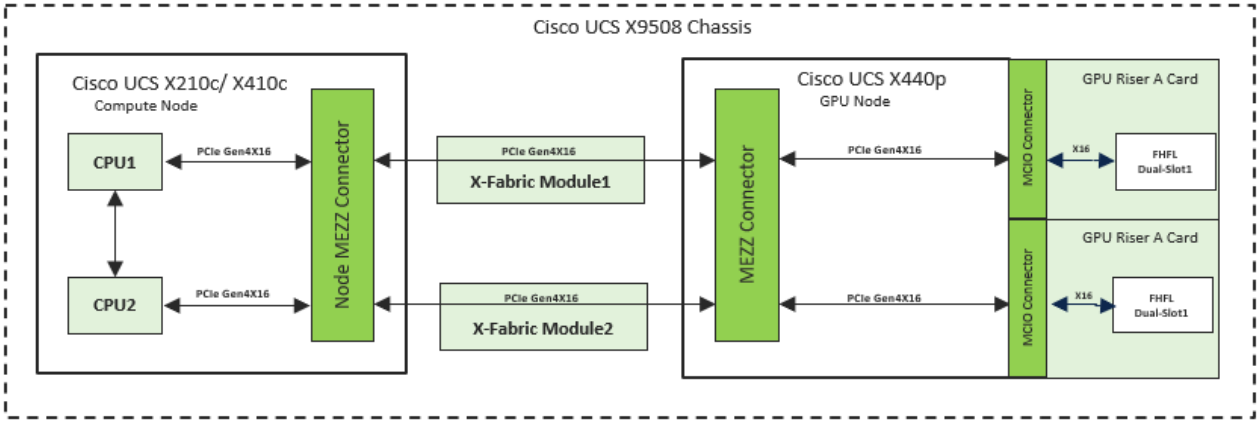
1. Cisco UCS VIC 14825 can only be used with the Cisco UCS VIC 14425 mLOM
2. Cisco UCS VIC 15420 can only be used with the Cisco UCS VIC 15422 mLOM
3. Included with the Cisco VIC 14825
4. Included with the Cisco VIC 15422

SUPPLEMENTAL MATERIAL

Simplified Block Diagram

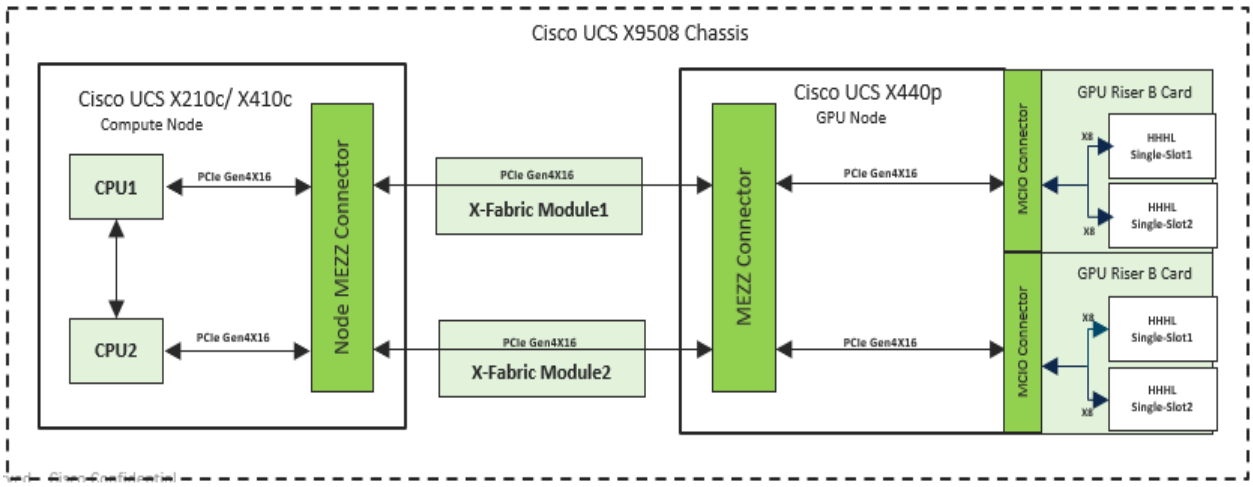
A simplified block diagram of the Cisco UCS X440p PCIe Node system board is shown in *Figure 3* with riser A.

Figure 3 Cisco UCS X440p PCIe Node Simplified Block Diagram with Riser A



A simplified block diagram of the Cisco UCS X440p PCIe Node system board is shown in *Figure 4* with riser B.

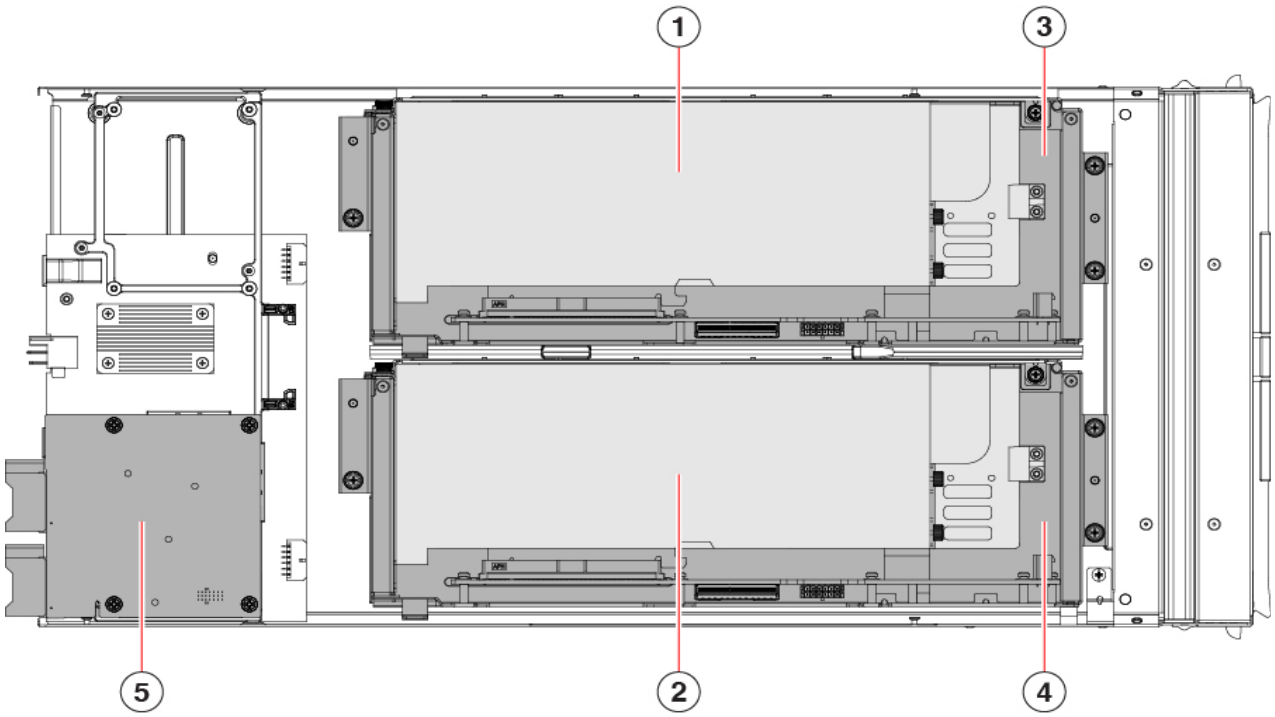
Figure 4 Cisco UCS X440p PCIe Node Simplified Block Diagram with Riser B



System Board

A top view of the Cisco UCS X440p PCIe Node system board is shown in ***Figure 5***.

Figure 5 Cisco UCS X440p 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 UCS X440p PCIe Node.

Table 8 Spare Parts

Product ID (PID)	PID Description
Riser Blank	
UCSX-RIS-BLK-440P=	PCIe blank for UCS X-series 440P PCIe node
UCSX-RIS-BLK-440P-D=	PCIe blank for UCS X-series 440P PCIe node
X-Fabric Module	
UCSX-F-9416=	UCS 9416 X-Fabric module for 9508 chassis
UCSX-F-9416-D=	UCS 9416 X-Fabric module for 9508 chassis
GPU Cards	
UCSX-GPU-T4-16=	NVIDIA T4 PCIE 75W 16GB
UCSX-GPU-A16=	NVIDIA A16 PCIE 250W 4X16GB
UCSX-GPU-A100-80=	TESLA A100, PASSIVE, 300W, 80GB
UCSX-GPU-A16-D=	NVIDIA A16 PCIE 250W 4X16GB
UCSX-GPU-A100-80-D=	TESLA A100, PASSIVE, 300W, 80GB
UCSX-GPU-L4=	NVIDIA L4 Tensor Core, 70W, 24GB
UCSX-GPU-L40=	NVIDIA L40 300W, 48GB wPWR CBL
UCSX-GPU-L40S=	NVIDIA L40S: 350W, 48GB, 2-slot FHFL GPU
UCSX-GPU-H100-80=	TESLA H100, PASSIVE, 350W, 80GB
UCSX-GPU-FLEX140=	Intel GPU Flex 140, Gen4x8, HHHL, 75W PCIe
UCSX-GPU-FLEX170=	Intel GPU Flex 170, Gen4x16, HHFL, 150W PCIe
UCSX-GPU-H100-NVL=	NVIDIA H100 NVL, 400W, 94GB, 2-slot FHFL GPU
UCSX-GPU-MI210=	AMD Instinct MI210:300W, 64GB, 2-slot FHFL GPU
Riser	
UCSX-440P-A=	UCS X-Series Gen4 PCIe node w/ Riser type A (1FHFL)
UCSX-440P-B=	UCS X-Series Gen4 PCIe node with Riser type B (2HHHL)
UCSX-RIS-A-440P-D=	Riser A for 1x dual slot GPU per riser, 440P PCIe node
UCSX-RIS-B-440P-D=	Riser B for 2x single slot GPUs per riser, 440P PCIe node

TECHNICAL SPECIFICATIONS

Dimensions and Weight

Table 9 Cisco UCS X440p 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	■ Minimally configured node weight = 12.84 lbs (5.83 kg) ■ Fully loaded PCIe Node with T4 GPU = 14.9 lb; minimum config with 1x T4 GPU = 12.9 lb ■ Fully loaded PCIe Node with A16 GPU = 17.1 lb; minimum config with 1X A16 GPU = 14.6 lb ■ Fully loaded PCIe Node with A40 GPU = 16.6 lb; minimum config with 1X A40 GPU = 14.4 lb ■ Fully loaded PCIe Node with A100 GPU = 17.9 lb; minimum config with 1X A100 GPU = 15 lb

Environmental Specifications

Table 10 Cisco UCS X440p 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 UCS X440p PCIe Node has a power cap of 1300 Watts for all combinations of components. Also, the ambient temperature must be less than 35 ºC (95 ºF).

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