ThinkSystem NVIDIA BlueField-3 QSFP112 Adapters
Product Guide

NVIDIA BlueField-3 is an advanced compute platform that enables software-defined, hardware-accelerated IT infrastructures. BlueField-3 offloads, accelerates, and isolates software-defined networking, storage, security, and management functions.

Two BlueField-3 adapters are offered in the ThinkSystem portfolio:

- Model B3220, a Data processing unit (DPU) adapter, with 16 Arm cores, 32GB of DDR5 memory, and two ports of 200Gb/s Ethernet or NDR200 InfiniBand network connectivity
- Model B3140H, a SuperNIC, with 8 Arm cores,16GB of DDR5 memory, and one port of 400Gb/s Ethernet or NDR InfiniBand network connectivity

The NVIDIA BlueField-3 DPU is a full-height half-length (FHHL) adapter as shown in the following figure.

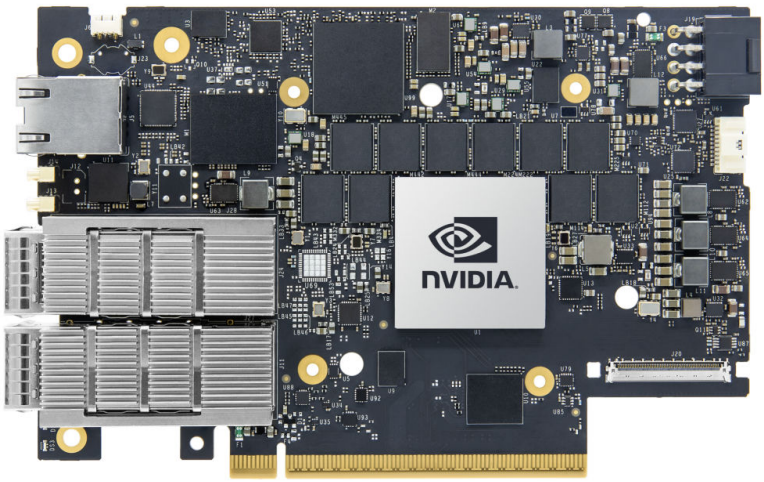

Figure 1. ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter

Did you know?

Powered by NVIDIA DOCA™, BlueField-3 enables full data center programmability through open APIs and an optimized developer experience. Top ISV providers and server makers are using DOCA for accelerating innovation and achieving better business outcomes with BlueField DPUs. Paired with NVIDIA GPUs, BlueField-3 secures and accelerates cloud-native computing platforms.

Compared to the BlueField-2 adapter, the BlueField-3 provides 4X more compute power, up to 4X faster crypto acceleration, 2X faster storage processing, and 4X more memory bandwidth, all while delivering full backward compatibility through the NVIDIA DOCA™ software framework.

Part number information

The following table shows the part number for the adapter and auxiliary power cable. The power cable is required to provide the power needed by the adapter.

Table 1. Part number information

Part number	Feature code	Description	NVIDIA model	NVIDIA part number	Additional information
BlueField-3 SuperNIC					
4XC7A93809	C0Q4	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	B3140H SuperNIC	900-9D3D4-00EN-HA0	-
BlueField-3 DPU					
4XC7A87752	BVBG	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	B3220 DPU	900-9D3B6-00CV-AA0	Gold-plated power connector
CTO only	CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	B3220 DPU	-	Tin-plated power connector
4XC7A96568	C4GD	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	B3240 DPU	900-9D3B6-00CN-AB0	Tin-plated power connector, dual-slot adapter
Auxiliary power cables for BlueField-3 DPU (for B3220, B3240)					
4X97B02426	BMJL	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	-	-	For use with adapter BVBG only
4X97A91527	BXB6	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	-	-	For use with adapter BVBG only
4X97B04861	C6R3, C6R1	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	-	-	For use with adapter BVBG only
CTO only	C1F7	ThinkSystem Rear BlueField-3 Power Cable	-	-	For use with adapter BVBG only
CTO only	C9K3	ThinkSystem BlueField-3 Power Cable	-	-	For use with adapter CCVX and C4GD only

The part number includes the following:

- One adapter with a full-height (3U) adapter bracket
- Documentation

The NVIDIA BlueField-3 SuperNIC is a half-height half-length (HHHL) adapter as shown in the following figure.

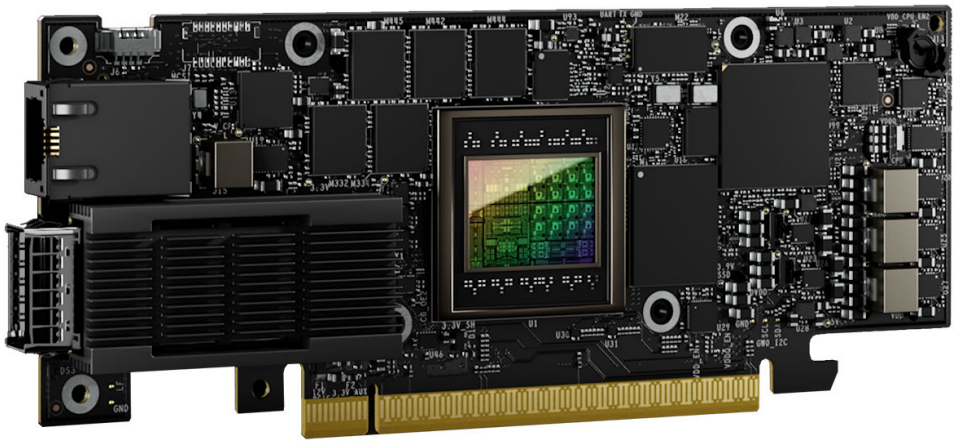

Figure 2. ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter

Supported transceivers and cables - B3140H

This section lists the transceivers and cables supported by the ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter, 4XC7A93809.

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
200/400Gb Transceivers		
4TC7A81831	BQJZ	ThinkSystem NDR/NDR200 QSFP112 IB Multi Mode Solo-Transceiver

The following table lists the supported optical cables.

Table 3. Optical cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Optical Cables		
4Z57A14188	B4QW	3m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14189	B4QX	5m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14190	B4QY	10m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14191	B4QZ	15m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14192	B4R0	20m Mellanox HDR IB Active Optical QSFP56 Cable
NVIDIA NDR Multi Mode Fibre Optical Cables		
4X97A81748	BQJN	Lenovo 3m NVIDIA NDR Multi Mode Optical Cable
4X97A81749	BQJP	Lenovo 5m NVIDIA NDR Multi Mode Optical Cable
4X97A81750	BQJQ	Lenovo 7m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
4X97A81751	BQJR	Lenovo 10m NVIDIA NDR Multi Mode Optical Cable
4X97A81752	BQJS	Lenovo 20m NVIDIA NDR Multi Mode Optical Cable
4X97A85349	BSN6	Lenovo 30m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
NVIDIA NDR Multi Mode Fibre Optical Splitter Cables		
4X97A81836	BQK4	Lenovo 3m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81837	BQK5	Lenovo 5m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81838	BQK6	Lenovo 7m NVIDIA NDR to 2x NDR200 Multi Mode MPO12 APC Optical Cable
4X97A81839	BQK7	Lenovo 10m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81840	BQK8	Lenovo 20m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable

The following table lists the supported direct-attach copper (DAC) cables.

Table 4. Copper cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Passive DAC Cables		
4Z57A14182	B4QQ	0.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14183	B4QR	1m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14184	B4QS	1.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14185	B4QT	2m Mellanox HDR IB Passive Copper QSFP56 Cable
NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Splitter Copper Cables		
4X97A81832	BQK0	Lenovo 1m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81833	BQK1	Lenovo 1.5m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81834	BQK2	Lenovo 2m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81835	BQK3	Lenovo 3m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97B08449	CAGR	Lenovo 5M NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Active Copper Splitter Cable Generic

Supported transceivers and cables - B3220

This section lists the transceivers and cables supported by the ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter, 4XC7A87752.

The following table lists the supported transceivers.

Table 5. Transceivers

Part number	Feature code	Description
200/400Gb Transceivers		
4TC7A81831	BQJZ	ThinkSystem NDR/NDR200 QSFP112 IB Multi Mode Solo-Transceiver

The following table lists the supported optical cables.

Table 6. Optical cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Optical Cables		
4Z57A14188	B4QW	3m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14189	B4QX	5m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14190	B4QY	10m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14191	B4QZ	15m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14192	B4R0	20m Mellanox HDR IB Active Optical QSFP56 Cable
NVIDIA NDR Multi Mode Fibre Optical Splitter Cables		
4X97A81836	BQK4	Lenovo 3m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81837	BQK5	Lenovo 5m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81838	BQK6	Lenovo 7m NVIDIA NDR to 2x NDR200 Multi Mode MPO12 APC Optical Cable
4X97A81839	BQK7	Lenovo 10m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81840	BQK8	Lenovo 20m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable

The following table lists the supported direct-attach copper (DAC) cables.

Table 7. Copper cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Passive DAC Cables		
4Z57A14182	B4QQ	0.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14183	B4QR	1m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14184	B4QS	1.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14185	B4QT	2m Mellanox HDR IB Passive Copper QSFP56 Cable
NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Splitter Copper Cables		
4X97A81832	BQK0	Lenovo 1m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81833	BQK1	Lenovo 1.5m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81834	BQK2	Lenovo 2m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81835	BQK3	Lenovo 3m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97B08449	CAGR	Lenovo 5M NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Active Copper Splitter Cable Generic

Supported transceivers and cables - B3240

This section lists the transceivers and cables supported by the ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector, 4XC7A96568.

The following table lists the supported transceivers.

Table 8. Transceivers

Part number	Feature code	Description
200/400Gb Transceivers		
4TC7A81831	BQJZ	ThinkSystem NDR/NDR200 QSFP112 IB Multi Mode Solo-Transceiver

The following table lists the supported optical cables.

Table 9. Optical cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Optical Cables		
4Z57A14188	B4QW	3m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14189	B4QX	5m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14190	B4QY	10m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14191	B4QZ	15m Mellanox HDR IB Active Optical QSFP56 Cable
4Z57A14192	B4R0	20m Mellanox HDR IB Active Optical QSFP56 Cable
NVIDIA NDR Multi Mode Fibre Optical Cables		
4X97A81748	BQJN	Lenovo 3m NVIDIA NDR Multi Mode Optical Cable
4X97A81749	BQJP	Lenovo 5m NVIDIA NDR Multi Mode Optical Cable
4X97A81750	BQJQ	Lenovo 7m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
4X97A81751	BQJR	Lenovo 10m NVIDIA NDR Multi Mode Optical Cable
4X97A81752	BQJS	Lenovo 20m NVIDIA NDR Multi Mode Optical Cable
4X97A85349	BSN6	Lenovo 30m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
NVIDIA NDR Multi Mode Fibre Optical Splitter Cables		
4X97A81836	BQK4	Lenovo 3m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81837	BQK5	Lenovo 5m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81838	BQK6	Lenovo 7m NVIDIA NDR to 2x NDR200 Multi Mode MPO12 APC Optical Cable
4X97A81839	BQK7	Lenovo 10m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable
4X97A81840	BQK8	Lenovo 20m NVIDIA NDR to 2x NDR200 Multi Mode Optical Cable

The following table lists the supported direct-attach copper (DAC) cables.

Table 10. Copper cables

Part number	Feature code	Description
QSFP56 HDR InfiniBand / 200 GbE Passive DAC Cables		
4Z57A14182	B4QQ	0.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14183	B4QR	1m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14184	B4QS	1.5m Mellanox HDR IB Passive Copper QSFP56 Cable
4Z57A14185	B4QT	2m Mellanox HDR IB Passive Copper QSFP56 Cable
NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Splitter Copper Cables		
4X97A81832	BQK0	Lenovo 1m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81833	BQK1	Lenovo 1.5m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81834	BQK2	Lenovo 2m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97A81835	BQK3	Lenovo 3m NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Passive Copper Splitter Cable
4X97B08449	CAGR	Lenovo 5M NVIDIA NDRx2 OSFP800 to 4x NDR200 QSFP112 Active Copper Splitter Cable Generic

Workloads

The BlueField-3 adapters are suitable for the following workload types:

- Cloud Networking: Cloud overlay, SDN acceleration, NAT, load balancer, NFV, video streaming
- Storage: NVMe over Fabrics (NVMe-oF), NVMe/ TCP™, elastic storage, hyper converged infrastructure (HCI)
- Security: Distributed next- generation firewall, IDS/ IPS, root of trust, micro- segmentation, DDOS prevention
- HPC / AI: Cloud-native supercomputing, multi-tenancy and security, communication accelerations
- Telco and Edge: Cloud RAN, virtualized edge gateways, VNF acceleration, edge microservers

Technical specifications

The BlueField-3 adapters have the following technical specifications:

Adapter specifications

- Form factor:
  - B3140H adapter: Single-slot HHHL adapter
  - B3220 adapter: Single-slot FHHL adapter
  - B3240 adapter: Dual-slot FHHL adapter
- Ports:
  - B3140H adapter: 1 port with a QSFP112 cage, providing 400Gb/s Ethernet or NDR InfiniBand connectivity
  - B3220 adapter: 2 ports using 2x QSFP112 cages, each providing 200Gb/s Ethernet or NDR200 InfiniBand connectivity
  - B3240 adapter: 2 ports using 2x QSFP112 cages, each providing 400Gb/s Ethernet or NDR InfiniBand connectivity
- Based on a ConnectX-7 networking subsystem

- PCIe Gen5 x16 host interface
- Support for an Auxiliary Card which provides an additional x16 host connection for Sockets Direct (SharedIO) support (B3240, B3220 adapters only)
- Maximum power consumption:
  - B3140H adapter: 75W
  - B3220 adapter: 75W+150W
  - B3240 adapter: 75W+150W

Compute and Memory

- Arm CPU cores
  - B3140H adapter: 8 Arm v8.2+ A78 Hercules cores (64-bit)
  - B3220 adapter: 16 Arm v8.2+ A78 Hercules cores (64-bit)
  - B3240 adapter: 16 Arm v8.2+ A78 Hercules cores (64-bit)
  - 8MB L2 cache
  - 16MB LLC system cache
- Programmable Datapath Accelerator
  - Programmability through DOCA
  - Heavy multi-threading applications acceleration
- DDR DIMM support
  - Dual DDR5 5600MT/s DRAM controllers
  - Onboard memory:
    - B3140H adapter: 16GB DDR5
    - B3220 adapter: 32GB DDR5
    - B3240 adapter: 32GB DDR5
  - ECC error protection support

Networking protocol support

- InfiniBand: IBTA v1.5(a) (Auto-Negotiation):
  - (B3240, B3140H adapters only) NDR (4 lanes x 100Gb/s per lane)
  - NDR200 (2 lanes x 100Gb/s per lane)
  - HDR (50Gb/s per lane)
  - HDR100 (2 lane x 50Gb/s per lane)
  - EDR (25Gb/s per lane)
  - FDR (14.0625Gb/s per lane)
  - 1X/2X/4X SDR (2.5Gb/s per lane).
- Ethernet:
  - (B3240, B3140H adapters only) 400GAUI-4 C2M, 400GBASE-CR4
  - 200GAUI-2 C2M, 200GAUI-4 C2M, 200GBASE-CR4
  - 100GAUI-2 C2M, 100GAUI-1 C2M, 100GBASE-CR4, 100GBASE-CR2, 100GBASE-CR1
  - 50GAUI-2 C2M, 50GAUI-1 C2M, 50GBASE-CR, 50GBASE-R2
  - 40GBASE-CR4, 40GBASE-R2
  - 25GBASE-R
  - 10GBASE-R, 10GBASE-CX4
  - 1000BASE-CX, CAUI-4 C2M, 25GAUI C2M, XLAUI C2M , XLPPI, SFI

Hardware Accelerations

- Security
  - Platform security
  - Secure boot with hardware root-of-trust (RoT)
  - Secure firmware update
  - On-board flash encryption
  - Device attestation
  - Functional isolation layer
  - Regular expression (RegEx) matching processor

    - IPsec/TLS/MACSec 128/256-bit data-in-motion encryption
    - PSP security protocol (PSP)
    - AES-GCM 128/256bit key
    - AES-XTS 256/512bit data-at-rest encryption
    - Connection tracking for statefull firewall
    - Public key accelerator (PKA)
    - True random number generator (TRNG)
- Cryptography (B3240 only)
    - Inline crypto accelerations: IPsec, TLS, MACsec, PSP
- Storage
    - BlueField SNAP - Elastic block storage - NVMe and VirtIO-blk
    - NVMe-oF and NVMe/TCP acceleration
    - Decompression engine
    - Erasure coding for RAID implementation
- Networking
    - RoCE, Zero Touch RoCE
    - ASAP² - Accelerated Switch and Packet Processing® for SDN and VNF acceleration
    - Single Root I/O Virtualization (SR-IOV)
    - VirtIO acceleration
    - Overlay network acceleration
    - VXLAN, Geneve, NVGRE
    - Programmable flexible parser: user-defined classification
    - Connection tracking (L4 firewall)
    - Flow mirroring, sampling and statistics
    - Header rewrite
    - Hierarchical QoS
    - Stateless TCP offloads
- HPC/AI Accelerations
    - HPC / AI All-to-All engine
    - NVIDIA GPUDirect
    - NVIDIA GPUDirect Storage (GDS)
    - HPC MPI Tag Matching

Additional features

- Advanced Timing and Synchronization
    - IEEE 1588v2 (any profile)
    - G.8273.2 Class C
    - PTP hardware clock (PHC)
    - Line rate hardware timestamp
    - SyncE
    - G.8262.1 (eEEC)
    - Configurable PPS In and PPS Out
    - Time triggered scheduling
    - Time-based SDN acceleration
- Boot Options
    - Secure boot (RSA authenticated)
    - Remote boot over Ethernet
    - Remote boot over iSCSI
    - PXE and UEFI
- Management
    - 1GbE out-of-band management port via the RJ45 port (can be disabled)
    - In-band management via the two network ports (can be disabled)
    - NC-SI, MCTP over SMBus, and MCTP over PCIe
    - IPMI management interface

- PLDM for Monitor and Control DSP0248
- PLDM for Firmware Update DSP026
- I2C interface for device control and configuration
- SPI interface to flash
- eMMC memory controller
- UART via the onboard 20-pin NCSI/UART connector
- USB via an onboard 4-pin connector

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 11. Server support (Part 1 of 5)

Part Number	Description	AMD V3				2S Intel V3/V4						Multi Node V3			1S V3			
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
BlueField-3 adapters																		
4XC7A93809	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A87752	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	N	Y	N	Y	N	N	Y	N	Y	Y	N	N	N	N	N	N	N
CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A96568	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Auxiliary power cables for BlueField-3 DPU (model B3220, B3240)																		
4X97B02426	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	N	Y	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N
4X97A91527	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4X97B04861	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	N	N	N	N	N	N	N	N	Y	Y	N	N	N	N	N	N	N
C1F7	ThinkSystem Rear BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C9K3	ThinkSystem BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 12. Server support (Part 2 of 5)

Part Number	Description	4S 8S Intel V3/V4					GPU Rich							Edge					
		SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SR850 V4 (7DJT / 7DJS)	SR860 V4 (7DJQ / 7DJN)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR680a V3 B200 (7DM9)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SR680a V4 (7DMK)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)
BlueField-3 adapters																			
4XC7A93809	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N
4XC7A87752	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N
CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N
4XC7A96568	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N
Auxiliary power cables for BlueField-3 DPU (model B3220, B3240)																			
4X97B02426	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4X97A91527	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
4X97B04861	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C1F7	ThinkSystem Rear BlueField-3 Power Cable	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	N	N	N	N
C9K3	ThinkSystem BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N

Table 13. Server support (Part 3 of 5)

Part Number	Description	Super Computing							1S Intel V2			2S Intel V2			AMD V1			
		SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)
BlueField-3 adapters																		

Part Number	Description	Super Computing							1S Intel V2			2S Intel V2			AMD V1			
		SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)
4XC7A93809	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A87752	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A96568	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Auxiliary power cables for BlueField-3 DPU (model B3220, B3240)																		
4X97B02426	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	Y
4X97A91527	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4X97B04861	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C1F7	ThinkSystem Rear BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C9K3	ThinkSystem BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 14. Server support (Part 4 of 5)

Part Number	Description	Dense V2				4S V2		8S	4S V1			1S Intel V1			
		SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
BlueField-3 adapters															
4XC7A93809	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A87752	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N
CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Part Number	Description	Dense V2				4S V2		8S	4S V1			1S Intel V1			
		SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4XC7A96568	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Auxiliary power cables for BlueField-3 DPU (model B3220, B3240)															
4X97B02426	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4X97A91527	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4X97B04861	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C1F7	ThinkSystem Rear BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N
C9K3	ThinkSystem BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 15. Server support (Part 5 of 5)

Part Number	Description	2S Intel V1								Dense V1			
		ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
BlueField-3 adapters													
4XC7A93809	ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A87752	ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter	N	N	N	N	N	N	N	N	N	N	N	N
CCVX	ThinkSystem NVIDIA BlueField-3 VPI QSFP112 2P 200G PCIe Gen5 x16 with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A96568	ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector	N	N	N	N	N	N	N	N	N	N	N	N
Auxiliary power cables for BlueField-3 DPU (model B3220, B3240)													
4X97B02426	ThinkSystem V3 2U BlueField-3 B3220 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N
4X97A91527	ThinkSystem SR675 V3 BlueField-3 Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N
4X97B04861	ThinkSystem SR650/a V4 DPU Adapter Power Cable Kit	N	N	N	N	N	N	N	N	N	N	N	N
C1F7	ThinkSystem Rear BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N
C9K3	ThinkSystem BlueField-3 Power Cable	N	N	N	N	N	N	N	N	N	N	N	N

Operating system support

The adapters support the operating systems listed in the following tables:

- ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter, 4XC7A93809
- ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter, 4XC7A87752

Tip: These tables are automatically generated based on data from Lenovo ServerProven.

ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter, 4XC7A93809

The following table lists the OS support for the ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter.

Table 16. Operating system support for ThinkSystem NVIDIA BlueField-3 VPI QSFP112 1P 400G PCIe Gen5 x16 B3140H, 4XC7A93809

Operating systems	SR685a V3	SR780a V3	SR680a V3 B200
Red Hat Enterprise Linux 9.4	Y [1]	Y	N
Red Hat Enterprise Linux 9.5	N	N	Y
Ubuntu 22.04 LTS	Y [1]	Y	Y
Ubuntu 24.04 LTS	Y [1]	Y	Y

[1] For limitation, please refer Support Tip TT2258

ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter, 4XC7A87752

The following table lists the OS support for the ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter.

Table 17. Operating system support for ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter, 4XC7A87752

Operating systems	SR665 V3	SR650 V3 (4th Gen Xeon)	SR655 V3	SR675 V3	SR650 V3 (5th Gen Xeon)	SR685a V3	SR680a V3	SR650 V4/SR650a V4	SR680a V3 B200
Microsoft Windows Server 2025	Y	Y	Y	Y	Y	N	N	Y	N
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	N	N	N	N	N
Red Hat Enterprise Linux 8.7	Y	Y	Y	Y	N	N	N	N	N

Operating systems	SR665 V3	SR650 V3 (4th Gen Xeon)	SR655 V3	SR675 V3	SR650 V3 (5th Gen Xeon)	SR685a V3	SR680a V3	SR650 V4/SR650a V4	SR680a V3 B200
Red Hat Enterprise Linux 8.8	Y	Y	Y	N	Y	N	N	N	N
Red Hat Enterprise Linux 8.9	Y	Y	Y	N	Y	N	N	N	N
Red Hat Enterprise Linux 8.10	Y	Y	Y	N	Y	N	N	N	N
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	N	N	N	N	N
Red Hat Enterprise Linux 9.1	Y	Y	Y	Y	N	N	N	N	N
Red Hat Enterprise Linux 9.2	Y	Y	Y	N	Y	N	N	N	N
Red Hat Enterprise Linux 9.3	Y	Y	Y	N	Y	N	N	N	N
Red Hat Enterprise Linux 9.4	Y	Y	Y	N	Y	Y	N	Y	N
SUSE Linux Enterprise Server 15 SP4	Y	Y	Y	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y	Y	N	N	N	N	N	N
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	N	Y	N	N	N	N
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y	Y	N	Y	N	N	N	N
SUSE Linux Enterprise Server 15 SP6	Y	Y	Y	Y	Y	N	N	Y	N
Ubuntu 20.04.5 LTS	Y	N	Y	N	N	N	N	N	N
Ubuntu 20.04 LTS	N	Y	N	N	Y	N	N	N	N
Ubuntu 22.04.3 LTS	N	N	N	N	Y	N	N	N	N
Ubuntu 22.04.5 LTS	Y	N	Y	N	N	N	N	Y	N
Ubuntu 22.04 LTS	Y	Y	Y	Y	Y	Y [1]	Y	N	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	Y	N	Y	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U1	Y	Y	Y	N	N	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U2	Y	Y	Y	N	Y	N	N	N	N
VMware vSphere Hypervisor (ESXi) 8.0 U3	Y	Y	Y	Y	Y	N	N	Y	N
VMware vSphere Hypervisor (ESXi) 9.0	Y	Y	Y	Y	Y	N	N	Y	N

[1] For limitation, please refer Support Tip TT2258

Regulatory approvals

The BlueField-3 adapters have the following hardware certifications:

- Safety: CB / cTUVus / CE
- EMC: CE / FCC / VCCI / ICES / RCM
- RoHS compliant

Physical specifications

The ThinkSystem NVIDIA BlueField-3 B3140H VPI QSFP112 1P 400G PCIe Gen5 x16 Adapter is a HHHL adapter and has the following physical specifications:

- Length: 168 mm (6.6 inches)
- Height: 69 mm (2.7 inches)
- Single slot width

The ThinkSystem NVIDIA Bluefield-3 B3240 2P 400G PCIe Gen5 x16 Crypto Enabled(Generic FW) with Tin Plating Connector is a FHHL dual-slot adapter and has the following physical specifications:

- Length: 168 mm (6.6 inches)
- Height: 111 mm (4.4 inches)
- Double-slot width

The ThinkSystem NVIDIA BlueField-3 B3220 VPI QSFP112 2P 200G PCIe Gen5 x16 Adapter is a FHHL adapter and has the following physical specifications:

- Length: 168 mm (6.6 inches)
- Height: 111 mm (4.4 inches)
- Single slot width

Operating environment

The BlueField-3 adapters are supported in the following environment:

- Temperature:
  - Operating: 0°C to 55°C (32°F to 131°F)
  - Storage: -40°C to 70°C (-40°F to 158°F)
- Humidity:
  - Operating: 10% to 85%
  - Storage: 10% to 90%

Warranty

One year limited warranty. When installed in a Lenovo server, this adapter assumes the server's base warranty and any warranty upgrades.

Seller Training Courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

1. **VTT AI: Introducing the Lenovo Hybrid AI 285 Platform with Cisco Networking**
   2025-11-04 | 36 minutes | Partners Only

   The Lenovo Hybrid AI 285 Platform enables enterprises of all sizes to quickly deploy AI infrastructures supporting use cases as either new greenfield environments or as an extension to current infrastructures.

   This session will describe the hardware architecture changes required to leverage Cisco networking hardware and the Cisco Nexus Dashboard within the Hybrid AI 285 Platform.

   Topics include:
   - Value propositions for the Hybrid AI 285 platform
   - Updates for the Hybrid AI 285 platform
   - Leveraging Cisco networking with the 285 platform
   - Future plans for the 285 platform

   Published: 2025-11-04
   Length: 36 minutes

   Start the training:
   Partner link: Lenovo 360 Learning Center

   Course code: DVAI220_P

Related information

For more information, refer to these documents:

- ServerProven compatibility
  https://serverproven.lenovo.com/
- NVIDIA BlueField Data Processing Units product page
  https://www.nvidia.com/dpu
- NVIDIA DOCA
  https://developer.nvidia.com/networking/doca
- NVIDIA BlueField-3 User Guide:
  https://docs.nvidia.com/networking/display/BlueField3DPU
- NVIDIA BlueField-3 Software User Guide
  https://docs.nvidia.com/networking/display/BlueFieldDPUOSLatest

Related product families

Product families related to this document are the following:

- 25 Gb Ethernet Connectivity
- Ethernet Adapters
- InfiniBand & Omni-Path Adapters

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