ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition PCIe Gen5 GPU

Product Guide

The ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition PCIe Gen5 GPU delivers a versatile platform to accelerate Deep Learning, Graphics and video processing applications in the Cloud and at the Edge. It is a full-height full-length, single-slot card that features 32 GB of GDDR7 memory, PCIe Gen5 x16 connectivity at a 165W power envelope. It is passively cooled card with a superior thermal design requiring system airflow to operate and handles challenging ambient environments with ease.

Figure 1. ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition PCIe Gen5 GPU (mockup)

Did you know?

As part of the NVIDIA OVX server platform, RTX PRO 4500 Blackwell GPU delivers the highest level of graphics, ray tracing, and simulation performance for NVIDIA Omniverse. With passive cooling, the GPU is designed to operate in servers such as the ThinkSystem SR665 V3.

Part number information

The following table shows the part numbers for the RTX PRO 4500 Blackwell GPU.

Table 1. Ordering information

Part number	Feature code	Description	NVIDIA part number	Controlled GPU status
4X67B12675	CG6A	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	900-2G147-2700-030	Controlled

The RTX PRO 4500 Blackwell GPU is Controlled which means the GPU is not offered in certain markets, as determined by the US Government.

The PCIe option part numbers includes the following:

- One RTX PRO 4500 Blackwell GPU with full-height (3U) adapter bracket attached
- Documentation

Features

The ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition PCIe Gen5 GPU delivers a versatile platform to accelerate Deep Learning, Graphics and video processing applications in the Cloud and at the Edge. It is a full-height full-length, single-slot card that features 32 GB of GDDR7 memory, PCIe Gen5 x16 connectivity at a 165W power envelope. It is passively cooled card with a superior thermal design requiring system airflow to operate and handles challenging ambient environments with ease.

Powered by the NVIDIA Blackwell Architecture, RTX PRO 4500 Blackwell GPU provides revolutionary multi-precision performance to accelerate deep learning and machine learning training and inference, AI-audio and video effects, data analytics, cloud gaming, rendering, video transcoding, virtual workstations, virtual desktop, and many other workloads.

As part of NVIDIA AI, the RTX PRO 4500 Blackwell GPU supports all AI frameworks and neural network models, delivering dramatic performance and efficiency that maximizes the utility of at-scale deployments.

Key features:

- Fifth-gen Tensor Cores with support for FP4 precision
- Fourth-gen Ray Tracing Cores
- 32 GB of GDDR7 memory
- 800 GB/s of memory bandwidth
- Ninth-gen NVENC and sixth-gen NVDEC with 4:2:2 support
- PCIe Gen 5

Target workloads

- Data processing with NVIDIA CUDA-X Libraries
- Vision AI with NVIDIA Metropolis
- Small-model inference
- Graphics and visual computing
- Video processing and streaming

With the RTX PRO 4500 Blackwell Server Edition, massive, fragmented, multimodal enterprise data can be transformed into AI-ready data. Vector index builds and vector search applications are accelerated and optimized with cuVS for existing databases and vector search libraries, delivering up to 50x performance over CPU-only systems.

Technical specifications

The following table lists the specifications of the RTX PRO 4500 Blackwell GPU.

Table 2. RTX PRO 4500 Blackwell GPU specifications

Feature	Specification
GPU Architecture	NVIDIA Blackwell Architecture
NVIDIA CUDA Cores	10,496
NVIDIA Tensor Cores	5th Generation
NVIDIA RT Cores	82 (4th Generation)
GPU Memory	32 GB GDDR7
Memory Interface	256-bit
Memory Bandwidth	Up to 800 GB/s
ECC	Yes
FP4 Tensor Core	1.6 PFLOPS (peak)
FP8 Tensor Core	811 TFLOPS
FP16 Tensor Core	406 TFLOPS
BF16 Tensor Core	406 TFLOPS
TF32 Tensor Core	203 TFLOPS
FP32 Single-Precision Performance	51 TFLOPS (peak)
RT Core performance	154 TFLOPS (peak)
Host Interface	PCIe 5.0 x16
NVLink support	No
Power Consumption	165 W
Multi-Instance GPU (MIG)	Up to 2 MIGs @ 16GB*
Thermal Solution	Passive cooling
Form Factor	4.4” H x 10.5” L, Single Slot, Full Height, Full Length
Display Connectors	None
Encode / Decode Engines	3x NVENC encode, 3x NVDEC decode

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 3. 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)
4X67B12675	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	N	N	N	4[1]	N	N	N	N	N	N	N	N	N	N	N	N	N

1. Supported with 5th Gen AMD EPYC processors only

Table 4. 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)
4X67B12675	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 5. 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)
4X67B12675	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. 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)
4X67B12675	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	N	N	N	N	N	N	N	N	N	N	N	N	N	N

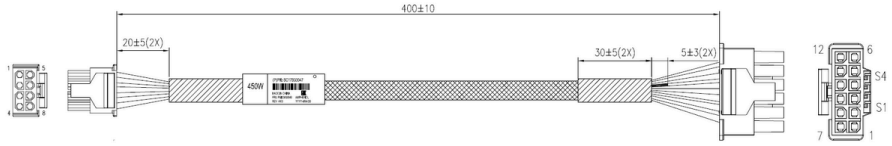
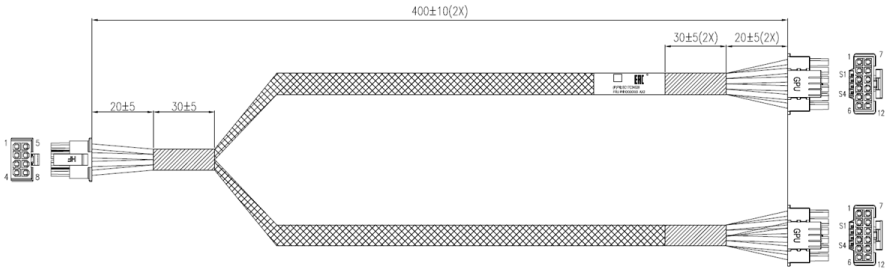
Table 7. Server support (Part 5 of 5)

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)
4X67B12675	ThinkSystem NVIDIA RTX PRO 4500 Blackwell Server Edition 32GB PCIe Gen5 Passive GPU	N	N	N	N	N	N	N	N	N	N	N	N

Auxiliary power cables

The RTX PRO 4500 Blackwell GPU option part number does not ship with auxiliary power cables. Cables are server-specific due to length requirements. For CTO orders, auxiliary power cables are derived by the configurator. For field upgrades, cables will need to be ordered separately as listed in the table below.

Table 8. Auxiliary power cables for RTX PRO 4500 Blackwell GPU

Auxiliary power cable needed with the SR665 V3
400mm 16-pin (2x6+4) cable    **Feature**: BRWK **SBB**: SBB7A66338 **Base**: SC17B33047 **FRU**: 03KM846 **Option**: SR665 V3: 4X67A85856, ThinkSystem SR665 V3 GPU Full Length Thermal Option Kit*
400mm Y-cable with 2x 16-pin (2x6+4) connectors (connects to two GPUs) **Feature**: CG6L **SBB**: SBB7B10414 **Base**: SC17C34528 **FRU**: 03PU324 **Option**: None    Cable usage in the SR665 V3: • With 1, 2, or 3 GPUs, use 3x cable BRWK (GPUs in slots 1, 4, 7) • With 4 GPUs, use 2x cable BRWK (slots 1, 4) and 1x cable CG6L (slots 7 & 8)
* The option part numbers are for thermal kits and include other components needed to install the GPU. See the server product guide for details.

Regulatory approvals

The RTX PRO 4500 Blackwell GPU has the following regulatory approvals:

- RCM
- BSMI
- CE
- FCC
- ICES
- KCC
- cUL, UL
- VCCI

Operating environment

The RTX PRO 4500 Blackwell GPU has the following operating characteristics:

- Ambient temperature
  - Operational: 0°C to 50°C (-5°C to 55°C for short term*)
  - Storage: -40°C to 75°C
- Relative humidity:
  - Operational: 5-85% (5-93% short term*)
  - Storage: 5-95%

* A period not more than 96 hours consecutive, not to exceed 15 days per year.

Warranty

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

Related publications

For more information, refer to these documents:

- ThinkSystem and ThinkAgile GPU Summary:
  https://lenovopress.lenovo.com/lp0768-thinksystem-thinkagile-gpu-summary
- ServerProven compatibility:
  https://serverproven.lenovo.com/
- RTX PRO 4500 Blackwell GPU product page:
  https://www.nvidia.com/en-us/data-center/rtx-pro-4500-blackwell-server-edition/

Related product families

Product families related to this document are the following:

- GPU adapters

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