

Lenovo P8

Version: 7.0 | 10/16/2025

Product Name	P8
Product Display Name	ThinkStation P8
Information Date	24-Jul-25
Hardware Maintenance Manual	P8 HMM
Drivers & Software	P8 Drivers & Software
Available Whitepapers	P8 Whitepapers

SECTION I: Platform Overview

Description	The bold Lenovo ThinkStation P8 is a force to be reckoned with and brings together breakthrough compute architecture with an optimized thermal design in a versatile, Aston Martin inspired chassis. The ThinkStation P8 is the leading AMD Ryzen™ Threadripper™ PRO 7000 WX-Series processor powered workstation delivering game-changing power and speed with the largest core count professional workstation up to 96 cores and up to 5.3GHz. Perfect for those who demand more power for multi-threaded applications and intense (high demand) workloads with professional manageability and enterprise-class services & support.
-------------	---

CPU

Processor Support	AMD Storm Peak Workstation Processor (Ryzen Threadripper Pro) AMD Shimada Peak Workstation Processor (Ryzen Threadripper Pro)
Socket Type	TR5/SP6
Disclaimers	Threadripper Pro CPUs support AMD vendor lock.

Operating Systems

Preloaded	Windows 11 Pro 64-bit for Workstation Ubuntu 22.04 LTS (configuration specific)
Supported	Red Hat Enterprise Linux 9.3 Ubuntu 22.04 LTS
Disclaimers	

Memory

Slots	Up to 8 DIMMs
Channels	8 Memory Channels
Type	DDR5, 288-Pin, ECC RDIMM and 3DS RDIMM
ECC Support	Yes
Speed	Up to 6400MT/s*
Max DIMM Size	128GB DDR5 ECC RDIMM 128GB DDR5 ECC 3DS-RDIMM
Max System Memory	1TB**
Disclaimers	*Actual Memory Speed is dependent on system configuration. **Total Memory – 1TB (*Delayed availability with Threadripper Pro 9000 series)

Storage

Total Bays/Size	3 (2 std, 1 optional)
SATA	3x SATA 3.0 Connectors
Onboard M.2	3x M.2 NVMe 2280/22110 PCIe Connectors Onboard (Gen5)
Front Access Storage Bay	1x M.2 NVMe 2280 PCIe in Flex access tray
Bay 1 Capability	Any one of the following (must match Bay 2): 3.5" SATA Drive Dual M.2 NVMe 2280/22110 Adapter* 15mm U.3 PCIe SSD 2.5" (Gen4)*
Bay 2 Capability	Any one of the following (must match Bay 1): 3.5" SATA Drive Dual M.2 NVMe 2280/22110 Adapter* 15mm U.3 PCIe SSD 2.5" (Gen4)*
Bay 3 (Optional) Capability	3.5" SATA Drive**
PCIe (M.2)	
Disclaimers	Note: Bays 1 and 2 must use the same type of storage *Requires additional parts. **Bay 3 inclusion dependent on system configuration. See Storage Whitepaper for details on the available usage options.

Video

Integrated Graphics	Not Available
Discrete Graphics	Nvidia RTX Pro 6000 Blackwell Workstation Edition (4x DP) – 96GB GDDR7* Nvidia RTX Pro 6000 Blackwell Max-Q Workstation Edition (4x DP) – 96GB GDDR7 Nvidia RTX Pro 5000 Blackwell (4x DP) – 48GB GDDR7 Nvidia RTX Pro 4500 Blackwell (4x DP) – 32GB GDDR7 Nvidia RTX Pro 4000 Blackwell (4x DP) – 24GB GDDR7 Nvidia T400(3x MiniDP) – 4GB GDDR6 Nvidia T1000(4x MiniDP) – 8GB GDDR6 Nvidia RTX A2000 (4x MiniDP) – 12GB GDDR6 Nvidia RTX A4000 (4x DP) – 16GB GDDR6 Nvidia RTX A6000(4x DP) – 48GB GDDR6 Nvidia RTX 2000 Ada (4x MiniDP) – 16GB GDDR6 Nvidia RTX 4000 Ada (4x DP) – 20GB GDDR6 Nvidia RTX 4500 Ada (4x DP) – 24GB GDDR6 Nvidia RTX 5000 Ada(4x DP) – 32GB GDDR6 Nvidia RTX 5880 Ada(4x DP) – 48GB GDDR6

	Nvidia RTX 6000 Ada (4x DP) – 48GB GDDR6 2 x NVIDIA RTX A6000 with NVLink Nvidia RTX A400(4x MiniDP) – 4GB GDDR6 Nvidia RTX A1000(4x MiniDP) – 8GB GDDR6 NVIDIA Quadro SYNC II card AMD Radeon PRO W6400 (2x DP), 4GB GDDR6 AMD Radeon PRO W7600 (4x DP), 8GB GDDR6 AMD Radeon PRO W7900 (3x DP,1x MiniDP), 48GB GDDR6
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x16
Disclaimers	*Note: The RTX Pro 6000 Blackwell Workstation Edition GPU requires a new, modified chassis as well as a thermal fan pack to allow for adequate thermal cooling.

Slots

Slot 1	PCIe 5.0 x16, Full Height, Full Length, 75W
Slot 2	PCIe 5.0 x8, Full Height, Full Length, 25W, Open Ended
Slot 3	PCIe 5.0 x16, Full Height, Full Length, 75W
Slot 4	PCIe 5.0 x8, Full Height, Full Length, 25W, Open Ended
Slot 5	PCIe 5.0 x16, Full Height, Full Length, 75W
Slot 6	PCIe 5.0 x16, Full Height, Full Length, 75W
Slot 7	PCIe 4.0 x8, Full Height, Half Length, 25W, Open Ended
Disclaimers	

Front I/O

USB	2x USB-C 3.2 Gen 2 (10Gbps)* 2x USB-A 3.2 Gen 2 (10Gbps)*
Audio	1x 3.5mm Combo Headphone Jack (Headphone + Mic in)
Media Card Reader	USB 3.0 15-in-1 Media card reader supporting SD UHS-II (Optional)

Flex Bay	1x Front access drive bay Supports either M.2 or 15-in-1 Media Card Reader
Disclaimers	*Basic front IO panel (excludes 2x USB-C and 2x USB-A ports) is supported Note: Actual USB throughput will vary depending on the type and quantity of USB devices used.

Rear I/O

USB	1x USB-C 3.2 Gen 2*2 (20Gbps) 3x USB-A 3.2 Gen 2 (10Gbps) 2x USB-A 2.0 (480Mbps)
Audio	2x 3.5mm Jacks (Line out, Line-in retasked as Mic)
DisplayPort	As Supported by GPU
HDMI	As Supported by GPU
DVI	
VirtualLink	
VGA Port	
Serial Port	Optional Serial COM port, via cable
Ethernet	1 x 1GbE – RJ45 with DASH 1 x 10GbE – RJ45
PS/2	Optional PS/2 (2 port) PCIe adapter
IEEE 1394	
Alternative Rear Power Button	Yes
Parallel Port	
Optional USB Adapter	
Optional Network Adapter	Intel I350-T2 Dual Port Gigabit PCIe Ethernet Adapter Intel I350-T4 Quad Port Gigabit PCIe Ethernet Adapter Broadcom 5720 Dual Port Gigabit PCIe Ethernet Adapter Broadcom 5719 Quad Port Gigabit PCIe Ethernet Adapter Intel X550-T2 Dual Port 10-Gigabit PCIe Ethernet Adapter Intel X710-T2L Dual Port 10-Gigabit PCIe Ethernet Adapter RZ616 WIFI6e PCIe M.2 2230 Module with Internal Antennas MT7925 WIFI7 PCIe M.2 2230 Module with Internal Antennas NVIDIA ConnectX-6 25G 2-Ports Adapter

Disclaimers	Note: Actual USB throughput will vary depending on the type and quantity of USB devices used.
-------------	---

Ethernet

Vendor	Aquantia 10 GbE AQC113-B1-C Realtek 1 GbE RTL8111EPP (DASH capable)
Speeds	10/100/1000/10000Mbps Aquantia AQC113-B1-C 10/100/1000Mbps Realtek RTL8111EPP
Functions	PXE, WOL, Jumbo Frames ASF
Connectors	2 x RJ45
Disclaimers	Note: Network speeds listed are theoretical.

Audio

Vendor	Realtek
Type	HD (2.0)
Internal Speaker	1 x 1.5 watt 4 ohm
Connectors	2x Rear 3.5mm Jacks (Line Out, Line In retasked as Mic) 1x Front 3.5mm Global Headset Jack (Headphone + Mic in)
Chipset	Realtek ALC897Q-VA2-CG Codec (rear) Realtek ALC4032 (front)
Number of Channels	Rear Audio: 2 Channels Front Audio: 2 Channels
Disclaimers	Note: Audio Codec ALC897Q can support 7.1 channel, but motherboard only has 2 rear jacks – MIC in and Line out, only 2 channel for Line out.

Thermal

Temp Sensors	Ambient Cabled Sensor – Thermistor, MB Header cabled to chassis front bezel
--------------	---

	PCIe Zone 1 Sensor – Thermistor PCIe Zone 2 Sensor – Thermistor PCIe Zone 3 Sensor – Thermistor DIMM Right Sensor – Thermistor located at rear of DIMM bank DIMM Left Sensor – Thermistor located at rear of DIMM bank Storage (M.2) Sensor1 – Thermistor located between M.2 Slot 1 and Slot 2 Storage (M.2) Sensor2 – Thermistor located near M.2 Slot 3
Fans	Dual Fan CPU heatsink 1x Fan for PCIe slots 1-4 2x Front CPU Fan (configuration dependent) 1x Front Flex Bay Fan (configuration dependent) 1x Fan for PCIe slots 5-7 1x HDD Fan (configuration dependent) 1x Rear Fan 2x PSU Fan (inside PSU) 2x Memory Duct Fan
Disclaimers	

Power Specifications

Power Supply	1000W / 1400W
Power Efficiency	92% Efficient @ 50% Load
Main	C14 socket to std C13 line cord
Operating Voltage Range	100 – 240V (autosensing)
Rated Voltage Range	90-264VAC
Rated Line Frequency	47Hz / 63Hz
Operating Line Frequency Range	50Hz / 60Hz
Rated Input Current	1000W: 6A-12A 1400W: 9A-15A
Graphics Power	Up to 3x 12VHPWR*
Power Supply Fan	Yes
ENERGY STAR® Qualified (config dependent)	Yes
80 PLUS Compliant	Yes
Built-in Self Test (BIST) LED	Yes

Disclaimers	Note: Power Output of 1400W PSU Limited to 1125W for 100-111.9 Input Voltage. *Quantity of Graphics power cables is configuration dependent *See Power Configuration Whitepaper for additional details.
-------------	---

BIOS

Vendor	AMI
Disclaimers	

Chassis Information

Color	Storm Gray
PSU	One Fixed 1400W, Autosensing, 92% PSU, 80 PLUS Platinum Qualified or One Fixed 1000W, Autosensing, 92% PSU, 80 PLUS Platinum Qualified
Thermal Solutions	Dual Fan CPU heatsink 1x Fan for PCIe slots 1-4 2x Front CPU Fan (configuration dependent) 1x Front Flex Bay Fan (configuration dependent) 1x Fan for PCIe slots 5-7 1x HDD Fan (configuration dependent) 1x Rear Fan 2x PSU Fan (inside PSU) 2x Memory Duct Fan
Dimensions	435mm / 17.1" H 175mm / 6.9" W 508mm / 20" D
Weight	22.7 kg / 50.0 lbs (max config)
Disclaimers	

Packaging Dimensions

Height (mm/in)	618mm / 24.23"
Width (mm/in)	324mm / 12.8"

Depth (mm/in)	695mm / 27.4"
Weight (kgs/lbs)	25.9 kg / 57.1 lbs (max config)
Disclaimers	

Security & Serviceability

TPM	Infineon SPI TPM SLB9672VU2.0 TPM 2.0
Asset ID	Yes, 1024 x 8bit
Cable Lock Support	Yes, Optional Kensington Cable Lock
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Yes
Power-On Password	Yes
Setup Password	Yes
NIC LEDs (integrated)	Yes
Access Panel Key Lock	Yes
Boot Sequence Control	Yes
Padlock Support	No
Boot Without Keyboard and/or Mouse	Yes
Access Panel	Tool-less Side Cover Removal
Optical Drive	No
Hard Drives	Tool-less
Expansion Cards	Tool-less
Processor Socket	Retained with Screws*
Color Coded User Touch Points	Yes
Color-coordinated Cables and Connectors	Yes
Memory	Tool-less
System Board	Retained with Screws
Restore CD/DVD/USB Set	Not Included, Restore Media Available via Lenovo Download Recovery Service

	or available through Lenovo Support.
Disclaimers	*CPU Heatsink assembly and force frame require a T20 bit.

Operating Environment

Air Temperature	Operating: 10°C to 35°C (50°F to 95°F)
Storage	Storage: -40°C to 60°C (-40°F to 140°F) in Original Shipping Carton Storage: -10°C to 60°C (14°F to 140°F) Without Carton
Humidity	Relative Humidity Operating: 10% to 80% (non-condensing) Relative Humidity Storage/Transit: 10% to 90% (non-condensing) Wet Bulb Temperature Operating: 25°C (77°F) max Wet Bulb Temperature Non-operating: 40°C (104°F) max
Altitude	Upper limits decrease 1°C (1.8°F) per 300 m (1000 ft) above sea level
Vibration	Operating: Random 5~500Hz 0.27Grms, 30minutes 3 axes (X,Y,Z) Non-Operating: Random 2~200Hz 1.04Grms, 15minutes 6 faces (±X,±Y, ±Z)
Shock	Operating: X,Y axis: ±15G/3ms Z axis: ±30G/3ms Operating (Rack mounted): X,Y,Z axis: ±15G/3ms Non-operating target: Trapezoidal shock, 35g average, 11ms
Disclaimers	Extended operating temperatures are possible – please contact your Lenovo Rep

SECTION II: Platform Detail

Board Size	15" x 11.57" (381mm x 293.8mm)
Layout	Lenovo Custom Extended eATX
Disclaimers	

Motherboard Core

Processor Support	AMD Storm Peak Workstation Processor AMD Shimada Peak Workstation Processor
Socket Type	Socket TR5/SP6
Memory Support	DDR5 up to 6400MT/s RDIMM / 3DS RDIMM Memory
CPU-CPU Interconnect	
Voltage Regulator	SVI3 VR Controller – 350W TDP Capable
Chipset (PCH)	AMD 600 Series Chipset Workstation Segment, Pro class version
Flash	2 x 64MB
Super I/O	1x Microchip MEC1723N-L0P-I/LJ (WFBGA-176pin)
Clock	External Clock
Audio	Rear Codec: Realtek ALC897Q-VA2-CG on Motherboard by Rear I/O Front Codec: Realtek ALC4032 on FPIO
Ethernet	Aquantia 10Gb AQCN13-B1-C Realtek 1Gb RTL8111EPP with DASH
SAS	
Disclaimers	

Supported Components

Processor Level	AMD Shimada Peak Workstation Processor AMD Stormpeak Workstation Processor
Processor	AMD Threadripper Pro 9995WX AMD Threadripper Pro 9985WX AMD Threadripper Pro 9975WX AMD Threadripper Pro 9965WX AMD Threadripper Pro 9955WX AMD Threadripper Pro 9945WX AMD Threadripper Pro 7995WX AMD Threadripper Pro 7985WX AMD Threadripper Pro 7975WX AMD Threadripper Pro 7965WX AMD Threadripper Pro 7955WX AMD Threadripper Pro 7945WX

Memory Type	RDIMM – 6400MT/s RDIMM – 5600MT/s RDIMM / 3DS-RDIMM – 4800MT/s
Memory	16GB DDR5 ECC RDIMM PC5-6400 32GB DDR5 ECC RDIMM PC5-6400 64GB DDR5 ECC RDIMM PC5-6400 128GB DDR5 ECC RDIMM PC5-6400 16GB DDR5 ECC RDIMM PC5-5600 32GB DDR5 ECC RDIMM PC5-5600 64GB DDR5 ECC RDIMM PC5-5600 16GB DDR5 ECC RDIMM PC5-4800 32GB DDR5 ECC RDIMM PC5-4800 64GB DDR5 ECC RDIMM PC5-4800 128GB DDR5 ECC 3DS-RDIMM PC5-4800
Disclaimers	Note:Total Memory – 1TB (*Delayed availability with Threadripper Pro 9000 series)

Storage

3.5" SATA Hard Disk Drive (HDD)	2TB SATA – 7200rpm, 6Gb/s, 3.5" 6TB SATA – 7200rpm, 6Gb/s, 3.5" (Enterprise Class) 12TB SATA – 7200rpm, 6Gb/s, 3.5" (Enterprise Class)
2.5" SAS Hard Disk Drive (HDD)	
2.5" SATA Hard Disk Drive (HDD)	
2.5" SATA Solid State Drive (SSD)	
M.2 PCIe Solid State Drive (SSD)	512GB M.2 PCIe – SSD, 2280, Gen5 (x4), NVMe, TLC, OPAL2.0 1024TB M.2 PCIe – SSD, 2280, Gen5 (x4), NVMe, TLC, OPAL2.0 2048TB M.2 PCIe – SSD, 2280, Gen5 (x4), NVMe, TLC, OPAL2.0 4096TB M.2 PCIe – SSD, 2280, Gen5 (x4), NVMe, TLC, OPAL2.0 512GB M.2 PCIe – SSD, 2280, Gen4 (x4), NVMe, TLC, OPAL2.0 1024TB M.2 PCIe – SSD, 2280, Gen4 (x4), NVMe, TLC, OPAL2.0 2048TB M.2 PCIe – SSD, 2280, Gen4 (x4), NVMe, TLC, OPAL2.0 4096TB M.2 PCIe – SSD, 2280, Gen4 (x4), NVMe, TLC, OPAL2.0
U.2/U.3 PCIe Solid State Drive (SSD)	15.3TB U.3 PCIe – SSD, 15mm, Gen4 (x4), NVMe, 2.5" OPAL2.0
PCIe Add-in-Card Solid State Drive (SSD)	
Intel Optane Storage Technology	
Disclaimers	

RAID

RAID Capabilities	Onboard M.2 RAID via AMD CPU – supports up to RAID 0, 1, 5 Internal NVMe RAID via AMD CPU – supports up to RAID 0, 1, 5, 10* Internal NVMe RAID via Broadcom RAID Controller – supports up to RAID 0, 1, 5, 10* SATA RAID via Onboard AMD SATA Controller – supports up to RAID 0, 1, 5
Notes	Supported RAID levels for a system will vary from the stated capabilities of the RAID controller due to dependencies on the number and capacity of physical disks in the system and on customer requirements for performance, fault tolerance, or data redundancy.
Optional Hard Disk Drive Controllers	
Intel VROC	
Disclaimers	*Additional hardware required Note: See Section 3 for details on supported Broadcom RAID Controller

Optical Drive/Removable Media

DVD-ROM Drive	
DVD Burner/CD-RW Drive	
Blu-Ray Burner Drive	
Media Card Reader Specifications	15-in-1 Media Card Reader Support SD slot 1.Secure Digital Card (SD) Mini SD (requires adapter) Micro SD (requires adapter) 2.Secure Digital High Capacity (SDHC) Mini SD High Capacity (requires adapter) Micro SD High Capacity (requires adapter) 3.SD Extended Capacity Memory Card (SDXC) Micro SD Extended Capacity (requires adapter) 4.SD Ultra High Speed II (SD UHSII) 5.MultiMediaCard(MMC) RS-MMC (requires adapter) MMC-Micro (requires adapter) CF slot 6.CompactFlash Type I 7.CompactFlash Type II 8.Microdrive MS slot 9.Memory Stick Memory Stick Micro (requires adapter)

	10.Memory Stick Duo 11.Memory Stick PRO 12.Memory Stick PRO Duo 13.Memory Stick PRO-HG Duo Memory Stick HG Micro (requires adapter) 14.Memory Stick XC Duo Memory Stick XC Micro (requires adapter) 15.Memory Stick XC-HG Duo Memory Stick XC-HG Micro (requires adapter)
Disclaimers	

Keyboard and Pointing Devices

Keyboard	USB Traditional Keyboard PS/2 Traditional Keyboard Smart Card Keyboard USB Calliope Keyboard
Pointing Devices	USB Fingerprint Mouse USB Calliope Mouse PS/2 Black Optical Mouse
Disclaimers	

Expansion Bays

External Access Bays	Front access M.2 drive bay
Internal Expansion Bays	Optional internal 3.5" drive bay

PCIe Adapters

Network	Intel I350-T2 Dual Port Gigabit PCIe Ethernet Adapter Intel I350-T4 Quad Port Gigabit PCIe Ethernet Adapter Broadcom 5720 Dual Port Gigabit PCIe Ethernet Adapter Broadcom 5719 Quad Port Gigabit PCIe Ethernet Adapter Intel X550-T2 Dual Port 10-Gigabit PCIe Ethernet Adapter Intel X710-T2L Dual Port 10-Gigabit PCIe Ethernet Adapter NVIDIA ConnectX-6 25G 2-Ports Adapter
Thunderbolt	

USB	Bixie USB-4 PCIe Adapter
WiFi Cards	Mediatek PCIe WiFi6e Card With BT5 Internal Antenna Kit (RZ616) Foxconn PCIe WiFi7 Card With BT5 Internal Antenna Kit (MT7925)
PS/2	PS/2 (2-Port) PCIe adapter
Com port	Serial COM port cable with 5V transceiver
PCIe to NVMe Adapter Card	ThinkStation PCIe Gen4 Quad M.2 SSD Adapter ThinkStation PCIe Gen5 Quad M.2 SSD Adapter
Other	BMC PCIe Adapter

SECTION III: Supported Component Detail

CPU Specifications Group 1

CPU	AMD Ryzen Threadripper Pro 9945WX	AMD Ryzen Threadripper Pro 9955WX	AMD Ryzen Threadripper Pro 9965WX	AMD Ryzen Threadripper Pro 9975WX	AMD Ryzen Threadripper Pro 9985WX
# of Cores	12	16	24	32	64
# of Threads	24	32	48	64	128
Processor Base Frequency	4.7 GHz	4.5 GHz	4.2 GHz	4 GHz	3.2 GHz
Max Turbo Frequency	Up to 5.4 GHz	Up to 5.4 GHz	Up to 5.4 GHz	Up to 5.4 GHz	Up to 5.4 GHz
Cache	64 MB	64 MB	128 MB	128 MB	256 MB
TDP	350W	350W	350W	350W	350W
AMD Spec Link	AMD Ryzen™ Threadripper™ PRO 9945WX	AMD Ryzen™ Threadripper™ PRO 9955WX	AMD Ryzen™ Threadripper™ PRO 9965WX	AMD Ryzen™ Threadripper™ PRO 9975WX	AMD Ryzen™ Threadripper™ PRO 9985WX
Disclaimers					

CPU Specifications Group 2

CPU	AMD Ryzen Threadripper Pro 9995WX	AMD Threadripper Pro 7945WX	AMD Threadripper Pro 7955WX	AMD Threadripper Pro 7965WX	AMD Threadripper Pro 7975WX
# of Cores	96	12	16	24	32
# of Threads	192	24	32	48	64
Processor Base Frequency	2.5 GHz	4.7 GHz	4.5 GHz	4.2 GHz	4 GHz
Max Turbo Frequency	Up to 5.4 GHz	Up to 5.3 GHz	Up to 5.3 GHz	Up to 5.3 GHz	Up to 5.3 GHz
Cache	384 MB	64 MB	64 MB	128 MB	128 MB
TDP	350W	350W	350W	350W	350W
AMD Spec Link	AMD Ryzen™ Threadripper™ PRO 9995WX	AMD Ryzen™ Threadripper™ PRO 7945WX	AMD Ryzen™ Threadripper™ PRO 7955WX	AMD Ryzen™ Threadripper™ PRO 7965WX	AMD Ryzen™ Threadripper™ PRO 7975WX
Disclaimers					

CPU Specifications Group 3

CPU	AMD Threadripper Pro 7985WX	AMD Threadripper Pro 7995WX
# of Cores	64	96
# of Threads	128	192
Processor Base Frequency	3.2 GHz	2.5 GHz
Max Turbo Frequency	Up to 5.3 GHz	Up to 5.3 GHz
Cache	256 MB	384 MB
TDP	350W	350W
AMD Spec Link	AMD Ryzen™ Threadripper™ PRO 7985WX	AMD Ryzen™ Threadripper™ PRO 7995WX
Disclaimers		

HDD Specifications

Drive	2TB SATA – 7200rpm, 6Gb/s, 3.5"	6TB SATA – 7200rpm, 6Gb/s, 3.5" Enterprise	12TB SATA – 7200 RPM 6Gb/s 3.5" Enterprise
3.5" SATA Hard Disk Drive (HDD)	Yes	Yes	Yes
2.5" SAS Hard Disk Drive (HDD)	NA	NA	NA
2.5" SATA Hard Disk Drive (HDD)	NA	NA	NA
Connector	SATA	SATA	SATA
Transfer Rate (Gb/sec)	Average Data Rate, Read/Write 156MB/s	Sustained Data Transfer Rate 216-226MB/s	Max Sustained Data Transfer Rate 268MB/s
Spindle Speed (RPM)	7,200	7,200	7,200
Power Off to Spindle Stop (sec)	NA	NA	NA
DC Power to Drive Ready (sec)	<20.0	<30.0	<30.0
Average Latency (msec)	4.16	4.16	4.16
Input (VDC)	5 & 12	5 & 12	5 & 12
Typical (Watts)	6.8Max	11(Max)	8(Max)
Idle (Watts)	3.9Max	5.9(Max)	5.3(Max)
Physical Dimensions	101.6mm x 147mm x 26.1mm	101.85mm x 147mm x 26.1mm	101.85mm x 147mm x 26.1mm
Weight (grams)	<495	<715	<715
Operating (C) Ambient	0 to 55	5 to 55	5 to 55
Operating (C) Base Casting	<60	<60	<60
Non-Operating (C) Ambient	(-40 to 70)	(-40 to 70)	(-40 to 70)
Gradient (C per Hour)	20	20	20
Operating (Gs @ 2ms)	80(Read/Write)	Read 70 / Write 40	50 (Read/Write)
Non-Operating (Gs @ 2ms)	350	250	250
Disclaimers			

Solid State Storage Specifications Group 1

Drive	512GB M.2 PCIe – SSD, 2280, Gen4Px4, NVMe, TLC, OPAL2.0	1TB M.2 PCIe – SSD, 2280, Gen4Px4, NVMe, TLC, OPAL2.0	2TB M.2 PCIe – SSD, 2280, Gen4Px4, NVMe, TLC, OPAL2.0	4TB M.2 PCIe – SSD, 2280, Gen4Px4, NVMe, TLC, OPAL2.0	15.3TB U.3 PCIe – SSD, 15mm, Gen4PX4, NVMe, 2.5" OPAL2.0
Dimensions Millimeters (W x D x H)	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm
Interface Type	PCIe Gen4	PCIe Gen4	PCIe Gen4	PCIe Gen4	PCIe Gen4
Power Active (AVG)	5.5W Read/5.5W Write	5.8W Read/5.9W Write	5.8W Read/6W Write	6.5 W Read/8W Write	15.5W Read/18.3W Write
Power Idle	50mW	50mW	50mW	50mW	5 W
Typical Sequential Read	6400 MB/s	6400 MB/s	6400 MB/s	6400 MB/s	7000 MB/s
Typical Sequential Write	4400 MB/s	4400 MB/s	5000 MB/s	5000 MB/s	5900 MB/s
Operating Temperature Range	0C to 70C	0C to 70C	0C to 70C	0C to 70C	0C to 70C
Endurance Rating (Lifetime Writes)	200 TBW	400 TBW	800 TBW	1600 TBW	28000 TBW
Mean Time Between Failures (MTBF)	2.0 million hours	2.0 million hours	2.0 million hours	2.0 million hours	2.0 million hours
Hardware Encryption	OPAL	OPAL	OPAL	OPAL	OPAL
Disclaimers			SSD performance measured with Crystal Disk Mark version 6.0.2 with the default 1000 MB data set. Sequential measurements are with 1 Thread, Queue-Depth 32. Random measurements are with 4 threads and queue-depth 32.		

Solid State Storage Specifications Group 2

Drive	512GB M.2 PCIe – SSD, 2280, Gen5Px4, NVMe, TLC, OPAL2.0	1TB M.2 PCIe – SSD, 2280, Gen5Px4, NVMe, TLC, OPAL2.0	2TB M.2 PCIe – SSD, 2280, Gen5Px4, NVMe, TLC, OPAL2.0	4TB M.2 PCIe – SSD, 2280, Gen5Px4, NVMe, TLC, OPAL2.0
Dimensions Millimeters (W x D x H)	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm	22mm x 80mm x 2.38mm
Interface Type	PCIe Gen5	PCIe Gen5	PCIe Gen5	PCIe Gen5

Power Active (AVG)	7.5W Read/5.7W Write	8.3W Read/7.9W Write	8.6W Read/8.5W Write	8.6W Read/8.5W Write
Power Idle	50mW	50mW	50mW	50mW
Typical Sequential Read	11000 MB/s	14000 MB/s	14000 MB/s	14000 MB/s
Typical Sequential Write	5500 MB/s	11000 MB/s	12000 MB/s	12000 MB/s
Operating Temperature Range	0C to 70C	0C to 70C	0C to 70C	0C to 70C
Endurance Rating (Lifetime Writes)	200 TBW	400 TBW	800 TBW	1600 TBW
Mean Time Between Failures (MTBF)	2.0 million hours	2.0 million hours	2.0 million hours	2.0 million hours
Hardware Encryption	OPAL	OPAL	OPAL	OPAL
Disclaimers		SSD performance measured with Crystal Disk Mark version 6.0.2 with the default 1000 MB data set. Sequential measurements are with 1 Thread, Queue-Depth 32. Random measurements are with 4 threads and queue-depth 32.		

HDD Controllers

PCI Bus	PCH Integrated	PCIe
PCI Modes	SATA 3.0	PCIe 3.0 x4
RAID Levels	0/1/5	0/1/5/10
Data Transfer Rates	6 Gb/s	64 Gb/s
Disclaimers		
Disclaimers		
Disclaimers		

Discrete Graphics Adapter Group 1

Adapter	NVIDIA T400	NVIDIA T1000	NVIDIA RTX A400	NVIDIA RTX A1000	NVIDIA RTX A2000
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 4.0 x8	PCIe 4.0 x8	PCIe 4.0 x16

Display Interface	3x mDP 1.4	4x mDP 1.4	4x mDP 1.4a	4x mDP 1.4a	4x mDP 1.4a
Graphics Architecture	TU117 (Turing)	TU117 (Turing)	GA107 (Ampere)	GA107 (Ampere)	GA106 (Ampere)
Memory Clock Frequency (MHz)	1250 MHz	1250 MHz	1500 MHz	1500 MHz	1500 MHz
Memory Size	4 GB GDDR6	8 GB GDDR6	4 GB GDDR6 with ECC	8 GB GDDR6 with ECC	12 GB GDDR6 with ECC
Memory Interface	64-bit	128-bit	64-bit	128-bit	192-bit
Memory Bandwidth	80 GB/s	160 GB/s	96 GB/s	192 GB/s	288 GB/s
GPU Cores	CUDA Cores: 384	CUDA Cores: 896	CUDA Cores: 768 Tensor Cores: 24 RT Cores: 6	CUDA Cores: 2,304 Tensor Cores: 72 RT Cores: 18	CUDA Cores: 3,328 Tensor Cores: 104 RT Cores: 26
GPU Core Frequency (MHz)	1425MHz	1395MHz	1762 MHz	1462 MHz	1200 MHz
Maximum Power Consumption	30 W	50 W	50 W	50 W	70 W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	3x 3840 x 2160 @ 120Hz 3x 5120 x 2880 @ 60Hz	4x 3840 x 2160 @ 120Hz 4x 5120 x 2880 @ 60Hz 2x 7680 x 4320 @ 60Hz	4x 4096 x 2160 @ 120 Hz 4x 5120 x 2880 @ 60 Hz	4x 4096 x 2160 @ 120Hz 4x 5120 x 2880 @ 60Hz 2x 7680 x 4320 @ 30Hz	4x 4096 x 2160 @ 120 Hz 4x 5120 x 2880 @ 60 Hz 2x 7680 x 4320 @ 60 Hz
Thermal Solution	Active	Active	Active	Active	Active
Dimension	2.7" H x 6.1" L, single Slot	2.7" H x 6.1" L, single Slot	2.7" H x 6.4" L, single slot	2.7" H x 6.4" L, single slot	2.7" H x 6.6" L, dual slot
Advanced Display	NA	NA	NA	NA	NA
SLI/NVLink Support	NA	NA	NA	NA	NA
Disclaimers					

Discrete Graphics Adapter Group 2

Adapter	NVIDIA RTX A4000	NVIDIA RTX A6000	NVIDIA RTX 2000 Ada	NVIDIA RTX 4000 Ada	NVIDIA RTX 4500 Ada
Bus Interface	PCIe 4.0 x16	PCIe 4.0 x16	PCIe 4.0 x8	PCIe 4.0 x16	PCIe 4.0 x16
Display Interface	4x DP 1.4a	4x DP 1.4a	4x mDP 1.4a	4x DP 1.4a	4x DP 1.4a

Graphics Architecture	GA104 (Ampere)	GA102 (Ampere)	AD107 (Ada Lovelace)	AD104 (Ada Lovelace)	AD103 (Ada Lovelace)
Memory Clock Frequency (MHz)	1750 MHz	2000 MHz	2000 MHz	2250 MHz	2250 MHz
Memory Size	16 GB GDDR6 with ECC	48 GB GDDR6 with ECC	16 GB GDDR6 with ECC	20 GB GDDR6 with ECC	24 GB GDDR6 with ECC
Memory Interface	256-bit	384-bit	128-bit	160-bit	192-bit
Memory Bandwidth	448 GB/s	768 GB/s	224 GB/s	360 GB/s	432 GB/s
GPU Cores	CUDA Cores: 6,144 Tensor Cores: 192 RT Cores: 48	CUDA Cores: 10,752 Tensor Cores: 336 RT Cores: 84	CUDA Cores: 2,816 Tensor Cores: 88 RT Cores: 22	CUDA Cores: 6,144 Tensor Cores: 192 RT Cores: 48	CUDA Cores: 7,680 Tensor Cores: 240 RT Cores: 60
GPU Core Frequency (MHz)	1560 MHz	1800MHz	2130 MHz	2175 MHz	2580 MHz
Maximum Power Consumption	140 W	300 W	70 W	130W	210 W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4 x 4096 x 2160 @ 120Hz 4 x 5120 x 2880 @ 60Hz 2 x 7680 x 4320 @ 60Hz	4 x 4096 x 2160 @ 120Hz 4 x 5120 x 2880 @ 60Hz 2 x 7680 x 4320 @ 60Hz	4x 4096 x 2160 @ 120 Hz 4x 5120 x 2880 @ 60 Hz 2x 7680 x 4320 @ 60 Hz	4 x 4096 x 2160 @ 120Hz 4 x 5120 x 2880 @ 60Hz 2 x 7680 x 4320 @ 60Hz	4 x 4096 x 2160 @ 120Hz 4 x 5120 x 2880 @ 60Hz 2 x 7680 x 4320 @ 60Hz
Thermal Solution	Active	Active	Active	Active	Active
Dimension	4.4" H x 9.5" L, single slot	4.4" H x 10.5" L, dual slot, full height	2.7" H x 6.6" L, dual Slot	4.4" H x 9.5" L, single slot	4.4" H x 10.5" L, dual slot
Advanced Display	RTX PRO Sync	RTX PRO Sync	NA	RTX PRO Sync	RTX PRO Sync
SLI/NVLink Support	NA	NVLink	NA	NA	NA
Disclaimers					

Discrete Graphics Adapter Group 3

Adapter	NVIDIA RTX 5000 Ada	NVIDIA RTX 5880 Ada	NVIDIA RTX 6000 Ada	NVIDIA RTX PRO 4000 Blackwell	NVIDIA RTX PRO 4500 Blackwell
Bus Interface	PCIe 4.0 x16	PCIe 4.0 x16	PCIe 4.0 x16	PCIe 5.0 x16	PCIe 5.0 x16
Display Interface	4x DP 1.4a	4x DP 1.4a	4x DP 1.4a	4x DP 2.1b	4x DP 2.1b
Graphics Architecture	AD102 (Ada Lovelace)	AD102 (Ada Lovelace)	AD102 (Ada Lovelace)	GB203 (Blackwell)	GB203 (Blackwell)

Memory Clock Frequency (MHz)	2250 MHz	2250 MHz	2500 MHz	1750 MHz	1750 MHz
Memory Size	32 GB GDDR6 with ECC	48 GB GDDR6 with ECC	48 GB GDDR6 with ECC	24 GB GDDR7 with ECC	32 GB GDDR7 with ECC
Memory Interface	256-bit	384-bit	384-bit	192-bit	256-bit
Memory Bandwidth	576 GB/s	960 GB/s	960 GB/s	672 GB/s	896 GB/s
GPU Cores	CUDA Cores: 12,800 Tensor Cores: 400 RT Cores: 100	CUDA Cores: 14,080 Tensor Cores: 440 RT Cores: 110	CUDA Cores: 18,176 Tensor Cores: 568 RT Cores: 142	CUDA Cores: 8,960 Tensor Cores: 280 RT Cores: 70	CUDA Cores: 10,496 Tensor Cores: 328 RT Cores: 82
GPU Core Frequency (MHz)	2550 MHz	2460 MHz	2505 MHz	2617 MHz	2617 MHz
Maximum Power Consumption	250 W	285 W	300 W	140 W	200 W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4x 4096×2160 @ 120Hz 4x 5120×2880 @ 60Hz 2x 7680×4320 @ 60Hz	4x 4096×2160 @ 120Hz 4x 5120×2880 @ 60Hz 2x 7680×4320 @ 60Hz	4x 4096×2160 @ 120Hz 4x 5120×2880 @ 60Hz 2x 7680×4320 @ 60Hz	4x 3840 x 2160 @ 165 Hz 2x 7680 x 4320 @ 100 Hz	4x 3840 x 2160 @ 165 Hz 2x 7680 x 4320 @ 100 Hz
Thermal Solution	Active	Active	Active	Active	Active
Dimension	4.4" H x 10.5" L, dual-slot	4.4" H x 10.5" L, dual-slot	4.4" H x 10.5" L, dual slot, full height	4.4" H x 9.5" L, single slot, full height	4.4" H x 10.5" L, dual slot, full height
Advanced Display	RTX PRO Sync	RTX PRO Sync	RTX PRO Sync	RTX PRO Sync	RTX PRO Sync
SLI/NVLink Support	NA	NA	NA	NA	NA
Disclaimers					

Discrete Graphics Adapter Group 4

Adapter	NVIDIA RTX Pro 5000 Blackwell	NVIDIA RTX PRO 6000 Blackwell Max-Q Workstation Edition	NVIDIA RTX PRO 6000 Blackwell Workstation Edition	AMD Radeon PRO W6400	AMD Radeon PRO W7600
Bus Interface	PCIe 5.0 x16	PCIe 5.0 x16	PCIe 5.0 x16	PCIe 4.0 x4	PCIe 4.0 x8
Display Interface	4x DP 2.1b	4x DP 2.1b	4x DP 2.1b	2x DP 1.4a	4x DP 2.1
Graphics Architecture	GB202 (Blackwell)	GB202 (Blackwell)	GB202 (Blackwell)	RDNA 2.0	RDNA 3.0

Memory Clock Frequency (MHz)	1750 MHz	1750 MHz	1750 MHz	2000 MHz	2250 MHz
Memory Size	48 GB GDDR7 with ECC	96 GB GDDR7 with ECC	96 GB GDDR7 with ECC	4 GB GDDR6	8 GB GDDR6
Memory Interface	384-bit	512-bit	512-bit	64-bit	128-bit
Memory Bandwidth	1344 GB/s	1792 GB/s	1792 GB/s	128 GB/s	288.0 GB/s
GPU Cores	CUDA Cores: 14,080 Tensor Cores: 440 RT Cores: 110	CUDA Cores: 24,064 Tensor Cores: 752 RT Cores: 188	CUDA Cores: 24,064 Tensor Cores: 752 RT Cores: 188	Stream Processors: 768 RT Cores: 12	Stream Processors: 2048 RT Cores: 32
GPU Core Frequency (MHz)	2617 MHz	2288 MHz	2617 MHz	2321 MHz	2440 MHz
Maximum Power Consumption	300 W	300 W	600 W	50 W	130 W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4x 3840 x 2160 @ 165 Hz 2x 7680 x 4320 @ 100 Hz	4x 4096 x 2160 @ 120 Hz 4x 5120 x 2880 @ 60 Hz 2x 7680 x 4320 @ 60 Hz	4x 4096 x 2160 @ 120 Hz 4x 5120 x 2880 @ 60 Hz 2x 7680 x 4320 @ 60 Hz	2x 3840×2160 2x 5120×2880 1x 7680×4320	4x 3840×2160 4x 5120×2880 2x 7680×4320
Thermal Solution	Active	Active	Double-flow-through	Active	Active
Dimension	4.4" H x 10.5" L, dual slot, full height	4.4" H x 10.5" L, dual slot, full height	5.4" H x 12" L, dual slot, extended height	6.6"L, single slot, half height	4.5" H x 9.5" L, single slot, full height
Advanced Display	RTX PRO Sync	RTX PRO Sync	RTX PRO Sync	NA	NA
SLI/NVLink Support	NA	NA	NA	NA	NA
Disclaimers					

Discrete Graphics Adapter Group 5

Adapter	AMD Radeon PRO W7900
Bus Interface	PCIe 4.0 x16
Display Interface	3x DP 2.1, 1x mDP 2.1
Graphics Architecture	RDNA 3.0
Memory Clock Frequency (MHz)	2250MHz

Memory Size	48 GB GDDR6 with ECC
Memory Interface	384-bit
Memory Bandwidth	864 GB/S
GPU Cores	Stream Processors: 6144 RT Cores: 96
GPU Core Frequency (MHz)	2495MHz
Maximum Power Consumption	295W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4x 4096 x 2160 (4K DCI) @ 120Hz with DSC 2x 6144 x 3456 (6K) 12-bit HDR @ 60Hz Uncompressed 1x 7680 x 4320 (8K) 12-bit HDR @ 60Hz Uncompressed 1x 12288 x 6912 (12K) @ 120Hz with DSC
Thermal Solution	Active
Dimension	4.3" H x 11" L, triple slot, full height
Advanced Display	NA
SLI/NVLink Support	NA
Disclaimers	

Ethernet Specifications Group 1 Part 1

Card	Intel I350-T2 Dual Port Gigabit Ethernet Adapter	Intel I350-T4 Quad Port Gigabit Ethernet Adapter	Broadcom 5720 Dual Port Gigabit PCIe Ethernet Adapter	Broadcom 5719 Quad Port Gigabit PCIe Ethernet Adapter	Intel X550-T2 Dual Port 10-Gigabit PCIe Ethernet Adapter
Supplier PN	I350T2G1P20, MM# 928941	I350T4G1P20, MM# 928942	BCM95720A2003LC	BCM95719A1904LC	MM#928955
Data Rates Supported	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	10/100/1000Mbps copper	10/100/1000Mbps copper	100/1000Mbps and 10Gbps Copper
Controller Details	Intel Ethernet Controller I350	Intel Ethernet Controller I351	BCM 5720	BCM 5719	Intel Ethernet Controller X540
Controller Bus Architecture	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)
Data Transfer Mode	Ethernet	Ethernet	Ethernet	Ethernet	Ethernet

Power Consumption	Copper: I350-T2 V2= 4.4W Fiber: I350-F2= 5.5W	Copper: I350T4V2= 5W LC-Fiber: I350F4= 6W	2.23W	5.78W	X540-T2: 10Gps= 17.4W 1Gbps= 9.5W 100Mbps=6.6W X540-T1: 10Gbps=10.8W 1Gbps= 7.7W 100Mbps= 6.4W
IEEE Standards Compliance	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3ab IEEE 802.3az IEEE 802.3x IEEE 802.1q	IEEE 802.3ab IEEE 802.3az IEEE 802.3x IEEE 802.1q	IEEE 802.3 100/1000/10GBASE-T
Boot ROM Support	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	PXE boot	PXE boot	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI
Network Transfer Mode (Full/Half Duplex)	Supported	Supported	Supported	Supported	Supported
Network Transfer Rate	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex	1,000Mbps Full Duplex
Operating System Driver Support	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows 7/8/10, Windows ServerLinux, FreeBSD
Manageability	Supported	Supported	Supported	Supported	Supported
Manageability Capabilities Alerting	Supported	Supported	Supported	Supported	Supported
TDP		Firmware Based Thermal Management		Firmware Based Thermal Management	
Operating Temperature Range	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)
# of Ports	2	4	2	4	2
Data Rate Per Port		10/100/1000Mbps (copper), 1000Mbps (fiber)		100/1,000Mbps, 10Gbps	
System Interface Type	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 2.1
NC Sideband Interface	Not Available	Not Available	Not Available	Not Available	Not Available

Jumbo Frames Supported	Yes	Yes	Yes	Yes	Yes
1000Base-T	Yes	Yes	Yes	Yes	Yes
IEEE 1588	Supported	Supported	Not Available	Not Available	Not Available
Supported Under vPro	Not Available	Not Available	Not Available	Not Available	Not Available
Disclaimers					

Ethernet Specifications Group 1 Part 2

Model	Intel I350-T2 Dual Port Gigabit Ethernet Adapter		Intel I350-T4 Quad Port Gigabit Ethernet Adapter		Broadcom 5720 Dual Port Gigabit PCIe Ethernet Adapter		Broadcom 5719 Quad Port Gigabit PCIe Ethernet Adapter		Intel X550-T2 Dual Port 10-Gigabit PCIe Ethernet Adapter		
Connector	2 x Ports RJ-45 Copper		4 x Ports RJ-45 Copper		2 Port RJ-45		4 Port RJ-45		2 x Ports RJ-45 Copper		
Website		i350 T2			i350 T4			X550-T2			
10BASE-T (IEEE 802.3 specification conformance)					Not						
100BASE-TX (IEEE 802.3 specification conformance)					Support						
1000BASE-T (IEEE 802.3 specification conformance)					Support						
Auto-Negotiation	IEEE* 802.3* Auto-negotiaton		IEEE* 802.3* Auto-negotiaton		IEEE* 802.3ab Auto-negotiaton		IEEE* 802.3ab Auto-negotiaton		IEEE* 802.3* Auto-negotiaton		
Intel® vPro™	Not Available		Not Available		Not Available		Not Available		Not Available		
Intel® Stable Image Platform Program (SIPP)			Not Available				Not Available				
Intel® Standard Manageability	Supported		Supported		Not Available		Not Available		Not		
Power Optimizer Platform Low-power Management Systems		Supported		Supported		Supported		Supported			
Energy Efficient Ethernet	Supported		Supported		Supported		Supported		Supported		
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported		Supported		Supported		Supported		Supported		

Receive Side Scaling	Supported		Supported	Supported	Supported	Supported
Dual Tx and Rx Queues	Yes		Yes	Supported	Supported	Yes
Jumbo Frames (up to 9KB)	Supported		Supported	Supported	Supported	Supported
Teaming		Supported		Supported		Supported
Timing and Synchronization				Not		
Wake from Deep Sx	Supported		Supported	Supported	Supported	N/A
Server Operating System Support	Windows Server 2008, 2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware		Windows Server 2008, 2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows Server 2008, 2012, 2016. 2019 Linux (RHEL/SLES), Free BSD, Xen, Vmware
Network Proxy/ARP Support	Supported		Supported	Supported	Supported	Supported
Disclaimers						

Ethernet Specifications Group 2 Part 1

Card	Intel X710-T2L Dual Port 10-Gigabit PCIe Ethernet Adapter	NVIDIA ConnectX-6 25G 2-Ports Adapter
Supplier PN	X710-T2L, MM# 99AT6H	900-9X663-0073-SQ0
Data Rates Supported	100Mbps, 1/2.5/5/10Gbps	25/10/1 GbE
Controller Details	Intel X710-AT2	MCX621202AS-ADAT
Controller Bus Architecture	PCIe 3.0	PCIe Gen 4.0 (16.0GT/s)
Data Transfer Mode	Ethernet	Ethernet
Power Consumption	9.6W	14W
IEEE Standards Compliance	5/2.5/1GbE, 10GBASE-T, 100BASE-TX	IEEE 802.3 by IEEE 802.3ae IEEE 802.3az IEEE 802.3ap IEEE802.3ad IEEE802.1AX IEEE802.1Q, 802.1P IEEE802.1Qau

		IEEE802.1Qaz IEEE802.1Qbb IEEE802.1Qbg IEEE 1588v2
Boot ROM Support		PXE boot
Network Transfer Mode (Full/Half Duplex)	Support	Supported
Network Transfer Rate	10Gbps Full Duplex	25Gbps Full Duplex
Operating System Driver Support	Win10, Win11, Linux	RHEL/CentOS/Windows/VMware
Manageability		Supported
Manageability Capabilities Alerting		Supported
Operating Temperature Range	0°C to 55°C (32°F to 131°F)	0°C to 55°C (32°F to 131°F)
# of Ports	2	2
Data Rate Per Port		100Mbps, 1G/2.5G/5G/10Gbps
System Interface Type	PCIe3.0	PCIe Gen 4.0 (16.0GT/s)
NC Sideband Interface	Not Available	Not Available
Jumbo Frames Supported	Yes	Yes
1000Base-T	Yes	Yes
IEEE 1588	Supported	Not Available
Supported Under vPro		Not Available
Disclaimers		

Ethernet Specifications Group 2 Part 2

Model	Intel X710-T2L Dual Port 10-Gigabit PCIe Ethernet Adapter	NVIDIA ConnectX-6 25G 2-Ports Adapter
Connector	2 x RJ45 Cpper	2 x Ports SFP28
Website	X710-T2L	ConnectX-6 (MCX621202AS-ADAT)
10BASE-T (IEEE 802.3 specification conformance)		Not Supported
100BASE-TX (IEEE 802.3 specification conformance)	Yes	Not Supported

1000BASE-T (IEEE 802.3 specification conformance)	Yes	Support
Auto-Negotiation	IEEE* 802.3* Auto-negotiaton	Support
Intel® vPro™	Not Support	Not Available
Intel® Stable Image Platform Program (SIPP)	Not Available	
Intel® Standard Manageability	Not Available	
Power Optimizer Platform Low-power Management Systems	No	
Energy Efficient Ethernet	Enabled for 10/5/2.5/1GBASE-T	Supported
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported	Supported
Receive Side Scaling	Supported	Supported
Dual Tx and Rx Queues	Yes	128
Jumbo Frames (up to 9KB)	Supported	Supported
Teaming	Supported	N/A
Integrated Auto Connect Battery Saver (ACBS) Battery Savings	No	
Timing and Synchronization	Supported	
Integrated Switched Voltage Regulator (iSVR)	No	
Shared Flash with System BIOS	Not Supported	
Wake from Deep Sx	No Supported	
Server Operating System Support	RHEL/CentOS/Windows/VMware	
Network Proxy/ARP Support	Supported	Supported
Disclaimers		

Media Card Reader

Description	UHS-II 15-in-1 USB3.0 MCR
Interface Type	USB 3.0
Form Factor	USB 3.0 Mass Storage Device

SECTION IV: BIOS/Certifications/Standards/Environmental

BIOS Specifications

WMI Support	Compliant With Microsoft WBEM and the DMTF Common Information Model
ROM-Based Setup Utility (F1)	System Configuration Setup Program (text and GUI interface) Available at Power-on With F1 Key
Bootblock Recovery	Recovers System BIOS if the Flash ROM Becomes Corrupted
Replicated Setup	Saves System Configuration Settings to a File That Can Then be Used to Replicate the Settings to Other Systems
Boot Control	Boot Control Available Through ROM-based Setup Utility or With F12 Key at Power-on
Memory Change Alert	Power-on Error Message in the Event of a Decrease in System Memory
Thermal Alert	Power-on Error message in the Event of a Fan Failure
Asset Tag	Supports Ability to Set SMBIOS Type 2 Baseboard Asset Tag Field
System/Emergency ROM Flash Recovery With Video	Supports Process to Recover the System BIOS if the Flash ROM Becomes Corrupted
Remote Wakeup/Remote Shutdown	System Admin Can Power On/Off a Client Computer from a Remote Location to Provide Maintenance
Quick Resume Time	Supports Low Power S3 (suspend to RAM) and Prompt Resume Times
ROM Revision Level	System UEFI (BIOS) Version Reported in SMBIOS Type 0 Structure and in BIOS Setup
Keyboard-less Operation	System Can be Booted Without a Keyboard
Per-port Control	Allows I/O Ports to be Individually Enabled/Disabled Through ROM-based Setup or WMI Interface
Adaptive Cooling	Offers Multiple Settings for Fan Control Ranging Between Better Performance and Better Acoustics

Security	User and Administrator Passwords Can Protect Boot and ROM-based Setup – Support Electronic Lock – Chassis Intrusion Detection – UEFI Secure Boot Support – HDD Password Can Protect HDD Data – Windows UEFI Firmware Update Support – Device Guard Support – Optional Access Panel Lock, Kensington Lock, and Pad Lock
DASH	Allows System to be Supported from a Remote Location
AMD Platform Secure Boot (PSB)	Provides a Security Foundation to Build Protections Against Software Based Attacks
Memory Modes	Supports Mirroring, Lock Step, and Sparing Memory Modes
Windows 10 Ready	Supports Windows 10 Requirements for Secure Flash, UEFI v 2.6 Device Guard Support Spec

Industry Standard Specification Support

UEFI	Unified Extensible Firmware Interface v2.7
ACPI (Advanced Configuration and Power management Interface)	Advanced Configuration and Power Interface v6.1
ASF 2.0	DMTF Alert Standard Format Specification v2.0
ATA (IDE)	NA
CD Boot	NA
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision v1.0
PCI	NA (No PCI slot)
PCI Express	PCI Express Base Specification v5.0
SATA	Serial ATA Revision 3.0 Specification
TPM	Trusted Computing Group TPM Specification v2.0
UHCI	Universal Host Controller Interface Design Guide, Revision v1.1
USB	Universal Serial Bus Revision v1.1 Universal Serial Bus v2.0 Universal Serial Bus v3.0
SMBIOS	DMTF System Management Spec v3.2.1

XHCI	XHCI SPEC Revision v1.2
------	-------------------------

Social and Environmental Responsibility

Quality Control	Lenovo is a member of an eco declaration system that enforces regular independent quality control
Hazardous Substances and Preparation	• Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenyl ethers (PBDE). (See legal reference and Note B1) • Products do not contain Asbestos • Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide • Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation • Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP • Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm²/week REACH Article 33 information about substances in articles is available at: http://www.lenovo.com/social_responsibility/us/en/ThinkGreen_products.html#environment
Batteries	NA
Safety, EMC Connection to the Telephone Network and Labeling	Not Applicable, no Connection to a Telephone Network

Safety, EMC Connection to the Telephone Network and Labeling

System Software Manager	Lenovo ThinkStation Supports Software Management Tools by Lenovo Vantage
-------------------------	--

Regulations & Standards

EMC & Safety	FCC SDoC for North America VCCI Certification for Japan BSMI Certification for Taiwan
--------------	--

	EU/EFTA CE Mark & DoC UL/CUL UL-GS IEC62368-1 CB Report/Certificate Saudi Arabia SASO Kuwait KUCAS China CCC Mark Hong Kong SAR (CB report) Singapore PSB South Africa SABS Morocco-CM Mexico-NOM Kazakhstan-EAC Serbia KVALITET Ukraine UKrCEPRO India-BIS UAE EQM
--	---

Environmentals

Energy Star	ENERGY STAR® v9.0
EPEAT	EPEAT GOLD
Greenguard	Greenguard
RoHS	RoHS Compliant
ErP Lot-3 2013	Yes
Hazardous Substances	• Products do not contain more than; 0.1% lead, 0.01% cadmium, 0.1% mercury, 0.1% hexavalent chromium, 0.1% polybrominated biphenyls (PBB) or 0.1% polybrominated diphenol ethers (PBDE) • Products do not contain Asbestos • Products do not contain Ozone Depleting Substances: Chlorofluorocarbons (CFC), hydrobromofluorocarbons (HBFC), hydrochlorofluorocarbons (HCFC), Halons, carbontetrachloride, 1,1,1-trichloroethane, methyl bromide • Products do not contain more than; 0.005% polychlorinated biphenyl (PCB), 0.005% polychlorinated terphenyl (PCT) in preparation • Products do not contain more than 0.1% short chain chloroparaffins (SCCP) with 10-13 carbon atoms in the chain containing at least 48% per mass of chlorine in the SCCP • Parts with direct and prolonged skin contact do not release nickel in concentrations above 0.5 microgram/cm²/week
TCO Certification	9.0
Disclaimers	EPEAT registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.