

Lenovo P3 Ultra SFF Gen 2

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Product Name	P3 Ultra SFF Gen 2
Product Display Name	ThinkStation P3 Ultra SFF Gen 2
Information Date	11-Jun-25
Hardware Maintenance Manual	TBD
Drivers & Software	TBD
Available Whitepapers	TBD

SECTION I: Platform Overview

Description	The Lenovo ThinkStation P3 Ultra SFF Gen 2 features a revolutionary form factor that is redefining the power of small. Supporting the latest Intel Core Ultra processors (Series 2) with an integrated NPU, up to NVIDIA RTX 4000 SFF Ada Generation graphics, super-fast memory, and cutting-edge storage, this workstation breaks new ground by delivering AI-optimized performance and ultimate flexibility in a chassis less than four liters in total volume.
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CPU

Processor Support	Intel Arrow Lake-S Series
Socket Type	Socket-V (LGA 1851)

Operating Systems

Preloaded	Windows 11 Pro 64-bit Windows 11 Home 64-bit Ubuntu 24.04 LTS
Supported	Red Hat Enterprise Linux Ubuntu 24.04 LTS

Memory

Slots	2
Channels	Supports up to 2 DIMM Sockets, 2 Channels
Type	DDR5 ECC and non-ECC CSODIMM DDR5 ECC and non-ECC SODIMM
ECC Support	Yes, CPU Dependent
Speed	Up to 6400MT/s CSODIMM Up to 5600MT/s SODIMM
Max DIMM Size	64GB DDR5 CSODIMM 48GB DDR5 SODIMM
Max System Memory	128GB
Disclaimers	*Memory speed impacted by number and type of DIMMs installed. *Memory speed can be dependent on the individual CPU capabilities.

Storage

Total Bays/Size	1 x 3.5" SATA
SATA	1 x SATA Connector, Gen 3
PCIe	1 x M.2 2240/2280 PCIe Connector, Gen 5 Onboard (from CPU) 1 x M.2 2240/2280 PCIe Connector, Gen 4 Onboard (from CPU) 1 x M.2 2240/2280 PCIe Connector, Gen 4 Onboard (from PCH) Additional M.2 2280 NVMe Drive Supported by Single Adapter, Gen 3
Disclaimers	Additional parts/enclosures may be required for some configurations. Refer to storage whitepaper for more details.

Video

Integrated Graphics	Intel(R) Graphics
Discrete Graphics	Nvidia RTX A400 (miniDP x4) – 4GB GDDR6, PCIe4, Single-Slot Nvidia RTX A1000 (miniDP x4) – 8GB GDDR6, PCIe4, Single-Slot Nvidia RTX 2000 Ada (miniDP x4) – 16GB GDDR6, PCIe4, Dual-Slot Nvidia RTX 4000 SFF Ada (miniDP x4) – 20GB GDDR6, PCIe4, Dual-Slot
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x16

Slots

Slot 1	MXM slot to PCIe 4.0 x16, Half Height, Half Length, 75W
Slot 2	PCIe 4.0 x8 (x4 electrical), Half Height, Half Length, 25W

Front I/O

USB	1 x USB-A 3.2 Gen 2 (10Gb/s) – Max 4.5W per port. 2 x USB-C 3.2 Gen 2 (20Gb/s) – Max 15W per port.
Audio	1 x Combo Audio/Microphone Jack (3.5mm)
Disclaimers	Actual USB throughput will vary depending on the type and quantity of USB devices used. USB-C ports are capable of Display output

Rear I/O

USB	4 x USB-A 3.2 Gen 2 (10Gb/s) – Max 4.5W per port.
DisplayPort	3 x Standard DP 1.4
Ethernet	1 x 1GbE – RJ45
Optional USB Adapter	Rear USB-C 3.2 Gen 2 PCIe x4 Adapter – LP 2-Port USB 3.0 PCIe x1 Adapter – LP 4-Port Serial Expansion Card PCIe x1 Adapter – LP 1-Port Serial Cable to Rear Thunderbolt 4 Board to Board (BTB) Adapter
Optional Network Adapter	Intel I350-T2 Dual Port PCIe x4 Gigabit Ethernet Adapter Intel I350-T4 Quad Port PCIe x4 Gigabit Ethernet Adapter (SBO) Broadcom 5720 Dual Port PCIe x4 Gigabit Ethernet Adapter Broadcom 5719 Quad Port PCIe x4 Gigabit Ethernet Adapter Nvidia ConnectX-6 Dual Port PCIe x16 25Gigabit Ethernet Adapter (Fiber) Intel X710-DA2 Dual Port PCIe x8 10Gigabit Ethernet Adapter (Fiber) Intel X710-T2L Dual Port PCIe x8 10Gigabit Ethernet Adapter Intel Gale Peak 2 BE200 WIFI7 + Bluetooth 5.4 PCIe Adapter
Disclaimers	Actual USB throughput will vary depending on the type and quantity of USB devices used. Rear USB Port 4 should support smart power on function.

Ethernet

Vendor	Intel Jacksonville I219-LM (w/ AMT 16.x)
Speeds	10/100/1000 Mbps

Functions	PXE, ASF, WOL, Jumbo Frames, Teaming
Connectors	1 x RJ45

Audio

Vendor	Realtek
Type	Integrated Audio
Internal Speaker	Yes, 1.5W
Connectors	1 x Front 3.5mm Jack (Microphone & Headphone)
Chipset	ALC623
Number of Channels	2 Channels (5.1 via Driver Selection)
Number of Bits/Audio Resolution	6 channels of DAC support 16/20/24-bit PCM format for 5.1 audio solution 2 Stereo ADC support 16/20-bit PCM format

Thermal

Temp Sensors	6 Total Sensors: - Ambient (2) - M.2 Connector (3) - CPU Vcore (1)
Fans	3 Total Fans: - CPU Fan 1 (top side) - CPU Fan 2 (top side) - System Auxiliary Fan (bottom side)
Disclaimers	Note: Fan control design will be based on BIOS fan control through the Super I/O.

Power Specifications

Power Supply	170W	230W	330W
Power Efficiency	90% Efficient @ 50% Load	90% Efficient @ 50% Load	90% Efficient @ 50% Load
Main	20V DC Jack, yellow	20V DC Jack, yellow	20V DC Jack, yellow
Operating Voltage Range	100 – 240V	100 – 240V	100 – 240V
Rated Voltage Range	90-264VAC	90-264VAC	90-264VAC
Rated Line Frequency	47Hz / 63Hz	47Hz / 63Hz	47Hz / 63Hz
Operating Line Frequency Range	50Hz / 60Hz	50Hz / 60Hz	50Hz / 60Hz
Rated Input Current	2.5A	3.5A	4.5A
Power Supply Fan	No	No	No
ENERGY STAR Qualified (config dependent)	Yes	Yes	Yes
Aux Power Drop	No	No	No

BIOS

Vendor	AMI
Self-Healing BIOS	Yes

Chassis Information

Color	Raven Black
PSU	170W, 230W, and 330W Available, Autosensing
Dimensions	202mm/7.9" H 223mm/8.7" D 87mm/3.4" W
Weight	3.6kg / 7.9lbs

Disclaimers	1. The system dimensions may vary depending on configurations. 2. The system weight is approximate and based on results in Lenovo lab, which varies depending on the source of component, variance of the distribution of each component, and manufacturing process. It may not be the exact weight for each specific model.
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Packaging Dimensions

Height (mm/in)	216mm / 8.5"
Width (mm/in)	483mm / 19"
Depth (mm)	295mm / 11.625"
Weight (kgs/lbs)	5.7 kg / 12.5 lbs
Disclaimers	1. The system dimensions may vary depending on configurations. 2. The system weight is approximate and based on results in Lenovo lab, which varies depending on the source of component, variance of the distribution of each component, and manufacturing process. It may not be the exact weight for each specific model.

Security & Serviceability

TPM	Infineon SLB9672 TPM 2.0
Asset ID	Yes, 1024 x 8bit
vPro	Intel vPro for WS (AMT 16.x)
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	No
Boot Sequence Control	Yes
Padlock Support	Yes
Boot without keyboard and/or mouse	Yes
Access Panel	Tool-less Side Cover Removal
Optical Drive	No
Hard Drives	Retained With Screws
Expansion Cards	Retained With Screws
Processor Socket	Retained With Screws
Color coded User Touch Points	Yes
Color-coordinated Cables and Connectors	Yes
Memory	Tool-less(Need to remove bottom side M,2 heatsink firstly)
System Board	Retained With Screws
Restore CD/DVD/USB Set	Not Included, Restore Media Available via Lenovo Customer Support Center

Operating Environment

Air Temperature	Operating: 10_C to 35_C (50_F to 95_F) Non-Operating: -40_C to 60_C (-40_F to 140_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	Operating Humidity: 10% to 90% (Humidity+EELP)
Altitude	Operating: 0m to 3048m (0ft to 10000ft) Storage: 0m to 12192m (0ft to 40000ft)
Vibration	Package Vibration: Three axes in use orientation (X, Y & Z-axis), 1.04Grms, 2-200Hz, 15mins/axis, random, packaged for shipment Operating Vibration: Random Vibration; 5 to 500 Hz, 0.27 G rms; 30 min/axis, X, Y, Z axes Non-Operating Vibration: Random Vibration; 2 to 200 Hz, 1.04 G rms; 15 min/face, 6 faces

Shock	Operating Shock: Half-sine wave, 15G/3ms(X,Y), 30G/3ms(Z) Rack Operating Shock: Half-sine wave, 15G/5ms Non-operating Shock: Trapezoidal wave, 45G/11ms
Disclaimers	Extended operating temperatures are possible – please contact your Lenovo Rep

SECTION II: Platform Detail

Board Size	7.24" x 7.69" (184.0mm x 195.5mm)
Layout	Custom

Motherboard Core

Processor Support	Intel Arrow Lake-S Series
Socket Type	Socket-V (LGA 1851)
Memory Support	DDR5 up to 6400MT/s CSODIMM (ECC or non-ECC) DDR5 up to 5600MT/s SODIMM (ECC or non-ECC)
Voltage Regulator	125W TDP Capable
Chipset (PCH)	Intel W880 Chipset
Flash	Single 64MB
Super I/O	EC: IT5652
Clock	Intel Native isCLK
Audio	Realtek ALC623 Codec
Ethernet	Intel Jacksonville I219-LM

Supported Components

Processor Level	Intel Arrow Lake
Processor	Intel Ultra 9 285K Intel Ultra 9 285 Intel Ultra 9 285T Intel Ultra 7 265K Intel Ultra 7 265 Intel Ultra 7 265T Intel Ultra 5 245K Intel Ultra 5 235 Intel Ultra 5 225 Intel Ultra 5 225T
Memory Type	DDR5 ECC/non-ECC CSODIMM – 6400MT/s DDR5 ECC/non-ECC SODIMM – 5600MT/s
Memory	16GB DDR5 6400 MT/s ECC CSODIMM 32GB DDR5 6400 MT/s ECC CSODIMM 48GB DDR5 6400 MT/s ECC CSODIMM 8GB DDR5 6400 MT/s non-ECC CSODIMM 16GB DDR5 6400 MT/s non-ECC CSODIMM 32GB DDR5 6400 MT/s non-ECC CSODIMM 48GB DDR5 6400 MT/s non-ECC CSODIMM 64GB DDR5 6400 MT/s non-ECC CSODIMM 16GB DDR5 5600 MT/s ECC SODIMM 32GB DDR5 5600 MT/s ECC SODIMM 48GB DDR5 5600 MT/s ECC SODIMM 32GB DDR5 5600 MT/s non-ECC SODIMM 48GB DDR5 5600 MT/s non-ECC SODIMM
Disclaimers	*Memory speed dependent on CPU support.

Storage

3.5" SATA Hard Disk Drive (HDD)	1TB SATA HDD 7200rpm, 6Gb/s, 3.5" 2TB SATA HDD 7200rpm, 6Gb/s, 3.5"
M.2 PCIe Solid State Drive (SSD)	512GB M.2 [2280] PCIe SSD, Gen 5 x4, NVMe, OPAL 1024GB M.2 [2280] PCIe SSD, Gen 5 x4, NVMe, OPAL 2048GB M.2 [2280] PCIe SSD, Gen 5 x4, NVMe, OPAL 256GB M.2 [2280] PCIe SSD, Gen 4 x4, NVMe, OPAL

	512GB M.2 (2280) PCIe SSD, Gen 4 x4, NVMe, OPAL 1024GB M.2 (2280) PCIe SSD, Gen 4 x4, NVMe, OPAL 2048GB M.2 (2280) PCIe SSD, Gen 4 x4, NVMe, OPAL 4096GB M.2 (2280) PCIe SSD, Gen 4 x4, NVMe, OPAL
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RAID

RAID Levels and Requirements	NVMe Drives Support 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.

Keyboard and Pointing Devices

Keyboard	Traditional AI USB Keyboard Calliope AI USB Keyboard EOS AI Wireless Keyboard
Pointing Devices	Calliope USB Mouse

PCIe Adapters

Network	Intel I350-T2 Dual Port PCIe x4 Gigabit Ethernet Adapter Intel I350-T4 Quad Port PCIe x4 Gigabit Ethernet Adapter Broadcom 5720 Dual Port PCIe x4 Gigabit Ethernet Adapter Broadcom 5719 Quad Port PCIe x4 Gigabit Ethernet Adapter Nvidia ConnectX-6 Dual Port PCIe x16 25Gigabit Ethernet Adapter (Fiber) Intel X710-T2L Dual Port PCIe x8 10Gigabit Ethernet Adapter BMC Controller Adapter – LP
Thunderbolt	Thunderbolt 4 Board to Board (BTB) Adapter
USB	Rear USB-C 3.2 Gen 2 PCIe x4 Adapter – LP 2-Port USB 3.0 PCIe x1 Adapter – LP
WiFi Cards	Intel Gale Peak 2 BE200 WIFI7 + Bluetooth 5.4 PCIe Adapter
Parallel Card	4-Port Serial Expansion Card PCIe x1 Adapter – LP 1-Port Serial Cable to Rear
PCIe to M.2 Adapter Card	PCIe x4 Gen 3 to M.2 Adapter – LP

SECTION III: Supported Component Detail

CPU Specifications Part 1

CPU	Intel Core Ultra 9 285K	Intel Core Ultra 7 265K	Intel Core Ultra 5 245K
# of Cores	24c	20c	14c
# of Threads	24	20	14
Processor Base Frequency	3.7GHz	3.9GHz	4.2Ghz
Max Turbo Frequency	5.7GHz	5.5GHz	5.2Ghz
Cache	36	30M	24M
TDP	125W	125W	125W
Intel ARK Spec Link	https://www.intel.com/content/www/us/en/products/sku/241060/intel-core-ultra-9-processor-285k-36m-cache-up-to-5-70-ghz/specifications.html	https://www.intel.com/content/www/us/en/products/sku/241063/intel-core-ultra-7-processor-265k-30m-cache-up-to-5-50-ghz/specifications.html	https://www.intel.com/content/www/us/en/products/sku/241067/intel-core-ultra-5-processor-245k-24m-cache-up-to-5-20-ghz/specifications.html
Disclaimers			

CPU Specifications Part 2

CPU	Intel Core Ultra 9 285	Intel Core Ultra 7 265	Intel Core Ultra 5 235	Intel Core Ultra 5 225
# of Cores	24c	20c	14c	10c

# of Threads	24	20	14	10
Processor Base Frequency	2.5GHz	2.4GHz	3.4GHz	3.3GHz
Max Turbo Frequency	5.6GHz	5.3GHz	5GHz	4.9GHz
Cache	36M	36M	24M	20M
TDP	65W	65W	65W	65W
Intel ARK Spec Link	https://www.intel.com/content/www/us/en/product/sku/241061/intel-core-ultra-9-processor-285-36m-cache-up-to-5-60-ghz/specifications.html	https://www.intel.com/content/www/us/en/product/sku/241068/intel-core-ultra-7-processor-265-30m-cache-up-to-5-30-ghz/specifications.html	https://www.intel.com/content/www/us/en/product/sku/241674/intel-core-ultra-5-processor-235-24m-cache-up-to-5-00-ghz/specifications.html	https://www.intel.com/content/www/us/en/product/sku/241070/intel-core-ultra-5-processor-225-20m-cache-up-to-4-90-ghz/specifications.html

CPU Specifications Part 3

CPU	Intel Ultra 9 285T 1.4GHz/24C/24T/36M 35W	Intel Ultra 7 265T 1.5GHz/20C/20T/30M 35W	Intel Ultra 5 235T 2.2GHz/14C/14T/24M 35W
# of Cores	24C	20C	14C
# of Threads	24T	20T	14T
Processor Base Frequency	1.4 GHz	1.5GHz	2.2GHz
Max Turbo Frequency	5.4GHz	5.3GHz	5.0GHz
Cache	36M	30M	24M
TDP	35W	35W	35W
Disclaimers			

HDD Specifications

3.5_ SATA Hard Disk Drive (HDD)	1TB SATA – 7200rpm, 6Gb/s, 3.5"
2.5_ SAS Hard Disk Drive (HDD)	Yes
Connector	Not Available
Transfer Rate (Gb/sec)	SATA
Spindle Speed (RPM)	Average Data Rate, Read/Write 156MB/s
Power Off to Spindle Stop (sec)	7,200
DC Power to Drive Ready (sec)	NA
Average Latency (msec)	<30.0
Input (VDC)	4.16
Typical (Watts)	5 & 12
Idle (Watts)	5.6Max
Physical Dimensions	3.7Max
Weight (grams)	101.6mm x 147mm x 26.1mm
Operating (C) Ambient	<53S
Operating (C) Base Casting	0 to 55C
Non-Operating (C) Ambient	<60
Gradient (C per Hour)	(-40 to 70)
Operating (Gs @ 2ms)	20
Non-Operating (Gs @ 2ms)	80
After Market Option	300

Solid State Storage Specifications Part1

Drive	NVMe 2280 M.2 512GB Gen5 PCIe SSD (OPAL)	NVMe 2280 M.2 1TB Gen5 PCIe SSD (OPAL)	NVMe 2280 M.2 2TB Gen5 PCIe SSD (OPAL)
Dimensions Millimeters (W x D x H)	22x80x2.38mm	22x80x2.38mm	22x80x2.38mm
Interface Type	PCIe Gen 5×4	PCIe Gen 5×4	PCIe Gen 5×4
Power Active (AVG)	10W	10W	10W
Power Idle	50mW	50mW	50mW

Typical Sequential Read	13000 MB/s	13800 MB/s	13800 MB/s
Typical Sequential Write	6000 MB/s	11000 MB/s	12000 MB/s
Burst Random Read (4K Queue Depth 32/8 thread);	1400K IOPS	2200K IOPS	2200K IOPS
Burst Random Write (4K Queue Depth 32/8 thread)	1600K IOPS	1600K IOPS	1700K IOPS
Operating Temperature Range	0 to 70C	0 to 70C	0 to 70C
Endurance Rating (Lifetime Writes)	150 TB	300 TB	600 TB
Mean Time Between Failures (MTBF)	2.0M POH	2.0M POH	2.0M POH
Hardware Encryption	AES 256 bit	AES 256 bit	AES 256 bit

Solid State Storage Specifications Part2

Drive	NVMe 2280 M.2 Value 256GB M.2 NVMe OPAL Gen4	NVMe 2280 M.2 512GB PCIe SSD (OPAL) Gen4	NVMe 2280 M.2 1TB PCIe SSD (OPAL) Gen4	NVMe 2280 M.2 2TB PCIe SSD (OPAL) Gen4	NVMe 2280 M.2 4TB PCIe SSD (OPAL) Gen4
Dimensions Millimeters (W x D x H)	22 x 80 x 2.38	22 x 80 x 2.38	22 x 80 x 2.38	22 x 80 x 2.38	22 x 80 x 2.38
Interface Type	PCIe Gen 4*4	PCIe Gen 4*4	PCIe Gen 4*4	PCIe Gen 4*4	PCIe Gen 4*4
Power Active (AVC)	5.9W	5.8W	8W	8.25W	8.1W
Power Idle	100 mW	35 mW	35 mW	25mW	60mW
Typical Sequential Read	3100 MB/s	6000 MB/s	6900 MB/s	6900 MB/s	7000 MB/s
Typical Sequential Write	1400 MB/s	3200 MB/s	4800 MB/s	4800 MB/s	5200 MB/s
Burst Random Read (4K Queue Depth 32/8 thread);	330K IOPS	500K IOPS	820K IOPS	800K IOPS	850K IOPS
Burst Random Write (4K Queue Depth 32/8 thread)	280K IOPS	370K IOPS	650K IOPS	650K IOPS	620K IOPS
Operating Temperature Range	0 to 55C	0 to 55C	0 to 55C	0 to 55C	0 to 55C
Endurance Rating (Lifetime Writes)	150 TB	150 TB	300 TB	600 TB	2400TB
Mean Time Between Failures (MTBF)	1.5M POH	2.0M POH	2.0M POH	2.0M POH	1.5M POH
Hardware Encryption	AES 256 bit	AES 256 bit	AES 256 bit	AES 256 bit	AES 256 bit

Integrated Graphics Adapter

Type	Intel Graphics
Display Interface	1x DP 1.4
Video Resolution (max)	8K60 or 5K60 HDR max(2* 5K60 HDR or 4* 4K60 HDR)

Discrete Graphics Adapter Part 1

Adapter	Nvidia RTX 4000 SFF Ada	Nvidia RTX 2000 Ada DS (miniDP x4) -16 GB GDDR6 with HP bracket installed and LP bracket loose in box	Nvidia A400(miniDP x4) – 4GB GDDR6 LP	Nvidia A1000(miniDP x4) – 8GB GDDR6 LP
Bus Interface	PCI Express 4.0 x 16	PCI Express 4.0*8	PCI Express 4.0*8	PCI Express 4.0*8
Display Interface	4 x mDP 1.4a	Four VESTA mini-DisplayPort connectors	4 x mDP 1.4a	Four VESTA mini-DisplayPort connectors
Graphics Chipset	PG192 SKU 550	PG192 SKU570	PG172 SKU570	PG172 SKU550
Memory Clock Frequency (MHz)	1560MHz	Base:1620 MHz Boost: 2130 MHz Maximum boost: 3105 MHz	Base:1447 MHz Boost: 1785MHz Maximum boost: 2100MHz	Base: 727 MHz Boost: 1462 MHz Maximum boost: 2100MHz
Memory Size	20GB GDDR6	16 GB	4GB	8GB
Memory Interface	160bit	128 bits	64 bits	128 bits
Memory Bandwidth	Up to 280GB/s	Up to 224 GB/s	Up to 96GB/s	Up to 192 GB/s
GPU Cores	2816	768	2304	
GPU Core Frequency (MHz)	720MHz (base)/3105MHz (max boost)	1620 MHz	1447 MHz	1447 MHz
Maximum Power Consumption	70w (Board Power)	70W	50W	50W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	DPI 1.4a: 7680*4320*24bpp/120Hz 7680 x 4320 x 24 bpp @ 60Hz 7680 x 4320 x 36 bpp @ 60Hz	Maximum pixel clock:Up to 2660 Mpixels per second Maximum raw bandwidth:32.4Cbps	Maximum pixel clock:Up to 2660 Mpixels per second Maximum raw bandwidth:32.4Cbps	Maximum pixel clock:Up to 2660 Mpixels per second Maximum raw bandwidth:32.4Cbps

	5120 x 3200 x 24 bpp @ 60Hz 5120 x 2880 x 24 bpp @ 60Hz	Example of maximum resolutions with CVT-RB timings: 7680 x 4320 x 24 bpp @ 120Hz 7680 x 4320 x 24 bpp @ 60Hz 7680 x 4320 x 36 bpp @ 60Hz 5120 x 3200 x 24 bpp @ 60Hz 5120 x 2880 x 24 bpp @ 60Hz	Example of maximum resolutions with CVT-RB timings: 7680 x 4320 x 24 bpp @ 60Hz 7680 x 4320 x 36 bpp @ 60Hz 5120 x 3200 x 24 bpp @ 60Hz 5120 x 2880 x 24 bpp @ 60Hz	Example of maximum resolutions with CVT-RB timings: 7680 x 4320 x 24 bpp @ 120Hz 7680 x 4320 x 24 bpp @ 60Hz 7680 x 4320 x 36 bpp @ 60Hz 5120 x 3200 x 24 bpp @ 60Hz 5120 x 2880 x 24 bpp @ 60Hz
Thermal Solution	Active cooled(blower fan)	Active cooled	Active cooled	Active cooled
Dimension	2.71 H x 6.675 L	2.26 H x 5.56 L	2.26 H x 5.39 L	2.26 H x 5.39 L
Advanced Display	Not Available	Not Available	Not Available	Not Available
SLI/NVLink Support	Not Available	Not Available	Not Available	Not Available

Ethernet Specifications Group 1 Part 1

Card	Intel I350-T2 Dual Port Gigabit Ethernet Adapter (Stony Lake T2)	Intel I350-T4 Quad Port Gigabit Ethernet Adapter (Stony Lake T4)	Intel X710-T2L PCIex8 10G Ethernet Adapter	Intel Wi-Fi 7 BE200 PCIe M.2 module SBB
Supplier PN	I350T2G1P20, MM# 928941	I350T4G1P20, MM# 928942	X710-T2L, MM# 99AT6H	BE200.NGWC, MM# 99C462
Data Rates Supported	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	10/100/1000Mbps (Copper), 1000Mbps (Fiber)	100Mbps, 1/2.5/5/10Gbps	2.4G/5G/6G
Controller Details	Intel Ethernet Controller I350	Intel Ethernet Controller I351	Intel X710-AT2	Intel Wi-Fi 7 BE200
Controller Bus Architecture	PCIe 2.1 (SGT/s)	PCIe 2.1 (SGT/s)	PCIe 2.1 (SGT/s)	PCIe 3.0
Data Transfer Mode	Ethernet	Ethernet	Ethernet	WLAN
Power Consumption	Copper: I350-T2 V2= 4.4W Fiber: I350-F2= 5.5W	Copper: I350T4V2= 5W LC-Fiber: I350F4= 6W	9.6W	M.2 power supply: supply: 3.3V worst case: 2000mA
IEEE Standards Compliance	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	5/2.5/1GbE, 10GBASE-T, 100BASE-TX	IEEE 802.11 be IEEE 802.11 a/b/d/e/g/h/i/k/n/r/ur/v/w/ac/ax
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, Intel iSCSI Remote Boot for Windows, Linux and VMware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	Wireless Functionality in Pre-boot Environment WiFi UEFI
Network Transfer Mode (Full/Half Duplex)	Supported	Supported	Support	NA
Network Transfer Rate	1,000Mbps Full Duplex	1,000Mbps Full Duplex	10Gbps Full Duplex	NA
Operating System Driver Support	Windows 7/8/10, Linux, Free BSD, XEN, VMware	Windows 7/8/10, Linux, Free BSD, XEN, VMware	Win10, Win11, Linux	Windows11, Linux, Free BSD
Manageability	Supported	Supported	Supported	Supported
Manageability Capabilities Alerting	Supported	Supported	Supported	Supported
Lithography			NA	
TDP	Firmware Based Thermal Management	Firmware Based Thermal Management	Firmware Based Thermal Management	NA
Operating Temperature Range	0C to 55C (32F to 131F)	0C to 55C (32F to 131F)	0C to 55C (32F to 131F)	0C to 50C
# of Ports	2	4	2	NA
Data Rate Per Port	10/100/1000Mbps (copper), 1000Mbps (fiber)	10/100/1000Mbps (copper), 1000Mbps (fiber)	100Mbps, 1G/2.5G/5G/10Gbps	2x2
System Interface Type	PCIe Gen 2.1	PCIe Gen 2.1	PCIe3.0	M.2: PCIe*, USB
NC Sideband Interface	Not Available	Not Available	Not Available	Not Available
Jumbo Frames Supported	Yes	Yes	Yes	Yes
1000Base-T	Yes	Yes	Yes	NA
MACsec IEEE 802.1 AE			NA	
IEEE 1588	Supported	Supported	Supported	NA
Supported Under vPro	Not Available	Not Available	Not Available	Supported
Disclaimers			-	

Ethernet Specifications Group 1 Part 2

Model	I350-T2	I350-T4	Intel X710-T2L PCIex8 10G Ethernet Adapter	Intel Wi-Fi 7 BE200 PCIe M.2 module SBB
Connector	2 x Ports RJ-45 Copper	4 x Ports RJ-45 Copper	2 x RJ45 Cpper	RF cable
Website	I350 T2	I350 T4	X710-T2L	BE200
100BASE-TX (IEEE 802.3 specification conformance)			Yes	
1000BASE-T (IEEE 802.3 specification conformance)			Yes	

Auto-Negotiation	IEEE* 802.3* Auto-negotiaton		IEEE* 802.3* Auto-negotiaton		IEEE 802.11 be Auto-negotiaton	
Intel vPro	Not Available		Not Available		Not Support	
Intel Standard Manageability	Supported		Supported		Supported	
Power Optimizer Platform Low-power Management Systems	Supported		Supported		Supported	
Energy Efficient Ethernet	Supported		Supported		Enabled for 10/5/2.5/1GBASE-T	
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported		Supported		Supported	
Receive Side Scaling	Supported		Supported		Supported	
Dual Tx and Rx Queues	Yes		Yes		Yes	
Jumbo Frames (up to 9KB)	Supported		Supported		Supported	
Teaming	Supported		Supported		Supported	
Wake from Deep Sx	Supported		Supported		No Supported	
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		Supported(S4)	
Network Proxy/ARP Support	Supported		Supported		Supported	

Ethernet Specifications Group 2 Part 1

Card	Broadcom 5720 2-Ports PCIe1 Gigabit Ethernet Adapter	Broadcom 5719 4-Ports PCIe4 Gigabit Ethernet Adapter	ConnectX-6
Supplier PN	BCM95720A2003LC	BCM95719A1904LC	900-9X663-0073-SQ0
Data Rates Supported	10/100/1000Mbps copper	10/100/1000Mbps copper	25/10/1 GbE
Controller Details	BCM 5720	BCM 5719	MCX621202AS-ADAT
Controller Bus Architecture	PCIe 2.1 (5GT/s)	PCIe 2.1 (5GT/s)	PCIe Gen 4.0 (16.0GT/s)
Data Transfer Mode	Ethernet	Ethernet	Ethernet
Power Consumption	2.23W	5.78W	14W
IEEE Standards Compliance	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 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	PXE boot	PXE boot
Network Transfer Mode (Full/Half Duplex)	Supported	Supported	Supported
Network Transfer Rate	1,000Mbps Full Duplex	1,000Mbps Full Duplex	25Gbps Full Duplex
Operating System Driver Support	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows 11, 64-bit, Windows 10, 64-bit, Linux	RHEL/CentOS/Windows/VMware
Manageability	Supported	Supported	Supported
Manageability Capabilities Alerting	Supported	Supported	Supported
Operating Temperature Range	0C to 55C (32F to 131F)	0C to 55C (32F to 131F)	0C to 55C (32F to 131F)
# of Ports	2	4	2
System Interface Type	PCIe Gen 2.1	PCIe Gen 2.1	PCIe Gen 4.0 (16.0GT/s)
NC Sideband Interface	Not Available	Not Available	Not Available
Jumbo Frames Supported	Yes	Yes	Yes
1000Base-T	Yes	Yes	Yes
IEEE 1588	Not Available	Not Available	Not Available
Supported Under vPro	Not Available	Not Available	Not Available
Disclaimers	-	-	-

Ethernet Specifications Group 2 Part 2

Model	Broadcom 5720 2-Ports PCIe1 Gigabit Ethernet Adapter	Broadcom 5719 4-Ports PCIe4 Gigabit Ethernet Adapter	ConnectX-6
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Connector	2 Port RJ-45	4 Port RJ-45	2 x Ports SFP28
Website	ConnectX-6 (MCX621202AS-ADAT)		
10BASE-T (IEEE 802.3 specification conformance)	Not Supported		
100BASE-TX (IEEE 802.3 specification conformance)	Not Supported		
1000BASE-T (IEEE 802.3 specification conformance)	Support		
Auto-Negotiation	IEEE* 802.3ab Auto-negotiaton	IEEE* 802.3ab Auto-negotiaton	Support
Intel vPro	Not Available	Not Available	Not Available
Intel Stable Image Platform Program (SIPP)	Not Available	Not Available	Not Available
Intel Standard Manageability	Not Available	Not Available	Not Available
Power Optimizer Platform Low-power Management Systems	Supported	Supported	No
Energy Efficient Ethernet	Supported	Supported	Supported
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported	Supported	Supported
Receive Side Scaling	Supported	Supported	Supported
Dual Tx and Rx Queues	Supported	Supported	128
Jumbo Frames (up to 9KB)	Supported	Supported	Supported
Teaming	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	Supported	Supported	
Server Operating System Support	Windows 11, 64-bit, Windows 10, 64-bit, Linux	Windows 11, 64-bit, Windows 10, 64-bit, Linux	RHEL/CentOS/Windows/VMware
Network Proxy/ARP Support	Supported	Supported	Support
Disclaimers			

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/graphic interface) available at power-on with F1 key
Bootblock Recovery	Recovers system BIOS if the flash ROM is 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 is 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	Supervisor, user and power-on passwords can protect boot and ROM-based setup - Chassis Intrusion Detection - UEFI Secure Boot Support - HDD Password Can Protect HDD Data - Windows UEFI Firmware Update Support

	- Device Guard Support - BIOS Guard, Boot Guard Support
Intel(R) AMT (includes ASF 2.0)	Allows system to be supported from a remote location
Intel(R) TXT	Intel(R) trusted execution technology 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 2.7 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 v6.2
ASF 2.0	DMTF Alert Standard Format Specification v2.0
ATA (IDE)	AT Attachment 6 with Packet Interface (ATA/ATAPI-6)
CD Boot	EI Torito Bootable CD-Rom Format Specification, v1.0
EHCI	Enhanced Host Controller Interface for Universal Serial Bus, Revision v1.0
PCI	PCI Local Bus v3.0 PC Firmware Specification 3.1
PCI Express	PCI Express Base Specification v4.0
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 Universal Serial Bus v3.2
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: https://www.lenovo.com/us/en/social_responsibility/social_responsibility_resources/
Batteries	UN38.3,MSDS
Safety, EMC Connection to the Telephone Network and Labeling	Not applicable

Acoustic Noise Emissions Declaration

LWAd(bels) Idle	3.1
LWAd(bels) Oper	3.7

Safety, EMC Connection to the Telephone Network and Labeling

Industry Standard Specifications	not applicable
Remote Manageability Software Solutions	not applicable
System Software Manager	Lenovo ThinkStation supports software management tools by Lenovo Vantage.

Regulations & Standards

EMC & Safety	FCC/IC VCCI BSMI KC RCM TUV-GS cTUVus IEC60950-1&IEC62368 CB Report/Certificate Saudi Arabia EQM Kuwait KUCAS China CCC Mark South Africa SABS Russia/Belarus/Kazakhstan/Kyrgyzstan/Armenia-EAC Morocco-CM Mexico-NOM Serbia KVALITET Ukraine UKrCEPRO India-BIS China SRRC Indonesia-SDPPI Malaysia-SIRIM Philippines-NTC
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Environmentals

Energy Star	ENERGY STAR 9.0
EPEAT	EPEAT Certification Available on Select Models
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/cm_/week
Materials Used	System 85% PCC recycled plastic in Front, Rear Bezel 35% PCC recycled plastic inside chassis Packaging Carton: 90% Recycled and/or FSC certified content3 Cushion: 90% Recycled EPE
TCO Certification	10.0
Disclaimers	EPEAT registered where applicable. EPEAT registration varies by country. See www.epeat.net for registration status by country.