

Lenovo ThinkStation P620

Version: 1.0 | 08/21/2020

DOWNLOADS

Hardware Maintenance Manual	TBD
Drivers & Software	TBD

SECTION I: Platform Overview

Description	Introducing the new ThinkStation P620. The first ever AMD Ryzen Threadripper PRO powered workstation offers stunning performance with up to 64 cores and up to 4.0GHz. Perfect for those who demand more power for today's multithreaded applications, the P620 combines Lenovo's legendary reliability and customer-driven innovation with professional manageability and enterprise-class support.
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CPU

Processor Support	AMD Castle Peak Workstation Processor
Socket Type	Socket-SP3 (SM-LGA)

Operating Systems

Preloaded	Windows 10 Pro 64-bit Ubuntu 20.04 LTS (configuration specific)
Supported	Ubuntu 20.04 LTS Red Hat Enterprise Linux 8.2

Memory

Slots	Up to 8 DIMMs
Channels	Supports up to 8 DIMM Sockets, 8 Channels
Type	288-Pin, 3200MHz ECC RDIMM
ECC Support	Yes
Speed	Up to 3200MHz
Max DIMM Size	64GB
Max System Memory	512GB

Storage

Total Bays/Size	4 x 3.5"
SATA	6 x SATA Connectors, Gen 3
PCIe	2 x M.2 PCIe Connectors Onboard, Gen 4 Additional M.2 NVMe Drives Supported by Single Adapters
eSATA	1 x eSATA Connector, Gen 3
Disclaimers	Additional parts/enclosures may be required for some configurations

Video

Integrated Graphics	Not Available
Discrete Graphics	PCIe Add-In-Card, Details in Section Below
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x16
Slot 1	PCIe 4.0 x16, Full Height, Full Length, 75W, Without Latch
Slot 2	PCIe 4.0 x8, Full Height, Full Length, 25W, Open-Ended
Slot 3	PCIe 4.0 x16, Full Height, Full Length, 75W, With Latch
Slot 4	PCIe 4.0 x16, Full Height, Full Length, 75W, With Latch
Slot 5	PCIe 4.0 x16, Full Height, Full Length, 75W, With Latch
Slot 6	PCIe 4.0 x8, Full Height, Full Length, 25W, Open-Ended

Front I/O

USB	2 x USB 3.2 Gen 2 Type-C (15W) 1 x USB 3.2 Gen 2 Type-A (11W) 1 x USB 3.2 Gen 2 Type-A
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Audio	1 x Front Stereo + MIC Headset
Media Card Reader	Optional: Front 15-in-1 Media Card Reader supporting SD-UHS-II (requires Flex module)
Flex Module	<p>Flex Module: Supports Two 5.25" Flex Bays With Several Options Integrated</p> <ul style="list-style-type: none"> • Up to Two 5.25" Slim ODD Cages • Up to One 5.25" Slim ODD and HDD Cage (FBSE) • Up to One Front Access Storage Enclosure (FASE) • Up to Two Front Removable Drive Enclosure - M.2 (CRU) • Up to One Flex Module for One or More of the Following Options: <ul style="list-style-type: none"> - 9.0mm Optical/15-in-1 USB 3.1 Gen 1 Reader/Front USB 3.1 Gen 1 Type-C/Front eSATA <p>Note:</p> <ol style="list-style-type: none"> 1. Only one 15-in-1 media card reader can be supported. 2. Only one USB 3.1 Gen 1 Type-C cable can be supported. 3. Only one front eSATA cable can be supported.
Disclaimers	Not all components above available concurrently in a single Flex module

Rear I/O

USB	4 x USB 3.2 Gen 2 Type-A 2 x USB 2.0 Type-A
Audio	3 x Rear (Line Out, Line In, MIC); Retaskable to 5.1
DisplayPort	As Supported by GPU
HDMI	As Supported by GPU
DVI	As Supported by GPU
VirtualLink	As Supported by GPU
VGA Port	As Supported by GPU
Serial Port	Optional 1 x Rear Port
Ethernet	1 x 10GbE - RJ45
PS/2	2 x PS/2
IEEE 1394	Not Available
eSATA	Optional PCIe Bracket
Parallel Port	Not Available
Optional USB Adapter	Not Available
Optional Network Adapter	Aquantia Single Port 10G Ethernet Adapter PCI-E 1 x WiFi Card With BT HP External Antenna Kit (9260 AC)

Ethernet

Vendor	Marvell AQC107 10G Ethernet
Speeds	10G/5G/2.5G/1G/100Mbps
Functions	PXE, ASF, WOL, Jumbo Frames, Teaming
Connectors	1 x RJ45

Audio

Vendor	Realtek
Type	HD (5.1)
Internal Speaker	Yes
Connectors	3 x Rear 3.5mm Jacks (Line In, Line Out, Microphone In)
Chipset	ALC4050
Number of Channels	6 (rear) + 2 (front)
Number of Bits/Audio Resolution	6 Channel DAC supports 16/20/24 bit PCM Stereo ADC supports 16/20 bit PCM

Thermal

Temp Sensors	CPU VR Sensor - Thermal Diode - Connected to Super I/O PCI Zone 1 Sensor - Thermal Thermistor - Connected to Super I/O PCI Zone 2/Chipset Sensor - Thermal Thermistor - Connected to Super I/O PCI Zone 3 Sensor - Thermal Diode - Connected to Super I/O M.2 Sensor - Thermal Thermistor - Connected to Super I/O Ambient Cabled Sensor - Thermal Diode - Connected to Super I/O PSU Thermal Sensor - Thermal Thermistor - Connected to Super I/O
Fans	2 x CPU Fan 4-pin Header With 3-pin Key 1 x Rear System Fan 4-pin Header With 3-pin Key 1 x Front System Fan 4-pin Header With 3-pin Key 2 x ODD Bay Fan 4-pin Header With 3-pin Key (optional) 2 x Memory Fan 4-pin Header with 3-pin Key 1 x PSU Fan Main PSU Power Connector

Power Specifications

Power Supply	1000W
Power Efficiency	92% Efficient @ 50% Load
Main	C14
Operating Voltage Range	100 - 240V
Rated Voltage Range	90-264VAC
Rated Line Frequency	47Hz / 63Hz
Operating Line Frequency Range	50Hz / 60Hz
Rated Input Current	9A-15A
Graphics	2 x 8 pin (6+2) 2 x 6 pin
Power Supply Fan	Yes
ENERGY STAR® Qualified (config dependent)	Yes
80 PLUS Compliant	Yes

Built-in Self Test (BIST) LED	Yes
Aux Power Drop	Yes

BIOS

Vendor	AMI
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Chassis Information

Color	Graphite Black
PSU	1000W Available, Autosensing, 92% PSU, 80 PLUS Platinum Qualified
Thermal Solutions	Two System Fans Standard (1 front, 1 rear), One PSU Fan, Two CPU Fans, Two MEM Fans
Dimensions	165mm/6.5" W x 460mm/18.1" D x 440mm/17.3" H
Weight	24kg / 52.9lbs

Packaging Dimensions

Height (mm/in)	575mm / 22.64"
Width (mm/in)	302mm / 11.89"
Depth (mm)	580mm / 22.83"
Weight (kgs/lbs)	27.48kg / 60.58lbs
Disclaimers	Note: Actual Weight of the packaging will depend on the system configuration.

Security & Serviceability

TPM	Infineon SLB9670 TPM 2.0
Asset ID	Yes, 1024 x 8bit
vPro	NA
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	Unique Key Lock Kit - Optional Common Key Lock Kit - Optional

Boot Sequence Control	Yes
Padlock Support	Not Supported
Boot without keyboard and/or mouse	Yes
Access Panel	Tool-less Side Cover Removal
Optical Drive	Tool-less
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 Customer Support Center

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	Operating: -15.2m to 3048m (-50ft to 10000ft) Storage: -15.2m to 10668m (-50ft to 35000ft)
Vibration	Package Vibration: Random,1.04G at 2-200 Hz, 15 Minutes XYZ 6 faces Operating Vibration: Random,0.27G at 5-500 Hz, 30 Minutes Per Surface (X,Y,Z) Non-Operating Vibration: Random,1.04G at 2-200 Hz, 15 Minutes Per Surface (±X,±Y,±Z)
Shock	Operation Shock: 3ms (15G) for 4 Axis (+X, -X, +Y,-Y) 3ms (30G) for 2 Axis (+Z, -Z), Half-sine Wave, Each Side Will do One Time Rack Operation Shock: 5ms (15G) for 6 Axis (+X, -X, +Y,-Y,+Z, -Z), Half-sine Wave, Each Side Will do One Time Non-operating Shock: Trapezoidal Wave, 35G, 11ms, 6 Sides (+X, -X, +Y,-Y, +Z, -Z), Filter 300Hz, Each Side Shock One Time

SECTION II: Platform Detail

Board Size	13.44" x 9.96" (341.5mm x 253mm)
Layout	Custom ATX

Motherboard Core

Processor Support	AMD Castle Peak Workstation processor
Socket Type	Socket-SP3 (SM-LGA)
Memory Support	DDR4 up to 3200MHz RDIMM Memory
CPU-CPU Interconnect	N/A
Voltage Regulator	IR35204MTRPBF+TDA21475 IR35201MTRPBF+TDA21475
Chipset (PCH)	AMD 2019 Premium Chipset BXB-B
Flash	32MB
Super I/O	Nuvoton NCT6686D-L
Clock	AMD Integrated Clock
Audio	Realtek ALC4050H Codec on Motherboard Realtek ALC4050 on Front Panel I/O
Ethernet	Marvell AQC10710Gb DASH

Supported Components

Processor Level	Castlepeak
Processor	AMD Threadripper Pro 3945WX 4.0GHz/12C/64M/3200/280W AMD Threadripper Pro 3955WX 3.9GHz/16C/64M/3200/280W AMD Threadripper Pro 3975WX 3.5GHz/32C/128M/3200/280W AMD Threadripper Pro 3995WX 2.7GHz/64C/256M/3200/280W
Memory Type	RDIMMs - 3200MHz
Memory	16GB DDR4 ECC RDIMM PC4-3200 32GB DDR4 ECC RDIMM PC4-3200 64GB DDR4 ECC RDIMM PC4-3200

Storage

3.5" SATA Hard Disk Drive (HDD)	1TB SATA HDD 7200rpm, 6Gb/s, 3.5" 2TB SATA HDD 7200rpm, 6Gb/s, 3.5" 4TB SATA HDD 7200rpm, 6Gb/s, 3.5" (enterprise class)
M.2 PCIe Solid State Drive (SSD)	256GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 512GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 1024GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 2048GB M.2 PCIe SSD, Gen 3 x4, NVMe, OPAL 256GB M.2 PCIe SSD, Gen 4 x4, NVMe, OPAL 512GB M.2 PCIe SSD, Gen 4 x4, NVMe, OPAL 1024GB M.2 PCIe SSD, Gen 4 x4, NVMe, OPAL 2048GB M.2 PCIe SSD, Gen 4 x4, NVMe, OPAL

RAID

RAID Levels and Requirements	M.2 RAID via AMD CPU – supports RAID 0, 1 SATA RAID via Onboard AMD SATA Controller – supports RAID 0, 1, 5, 10
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. Max supported RAID 0/1/5/10.

Optical Drive/Removable Media

DVD-ROM Drive	DVD-ROM, 9.0mm Slim, SATA
DVD Burner/CD-RW Drive	DVD Burner/CD-RW Rambo, 9.0mm Slim, SATA
Blu-Ray Burner Drive	Blu Ray Burner w/AACS encryption, 9.0mm Slim, SATA
Media Card Reader Specifications	Optional Front USB 3.0 15-in-1 Media card reader supporting SD UHS-II (requires Flex module)

Keyboard and Pointing Devices

Keyboard	Traditional USB Keyboard Traditional PS/2 Keyboard Smart Card USB Keyboard Calliope USB Keyboard
Pointing Devices	Calliope USB Mouse Lenovo USB Laser Mouse Fingerprint USB Mouse PS/2 Optical Mouse

Expansion Bays

5.25" External Access Bays	<p>Flex Module: Supports Two 5.25" Flex Bays With Several Options Integrated</p> <ul style="list-style-type: none"> • Up to Two 5.25" Slim ODD Cages • Up to One 5.25" Slim ODD and HDD Cage (FBSE) • Up to One Front Access Storage Enclosure (FASE) • Up to Two Front Removable Drive Enclosure – M.2 (CRU) • Up to One Flex Module for One or More of the Following Options: <ul style="list-style-type: none"> – 9.0mm Optical/15-in-1 USB 3.1 Gen 1 Reader/Front USB 3.1 Gen 1 Type-C/Front eSATA <p>Note:</p> <ol style="list-style-type: none"> 1. Only one 15-in-1 media card reader can be supported. 2. Only one USB 3.1 Gen 1 Type-C cable can be supported. 3. Only one front eSATA cable can be supported.
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PCIe Adapters

Network	Marvell 10G Ethernet Adapter (single port)
WiFi Cards	Intel PCIe WiFi Card With BT (9260 AC)
PCIe to M.2 Adapter Card	Single M.2 PCIe Adapter Quad M.2 PCIe Adapter

SECTION III: Supported Component Detail

CPU Specifications

CPU	Ryzen Threadripper PRO 3995WX	Ryzen Threadripper PRO 3975WX	Ryzen Threadripper PRO 3955WX	Ryzen Threadripper PRO 3945WX
# of Cores	64	32	16	12
# of Threads	128	64	32	24
Processor Base Frequency	2.7GHz	3.5GHz	3.9GHz	4.0GHz
Max Turbo Frequency	4.2GHz	4.2GHz	4.3GHz	4.3GHz
Cache	256MB	128MB	64MB	64MB
TDP	280W	280W	280W	280W

HDD Specifications

Drive	1TB SATA - 7200rpm, 6Gb/s, 3.5"	2TB SATA - 7200rpm, 6Gb/s, 3.5"	4TB SATA - 7200rpm, 6Gb/s, 3.5" (Enterprise)
3.5" SATA Hard Disk Drive (HDD)	Yes	Yes	Yes
2.5" SATA Hard Disk Drive (HDD)	Not Available	Not Available	Not Available
Connector	SATA	SATA	SATA
Transfer Rate (Gb/sec)	Average Data Rate, Read/Write 156MB/s	Maximum data transfer rate 220 MB/s	Maximum data transfer rate 215 MB/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)	<10.0	<17.0	<17.0
Average Latency (msec)	4.16	6	4.16
Input (VDC)	5	5	5
Typical (Watts)	6.19	6.7	7.35
Idle (Watts)	4.6	4.5	4.48

Physical Dimensions	101.6mm x 146.99mm x 19.88mm	101.6mm x 146.99mm x 20.2mm	101.85mm x 147mm x 26.1mm
Weight (grams)	420	415	649
Operating (C) Ambient	0 to 60	0 to 60	5 to 60
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)	70	80	Read 70 Gs / Write 40 Gs
Non-Operating (Gs @ 2ms)	350	350	300

Solid State Storage Specifications

Drive	2048GB M.2 SSD, NVMe, Opal, GEN4x4, TLC,2280	1024GB M.2 SSD, NVMe, Opal, GEN4x4, TLC,2280	512GB M.2 SSD, NVMe, Opal, GEN4x4, TLC,2280	256GB M.2 SSD, NVMe, Opal, GEN4x4, TLC,2280	1024GB NVMe M.2 SSD TLC
Dimensions Millimeters (W x D x H)	X	X	X	X	22 x 80 x 2.3
Interface Type	X	X	X	X	PCIe Gen 3 x4 NVMe
Power Active (AVG)	X	X	X	X	5W
Power Idle	X	X	X	X	50mW
Typical Sequential Read	X	X	X	X	3200MB/s
Typical Sequential Write	X	X	X	X	1600MB/s
Operating Temperature Range	X	X	X	X	0 to 55°C
Endurance Rating (Lifetime Writes)	X	X	X	X	300TB
Mean Time Between Failures (MTBF)	X	X	X	X	2.0M POH
Hardware Encryption	X	X	X	X	AES 256-bit

Solid State Storage Specifications

Drive	512GB NVMe M.2 SSD TLC	256GB NVMe M.2 SSD TLC
Dimensions Millimeters (W x D x H)	22 x 80 x 2.3	22 x 80 x 2.3
Interface Type	PCIe Gen 3 x4 NVMe	PCIe Gen 3 x4 NVMe
Power Active (AVG)	5W	5W
Power Idle	50mW	50mW
Typical Sequential Read	3200MB/s	3000MB/s

Typical Sequential Write	1600MB/s	1300MB/s
Typical Random Read (4GB Span)	340K IOPS	205K IOPS
Typical Random Write (4GB Span)	275K IOPS.	260K IOPS.
Operating Temperature Range	0 to 55°C	0 to 55°C
Endurance Rating (Lifetime Writes)	150TB	85TB
Mean Time Between Failures (MTBF)	2.0M POH	2.0M POH
Hardware Encryption	AES 256-bit	AES 256-bit

HDD Controllers

PCI Bus	PCIe Gen4
PCI Modes	RAID, AHCI
RAID Levels	0, 1, 5, 10, Volume and RAIDable
Data Transfer Rates	AMD RAIDXpert2 (OS) RAID and PD operations in BIOS
PCI Card Type	SATA 6Gbs NVMe 16Gbs
PCI Voltage	Onboard AMD controller (Bixby)
Disclaimers	SATA, M.2 NVMe

Optical Drive Specifications

Description	DVD-ROM, 9.0mm Slim	DVD Burner/CD-RW Rambo, 9.0mm Slim	Blu Ray Burner w/AACS encryption, 9.0 slim
Interface Type	SATA	SATA	SATA

Discrete Graphics Adapter

Adapter	Quadro P620	Quadro P1000	Quadro P2200	Quadro RTX 4000	Quadro RTX 5000
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16
Display Interface	4 x mDP 1.4	4 x mDP 1.4	4 x DP 1.4	3 x DP 1.4 1 x VirtualLink	4 x DP 1.4 1 x VirtualLink
Graphics Chipset	Pascal	Pascal	Pascal	Turing	Turing
Memory Clock Frequency (MHz)	1252MHz	1253MHz	1251MHz	1625MHz	1750MHz

Memory Size	2GB GDDR5	4GB GDDR5	5GB GDDR5X	8GB GDDR6	16GB GDDR6
Memory Interface	128-bit	128-bit	160-bit	256-bit	256-bit
Memory Bandwidth	Up to 80GB/s	Up to 82GB/s	Up to 200GB/s	Up to 416GB/s	Up to 448GB/s
GPU Cores	CUDA Cores: 512	CUDA Cores: 640	CUDA Cores: 1280	CUDA Cores: 2304 Tensor Cores: 288 RT Cores: 36	CUDA Cores: 3072 Tensor Cores: 384 RT Cores: 48
GPU Core Frequency (MHz)	1266MHz	1266MHz	1000MHz	1005MHz	1620MHz
Maximum Power Consumption	40W	47W	75W	Total board power: 160W Total graphics power: 125W	Total board power: 265W Total graphics power: 230W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4 x 4096x2160 @ 60Hz 4 x 5120x2880 @ 60Hz	4 x 4096x2160 @ 60Hz 4 x 5120x2880 @ 60Hz	4 x 4096x2160 @ 120Hz 4 x 5120x2880 @ 60Hz	4 x 3840x2160 @ 120Hz 4 x 5120x2880 @ 60Hz 4 x 7680x4320 @ 60Hz	4 x 4096x2160 @ 120Hz 4 x 5120x2880 @ 60Hz 2 x 7680x4320 @ 60Hz
Thermal Solution	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink
Dimension	2.713" H x 5.7" L Single Slot, Low Profile	2.713" H x 5.7" L Single Slot, Low Profile	4.4" H x 7.9" L Single Slot	4.4" H x 9.5" L Single Slot	4.4" H x 10.5" L Dual Slot, Full Height
Advanced Display	Not Available	Not Available	Not Available	SYNC 2	SYNC 2
SLI/NVLink Support	Not Available	Not Available	Not Available	Not Available	NVLink

Discrete Graphics Adapter

Adapter	Quadro RTX 6000	Quadro RTX 8000	Quadro GV100	AMD Radeon Pro WX3200	AMD Radeon Pro W 5500
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 3.0 x16	PCIe 4.0 x16
Display Interface	4 x DP 1.4 1 x VirtualLink	4 x DP 1.4 1 x VirtualLink	4 x DP 1.4	4 x mDP 1.4	4 x DP 1.4
Graphics Chipset	Turing	Turing	Volta	Polaris	RDNA
Memory Clock Frequency (MHz)	1750MHz	1750MHz	858MHz	X	X
Memory Size	24GB GDDR6	48GB GDDR6	32GB HBM2	4GB GDDR5	8GB GDDR6
Memory Interface	384-bit	384-bit	4096-bit	128-bit	128-bit

Memory Bandwidth	Up to 672GB/s	Up to 672GB/s	Up to 870GB/s	96GB/s	224 GB/s
GPU Cores	CUDA Cores: 4608 Tensor Cores: 576 RT Cores: 72	CUDA Cores: 4608 Tensor Cores: 576 RT Cores: 72	CUDA Cores: 5120 Tensor Cores: 640	640	1408
GPU Core Frequency (MHz)	1440MHz	1395MHz	1132MHz	X	X
Maximum Power Consumption	Total board power: 295W Total graphics power: 260W	Total board power: 295W Total graphics power: 260W	250W	50W	125W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	4 x 4096x2160 @ 120Hz 4 x 5120x2880 @ 60Hz 2 x 7680x4320 @ 60Hz	4 x 3840 x 2160 @ 120Hz 4 x 5120x2880 @ 60Hz 2 x 7680x4320 @ 60Hz	4 x 4096x2160 @ 120Hz 4 x 5120x2880 @ 60Hz 2 x 7680x4320 @ 60Hz	4 x 1920x1080 @ 60Hz 4 x 3840x2160 @ 60Hz 2 x 5120x2880 @ 60Hz 1 x 7680x4320 @ 60Hz	4 x 1920x1080 @ 60Hz 4 x 3840x2160 @ 60Hz 2 x 5120x2880 @ 60Hz 2 x 7680x4320 @ 60Hz
Thermal Solution	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	X	X
Dimension	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height	4.4" H x 10.5" L Dual Slot, Full Height	2.7" H x 6.6" L Single Slot, Half Height	4.4" H x 9.5" L Single Slot, Full Height
Advanced Display	SYNC 2	SYNC 2	Not Available	Not Available	Not Available
SLI/NVLink Support	NVLink	NVLink	NVLink	Not Available	Not Available

Discrete Graphics Adapter

Adapter	AMD Radeon Pro W 5700
Bus Interface	PCIe 4.0 x16
Display Interface	5 x mDP 1.4
Graphics Chipset	RDNA
Memory Size	8GB GDDR6
Memory Interface	256-bit
Memory Bandwidth	448 GB/s
GPU Cores	2304
Maximum Power Consumption	205W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	6 x 1920x1080 @ 60Hz 6 x 3840x2160 @ 60Hz

	3 x 5120x2880 @ 60Hz 3 x 7680x4320 @ 60Hz
Dimension	4.4" H x 10.5" L Double Slot, Full Height
Advanced Display	Not Available
SLI/NVLink Support	Not Available

Ethernet

Model	Marvell AQC-107 (Onboard LOM)	AQN-107 Optional PCIe AIC
Description	Five speed 10GBASE-T LAN on Motherboard NIC	Five speed 10GBASE-T LAN on Motherboard NIC
Connector	RJ-45 Copper	RJ-45 Copper
Controller Bus Architecture	PCIe Gen3 x4	PCIe Gen3 x4
Data Transfer Mode	Ethernet	Ethernet
Website	https://www.marvell.com/products/ethernet-adapters-and-controllers/aqion-ethernet-controllers.html	https://www.marvell.com/products/ethernet-adapters-and-controllers/aqion-ethernet-adapters.html
DMTF DASH	Supported	Not Supported
Data Rates Supported	100Mbps, 1Gbps, 2.5Gbps, 5Gbps, 10Gbps	100Mbps, 1Gbps, 2.5Gbps, 5Gbps, 10Gbps
5GBASE-T (IEEE 802.3 specification conformance)	Supported	Supported
2.5GBASE-T (IEEE 802.3 specification conformance)	Supported	Supported
10GBASE-T (IEEE 802.3 specification conformance)	Supported	Supported
100BASE-TX (IEEE 802.3 specification conformance)	Supported	Supported
1000BASE-T (IEEE 802.3 specification conformance)	Supported	Supported
Auto-Negotiation	Supported	Supported
Power Optimizer Platform Low-power Management Systems	N/A	N/A
MACsec IEEE 802.1 AE	Supported	Supported
Energy Efficient Ethernet	Supported	Supported
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported	Supported
Receive Side Scaling	Supported	Supported
Dual Tx and Rx Queues	Supported	Supported
Quality of Service (QoS) and Data Center Bridging (DCB)	Up to 8 QoS traffic classes	Up to 8 QoS traffic classes
Jumbo Frames (up to 9KB)	Supported (Up to 16KB)	Supported, Up to 9KB frames
Teaming	No	Yes(?)

Integrated Auto Connect Battery Saver (ACBS) Battery Savings	N/A	N/A
Timing and Synchronization	IEEE 1588 Ver1 & Ver2 (AVB) NTP Ver3 & Ver4 SNTP Ver4	IEEE 1588 Ver1 & Ver2 (AVB) NTP Ver3 & Ver4 SNTP Ver4
Integrated Switched Voltage Regulator (iSVR)	N/A	N/A
NC Sideband Interface	SMBus	SMBus
Shared Flash with System BIOS	No	No
Wake from Deep Sx	Supported	Supported
Wake on LAN (Magic Packet, PING, Pattern)	Supported	Supported
Operating System Support	Win10 and Linux 8	Win10 and Linux 8
Manageability Capabilities Alerting	ASF 1.0 and 2.0	ASF 1.0 and 2.0
Network Proxy/ARP Support	Supported	Supported
TDP	108C	108C
Temperature Operating range	0-55C w/ no air flow	0-55C w/ no air flow
Power Consumption	6W @ 10Gbs 4W @5Gbs	6W @ 10Gbs 4W @5Gbs
IEEE Standards Compliance	IEEE 802.3bz - NBASE-T IEEE 802.3x - Flow Control IEEE 802.1P - Quality of Service IEEE 802.1QAV - AVB	IEEE 802.3bz - NBASE-T IEEE 802.3x - Flow Control IEEE 802.1P - Quality of Service IEEE 802.1QAV - AVB
Boot ROM Support	UEFI (Unified Extensible Firmware Interface) 2.3/2.5 PXE (Preboot Execution Environment) 2.0	UEFI (Unified Extensible Firmware Interface) 2.3/2.5 PXE (Preboot Execution Environment) 2.1

Media Card Reader

Description	15-in-1 USB 3.0 Media Card Reader
Interface Type	Integrated into Front Panel
Form Factor	SD UHS-II, Compact Flash, SM

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 only 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 <ul style="list-style-type: none"> - 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
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)	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	NA (No PCI slot)
PCI Express	PCI Express Base Specification v3.0
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	<ul style="list-style-type: none"> • 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	Not Available
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
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Regulations & Standards

EMC & Safety	FCC DoC for North America VCCI Certification for Japan BSMI Certification for Taiwan EU/EFTA CE Mark & DoC UL/CUL UL-GS IEC60950-1 CB Report/Certificate Saudi Arabia SASO Kuwait KUCAS China CCC Mark Hong Kong SAR (CB report) Singapore PSB South Africa SABS Russia-EAC Morocco-CM Mexico-NOM Kazakhstan-EAC Belarus-EAC Serbia KVALITET Ukraine UKrCEPRO India-BIS USA Chemical Emission Test
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Environmentals

Energy Star	ENERGY STAR® v8.0
EPEAT	EPEAT Certification Available on Select Models
ErP Lot-3 2013	Yes
Hazardous Substances	<ul style="list-style-type: none"> • 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