Lenovo P358

Version: 1.0 | 08/31/2022

Downloads

Hardware Maintenance Manual	TBD
Drivers & Software	TBD
Available Whitepapers	TBD

SECTION I: Platform Overview

Description	Workstation power is now within your reach with the ThinkStation® P358. Built for mission-critical tasks that require superior reliability and performance, this workstation leads on both counts and does it with exceptional all-around value.

CPU

Processor Support	AMD Ryzen Pro Series
Socket Type	AM4
CPU Type	µPGA-1331

Operating Systems

Preloaded	Windows 11 Pro Windows 11 Home Windows 10 Pro 64-bit Ubuntu 22.04 LTS
Supported	Red Hat Enterprise Linux 8.6

Memory

Slots	Up to 4 DIMMs
Channels	Supports up to 4 DIMM Sockets, 2 Channels
Type	288-Pin, 1866/2133/2400/2666/2933/3200 MHz ECC and non-ECC UDIMM
ECC Support	Yes
Speed	Up to 3200MHz
Max DIMM Size	32GB DDR4 UDIMM
Max System Memory	128GB

Storage

Total Bays/Size	2 x 3.5" 1 x 2.5"
SATA	3 x SATA Connectors, Gen 3
PCIe	1 x M.2 PCIe Connector, Gen 4 Onboard
Disclaimers	1. Additional parts/enclosures may be required for some configurations.

Video

Integrated Graphics	Yes, CPU dependent
Discrete Graphics	PCIe Add-In-Card, Details in Section Below
Multi-GPU Support	Yes
Type	PCIe Add-In-Card
Bus Interface	PCIe x16

Slots

Slot 1	PCIe 3.0 x16, Full Height, Full Length, 75W, With Latch
Slot 2	PCIe 3.0 x1, Full Height, Half Length, 25W
Disclaimers	Note: PCIe Slot 1 is intended only for discrete graphics.

Front I/O

USB	2 x USB 3.2 Gen 2 Type-A 10Gb/s 2 x USB 3.2 Gen 1 Type-A 5Gb/s 1 x USB 3.2 Gen 1 Type-C 5Gb/s

Audio	1 x Audio Jack (3.5mm) 1x Microphone Jack (3.5mm)
Media Card Reader	Optional: Front 3-in-1 Media Card Reader (USB 2.0)
Flex Bay	One 3.5" Flex Bay, Supports the Following: – Flex storage enclosure
Disclaimers	Note: Actual USB throughout will vary depending on the type and quantity of USB devices used.

Rear I/O

USB	2 x USB 2.0 Type-A 480 Mb/s (w/ Smart power on) 2 x USB 2.0 Type-A 480 Mb/s
Audio	1 x Rear (Line Out); Retaskable to 5.1
DisplayPort	2 x Standard (CPU dependent)
HDMI	1 x Standard (CPU dependent)
Serial Port	1 x Standard Optional 1 x Rear Port
Ethernet	1 x 1GbE – RJ45
Parallel Port	Optional 1 x Rear Bracket
Optional USB Adapter	2-Port USB Expansion Card (USB3.0) PCIEx1-HP 4-Port Serial Expansion Card PCIe X1-HP
Optional Network Adapter	Bitland RTL8168H Single Port Gigabit Ethernet Adapter Intel I210-T1 Single Port Gigabit Ethernet Adapter
Disclaimers	Note: Actual USB throughout will vary depending on the type and quantity of USB devices used.

Ethernet

Vendor	Realtek RTL8111EPV
Speeds	10/100/1000 Mbps
Functions	DASH, PXE
Connectors	1 x RJ45

Audio

Vendor	Realtek
Type	HD (5.1)
Internal Speaker	Yes
Connectors	2 x Front 3.5mm Jacks (Mic & Headphone) 1 x Rear 3.5mm Jacks (Line Out)
Chipset	ALC623-CG

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 2 stereo ADC support 16/20-bit PCM

Thermal

Temp Sensors	Ambient Sensor VR Sensor Graphics Card Sensor (if applicable)
Fans	1 x CPU Fan 1 x Front Fan 1 x Rear Fan 1 x Power Supply Fan (inside PSU) 1 x Side Panel Cover Fan (for select graphics cards)

Power Specifications

Power Supply	750W	500W	300W
Power Efficiency	92% Efficient @ 50% Load	92% Efficient @ 50% Load	90% Efficient @ 50% Load
Main	C14	C14	C14
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	10A	7A	5A
Graphics	1 x 8 pin	1 x 8 pin	N/A
Power Supply Fan	Yes	Yes	Yes
ENERGY STAR® Qualified (config dependent)	Yes	Yes	Yes
80 PLUS Compliant	Yes	Yes	Yes
Built-in Self Test (BIST) LED	No	No	No
Aux Power Drop	Yes	Yes	No

BIOS

Vendor	AMI
Self-Healing BIOS	No

Chassis Information

Color	Raven Black
PSU	750W, 500W, and 300W Available, Autosensing, 80 PLUS Platinum Qualified for 750w and 500w, 80 PLUS Gold Qualified for 300W
Thermal Solutions	Two System Fans Standard (1 front, 1 rear), One Fan per CPU, One PSU Fan, One Side Panel Cover Fan (for select graphics cards)
Dimensions	376mm/14.8" H 315.4mm/12.4" D 170mm/6.7" W
Weight	9.8 kg / 21.61 lbs

Packaging Dimensions

Height (mm/in)	540mm / 21.26"
Width (mm/in)	280mm / 11.02"
Depth (mm)	420mm / 16.54"
Weight (kgs/lbs)	12.1 kg / 26.68 lbs

Security & Serviceability

TPM	Infineon SLB9670VQ 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	No
Boot Sequence Control	Yes
Padlock Support	Yes
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	Tool-less
Color coded User Touch	Yes

Points	
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: 5°C to 40°C (41°F to 104°F) Non-operating: -10°C to 65°C (-23°F to 18°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 90% (Humidity+EELP)
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: Half-sine wave, 15G/3ms(X,Y), 30G/3ms(Z) Rack Operation Shock: Half-sine wave, 15G/5ms Non-operating Shock: Trapezoidal Wave, 45G/11ms

SECTION II: Platform Detail

Board Size	10.51" x 9.65" (267mm x 245mm)
Layout	Custom ATX

Motherboard Core

Processor Support	AMD Renoir Pro / Vermeer Pro
Socket Type	AM4
Memory Support	DDR4 up to 3200MHz UDIMM Memory (ECC and non-ECC)
Voltage Regulator	65W TDP Capable
Chipset (PCH)	AMD Pro 565
Flash	16MB

Super I/O	Nuvoton NCT6686D
Clock	AMD Integrated Clock
Audio	Realtek ALC623-CG Codec
Ethernet	Realtek RTL8111EPV

Supported Components

Processor Level	AMD Ryzen Pro Series
Processor	Vermeer Pro AMD Ryzen 9 Pro 5945 AMD Ryzen 7 Pro 5845 AMD Ryzen 5 Pro 5645 Renoir Pro AMD Ryzen 3 Pro 4350G
Memory Type	ECC/non-ECC UDIMMs – 3200MHz
Memory	8GB DDR4 ECC UDIMM PC4-3200 16GB DDR4 ECC UDIMM PC4-3200 32GB DDR4 ECC UDIMM PC4-3200 8GB DDR4 non-ECC UDIMM PC4-3200 16GB DDR4 non-ECC UDIMM PC4-3200 32GB DDR4 non-ECC UDIMM 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 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 Levels and Requirements	N/A

Optical Drive/Removable Media

DVD-ROM Drive	Slim DVD-ROM Drive
DVD Burner/CD-RW Drive	Slim DVD Burner/CD-RW Drive
Blu-Ray Burner Drive	Slim Blu-Ray ODD DVD Burner
Media Card Reader Specifications	Optional Front 3-in-1 USB 2.0 Media Card Reader

Keyboard and Pointing Devices

Keyboard	Calliope USB Keyboard Traditional USB Keyboard
Pointing Devices	Calliope USB Mouse Fingerprint USB Mouse

Expansion Bays

PCIe Adapters

Network	Bitland RTL8168H Single Port Gigabit Ethernet Adapter Intel I210-T1 Single Port Gigabit Ethernet Adapter
USB	Rear Dual Port USB 3.0 PCIe Adapter
WiFi Cards	Foxconn PCIe WiFi6 Card With BT External Antenna Kit (MT7921LEN)
Parallel Card	4-port Serial Expansion Card

SECTION III: Supported Component Detail

CPU Specifications

CPU	AMD Ryzen 9 Pro 5945	AMD Ryzen 7 Pro 5845	AMD Ryzen 5 Pro 5645	AMD Ryzen 5 Pro 5650G	AMD Ryzen 3 Pro 4350G
# of Cores	12	8	6	6	4
# of Threads	24	16	12	12	8
Processor Base Frequency	3	3.4	3.7	4.4	3.7
Max Turbo Frequency	4.7	4.6	4.6	3.9	4.2
Cache	64M	32MB	32MB	16MB	4MB
TDP	65W	65W	65W	65W	65W

HDD Specifications

Drive	1TB SATA – 7200rpm, 6Gb/s, 3.5"	2TB SATA – 7200rpm, 6Gb/s, 3.5"	4TB SATA – 7200rpm, 6Gb/s, 3.5"
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	Average Data Rate, Read/Write 156MB/s	Sustained Data Transfer Rate 216-226MB/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	4.16	4.16
Input (VDC)	5	5	5
Typical (Watts)	6.19	6.7	11.33
Idle (Watts)	4.6	4.5	5.45
Physical Dimensions	101.6mm x 146.99mm x 19.88mm	101.6mm x 146.99mm x 26.1mm	101.85mm x 147mm x 26.1mm
Weight (grams)	420	535	650
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	300	300

Solid State Storage Specifications

Drive	256GB NVMe M.2 SSD OPAL	NVMe 2280 M.2 512GB PCIe SSD (OPAL)	NVMe 2280 M.2 1TB PCIe SSD (OPAL)	NVMe 2280 M.2 2TB PCIe SSD (OPAL)
Dimensions Millimeters (W x D x H)	22 x 80 x 2.38 (mm)	22 x 80 x 2.38 (mm)	22 x 80 x 2.38	22 x 80 x 2.38
Interface Type	PCIe 4x(Gen4)	PCIe Gen 4x4	PCIe Gen 4x4	PCIe Gen 4x4
Power Active (AVG)	5.8W	5.8W	5.8W	5.8W
Power Idle	35 mW	35 mW	35 mW	35 mW
Typical Sequential Read	5000 MB/s	6000 MB/s	6400 MB/s	6400 MB/s
Typical Sequential Write	1600 MB/s	3200 MB/s	3800 MB/s	5000 MB/s
Burst Random Read (4K Queue Depth 32/8 thread);	250K IOPS	500K IOPS	550K IOPS	550K IOPS
Burst Random Write (4K Queue Depth 32/8 thread)	200K IOPS	370K IOPS	400K IOPS	400K IOPS
Operating Temperature Range	0 to 55°C	0 to 55°C	0 to 55°C	0 to 55°C
Endurance Rating (Lifetime Writes)	85 TB	150 TB	300 TB	600 TB

Mean Time Between Failures (MTBF)	2.0M POH	2.0M POH	2.0M POH	2.0M POH
Hardware Encryption	AES 256 bit	AES 256 bit	AES 256 bit	AES 256 bit

Optical Drive Specifications

Description	9mm Slim DVD ROM Drive (SATA)	9mm Slim DVD Burner/CD-RW Drive (SATA) (Ready in Sep)	9mm Slim Blu-Ray ODD DVD Burner (SATA)
Interface Type	SATA 1.5 Gb/s	SATA 1.5 Gb/s	SATA 1.5 Gb/s
Dimensions	128±0.4×9.0 ±0.4×127±0.4(Max) Unit:mm （Without Bezel-W x H x D)	128±0.4×9.0 ±0.4×127±0.4(Max) Unit:mm （Without Bezel-W x H x D)	128±0.4×9.0 ±0.4×127±0.4(Max) Unit:mm （Without Bezel-W x H x D)
Disc Capacity	NA	NA	NA
Type	DVDROM	DVDWriter	BD Rambo
External Dimensions	NA	NA	NA
Speed	NA	NA	NA
Bay Type	9.0mm Tray	9.0mm Tray	9.0mm Tray
Color	Business Black or without bezel	Business Black or without bezel	Business Black or without bezel
Removable	No	No	No
Internal Buffer Size	0.5MB Min	0.5MB Min	4MB
Writes	NA	8XDVD+R / 8XDVD+RW / 6XDVD+R DL 8XDVD-R / 6XDVD-RW / 6XDVD-R DL 24XCD-R / 16XCD-RW	6x BD-R / 2x BD-RE 8XDVD+R / 8XDVD+RW / 6XDVD+R DL 8XDVD-R / 6XDVD-RW / 6XDVD-R DL 5XDVD-RAM 24XCD-R / 16XCD-RW
Reads	8XDVD-ROM / 24XCD-ROM	8XDVD-ROM / 24XCD-ROM	6x BD-ROM /8x DVD-ROM / 5x DVD-RAM / 24x CD-ROM
Source	DC Power 5V	DC Power 5V	DC Power 5V
DC Power Requirements	+5V±5%	+5V±5%	+5V±5% Ripple less than 100mVp-p
DC Current	Max 2.5A@5v	Max 2.5A@5v	Max 2A@5v
Operating Systems Supported	Windows OS/Linux	Windows OS/Linux	Windows OS/Linux
Temperature	Operating: 5ºC to 45 ºC Non-Operating:-30ºC to 60ºC	Operating: 5ºC to 45 ºC Non-Operating:-30ºC to 60ºC	Operating: 5ºC to 45 ºC Non-Operating:-30ºC to 60ºC
Relative Humidity	Operating > Read: 15 % to 85 % (Non-Condensing) Write 15 % to 80 % (Depend on the Temperature) Storage/Transportation>	Operating > Read: 15 % to 85 % (Non-Condensing) Write 15 % to 80 % (Depend on the Temperature) Storage/Transportation>	Operating > Read: 15 % to 85 % (Non-Condensing) Write 15 % to 80 % (Depend on the Temperature) Storage/Transportation>

	10 % to 80 % (Non-Condensing)	10 % to 80 % (Non-Condensing)	10 % to 80 % (Non-Condensing)

Integrated Graphics Adapter

Type	Vega 7 core
Bus Interface	Processor onboard
Display Interface	DP/DP/HDMI
Video Resolution (max)	DP: 4K 60Hz HDMI 4K 30Hz

Discrete Graphics Adapter

Adapter	Quadro T400 – 4GB GDDR6	Quadro T1000 – 8GB GDDR6	NVIDIA Quadro A2000(DP x4) – 12GB GDDR6	RTX 3060	RTX 3070Ti	RTX 3080
Bus Interface	PCIe 3.0 x16	PCIe 3.0 x16	PCI Express 4.0x16	PCIe 4.0 x16	PCI Express 4.0x16	PCI Express 4.0x16
Display Interface	3 x mDP 1.4a	4 x mDP 1.4a	4 x mDP 1.4a	HDMI*1: 7680*4320@60Hz DP*3：5120*2880@60Hz	DP *3 + HDMi *1	DP *3 + HDMi *1
Graphics Chipset	TU117-850	TU117-875	GP106-850	GP106-400-A1	GP104-400-A1	GA102-200-KD-A1
Memory Clock Frequency (MHz)	5001MHz	5001MHz	6001MHz	8000MHz	9500MHz	9500 MHz
Memory Size	4GB GDDR6	8GB GDDR6	12GB GDDR6	12GB GDDR6	8GB GDDR6	10GB DDR6
Memory Interface	64-bit	128-bit	192-bit	192-bit	256-bit	256-bit
Memory Bandwidth	Up to 80GB/s		Up to 160GB/s		Up to 288GB/s	
GPU Cores	CUDA Cores: 384	CUDA Cores: 896	N/A	3584	6144	8704
GPU Core Frequency (MHz)	420MHz (base)/2100MHz (max boost)	1065MHz (base)/2100MHz (max boost)	1493MHz	base 1320MHz；boost 1777MHz	1575MHz (base)/1770MHz (max boost)	1440MHz (base)/1740MHz (max boost)
Maximum Power Consumption	30W	50W	70W	170W	290W	320W
Supported Resolutions and Max Refresh Rates (Hz) (Note: Analog and/or Digital)	7680 x 4320 x 24 bpp @ 120Hz 7680 x	7680 x 4320 x 24 bpp @ 120Hz 7680 x	DP1.4a: 7680*4320*24bpp/120Hz (Requires	HDMI*1: 7680*4320@60Hz DP*3：	DP1.4a: 7680*4320*24bpp/120Hz (Requires	DP1.4a: 7680*4320*24bpp/120Hz (Requires

	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	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	two DisplayPort 1.4a links and DSC compression) HDPC: 2.2 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	5120*2880@60Hz	two DisplayPort 1.4a links and DSC compression) HDMI2.1: 7680*4320*24bpp YUV420 or DSC at 60Hz (Requires two DisplayPort 1.4a links and DSC compression)	two DisplayPort 1.4a links and DSC compression) HDMI2.1: 7680*4320*24bpp YUV420 or DSC at 60Hz
Thermal Solution	Ultra-quiet Active Fansink	Ultra-quiet Active Fansink	Active Fansink	Active Fansink	Active Fansink	Active Fansink
Dimension	2.713" H x 6.137" L Single Slot, Low Profile	2.713" H x 6.137" L Single Slot, Low Profile	6.6 inches, HHHL double-slot	4.3 inches*8.9 inches, double-slot	4.37 inches*10.57 inches, 2.5-slot	4.37 inches*10.57 inches, 2.5-slot
Advanced Display	Not Available	Not Available	Not Available	Not Available	Not Available	Not available
SLI/NVLink Support	Not Available	Not Available	Not Available	Not Available	Not Available	Not available

Intel® Ethernet Specifications

Card	Intel I210-T1 Single Port Gigabit Ethernet Adapter (Springville)	Bitland BN8E88 1000M PCIex1 noASF – FH/LP	2 x 2 AX WiFi with BT (M.2) vPro AX201-TWR/SFF
Supplier PN	I210T1, MM# 941033	1218-00934/1218-00933	
Data Rates Supported	10/100/1000Mbps copper	10M, 100M, and 1000M	
Controller Details	Intel® Ethernet Controller I210	REALTEK RTL8168E-VB-CG	
Controller Bus Architecture	PCIe 2.1 (5GT/s)	PCI Express 1.1 2.5GT/s	
Data Transfer Mode	Ethernet	Ethernet	
Power Consumption	0.81W	RTL8168E=0.53W	
IEEE Standards Compliance	IEEE 802.3/10BASE-T, 100BASE-TX, 1000BASE-T	IEEE 802.1P Layer 2 Priority Encoding IEEE 802.1Q VLAN tagging IEEE 802.3az Draft 3.2 (EEE)	
Boot ROM Support	PXE boot, Intel iSCSI Remote Boot for Windows, Linux and Vmware, Intel BootAgent Software via PXE or BootP, WDMS or UEFI	Supported	
Network Transfer Mode	Supported	Supported	

(Full/Half Duplex)		
Network Transfer Rate	1,000Mbps Full Duplex	1,000Mbps Full Duplex
Operating System Driver Support	Windows 7/8/10, Linux, Free BSD, XEN,Vmware	Win10
Manageability	Supported	Supported
Manageability Capabilities Alerting	Supported	Supported
TDP	Firmware Based Thermal Management	Not Available
Operating Temperature Range	0°C to 55°C (32°F to 131°F)	O ℃, 50 ℃ (32 ° F to 122 ° F)
# of Ports	1	1
Data Rate Per Port	10/100/1000Mbps (copper)	10M, 100M, and 1000M
System Interface Type	PCIe Gen 2.1	PCI Express 1.1
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	Not Available
Disclaimers		

Ethernet

Model	i210-T1	WIFI 6 WLAN Foxconn MT7921LEN WIFI6 2*2ax+BT5.x PCIE M.2 2230 module	Bitland BN8E88 1000M PCIex1 noASF – FH/LP	2 x 2 AX WiFi with BT (M.2) vPro AX201-TWR/SFF
Connector	RJ-45 Copper		1 Port RJ-45	
Website	i210 T1		IC Datasheet	
Auto-Negotiation	IEEE* 802.3* Auto-negotiaton		Auto-Negotiation with Next Page capability	
Intel® vPro™	Not Available		Not Available	
Intel® Stable Image Platform Program (SIPP)	Not Available			
Intel® Standard Manageablity	Not Supported		Not Available	
Power Optimizer Platform Low-power Management Systems	Supported		Supported	
Energy Efficient Ethernet	Supported		Supported	
TCP/UDP Checksum and Segmentation Offload (IPv4 and IPv6)	Supported			
Receive Side Scaling	Supported		Supported	

Dual Tx and Rx Queues	Yes	Not Available
Jumbo Frames (up to 9KB)	Supported	Supported
Teaming	Not Available	Supported
Wake from Deep Sx	Supported	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), Vmware
Network Proxy/ARP Support	supported	Supported

Media Card Reader

Description	Media Card reader (3 in 1) TWR
Interface Type	USB2.0
Form Factor	USB 2.0 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 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	Supervisor, SMP and Power-On 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, Kensington Lock, and Pad Lock -Secure Wipe 2.0 -Subscription Certificate Storage
Intel(R) AMT (includes ASF 2.0)	Not Supported
Intel(R) TXT	Not Supported
Memory Modes	Supports Mirroring, Lock Step, and Sparing Memory Modes
Windows 10 Ready	Supports Windows 10 Requirements for Secure Flash, UEFI v 2.8 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	Supported
ATA (IDE)	Not Supported
CD Boot	El Torito Bootable CD-Rom Format Specification, 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
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	GDX Scip control
Batteries	UN38.3,MSDS
Safety, EMC Connection to the Telephone Network and Labeling	Not applicable
LWAd(bels) Idle	2.9
LWAd(bels) Oper	4

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	CE FCC/IC VCCI BSMI KC RCM UL-GS cULus IEC60950-1&IEC62368 CB Report/Certificate Saudi Arabia SIRC UAE EQM Kuwait KUCAS China CCC Mark Singapore PSB 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 Thailand-NBTC Chile-SUBTEL UK-UKCA

Environmentals

Energy Star	ENERGY STAR 8.0
EPEAT	EPEAT Gold
ErP Lot-3 2013	Yes
Hazardous Substances	GDX Scip control
TCO	TCO9.0