

# Lenovo ThinkPad P53

Version: 1 | 10/29/2019

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Hardware Maintenance Manual	<a href="#">P53 HMM</a>
Drivers & Software	<a href="#">P53 Drivers &amp; Software</a>

## SECTION I: SYSTEM OVERVIEW

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Description	A new milestone for mobile workstations. Through impeccable design and engineering, The ThinkPad® P53 has broken performance barriers never before achieved. The new NVIDIA® Quadro RTX5000 will be the first ever of its class in a 15.6" ThinkPad chassis. Coupled with Intel® 9th gen Xeon® and Core™ class CPUs, the P53 will enable users to do more and go further than ever before; whether it's increased performance within traditional ISV workflows, AR and VR content creation, or deployment of mobile AI.
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## CPU

Processor Support	Intel 9th gen Coffee Lake Refresh H Series Core i5, i7, i9 Intel 9th gen Coffee Lake Refresh H Series Xeon
Socket Type	BGA

## Operating Systems

Preloaded	Windows 10 Pro 64-bit for Workstations (RS5, 19H1) Windows 10 Pro 64-bit (RS5, 19H1) Windows 10 Home 64-bit (RS5, 19H1) Windows 10 Single Language Home 64-bit (RS5, 19H1) Ubuntu 64-bit (Version 18.04 LTS, running the 4.15.0-1039-oem kernel)
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	No Operating System
Supported	Windows 10 Pro 64-bit for Workstations (RS5, 19H1) Windows 10 Pro 64-bit (RS5, 19H1) Windows 10 Home 64-bit (RS5, 19H1) Windows 10 Single Language Home 64-bit (RS5, 19H1) Ubuntu & RedHat Linux 64-bit (Version 18.04 LTS, running the 4.15.0-1039-oem kernel) No Operating System

## Memory

Number of DIMM Slots	Up to 4 DIMM sockets: Top x2; Bot x2
Channels	Single Channel w/ 1DIMM Dual Channel w/ 2DIMMs
Type	DDR4, SO-DIMM, ECC non-ECC
ECC Support	Yes
Speed	Up to 2666 MHz
Max DIMM Size	32GB
Max System Memory	128GB
Min System Memory	8GB
Soldered Memory	None

## Storage

Storage Slots	3 slots
SATA	1x 2.5" SATA HDD
PCIe	Solid State Drive, OPAL2 PCIe-NVMe M.2 2280-S3 - TLC
SAS	HDD 500GB 7200 1TB 7200 2TB 5400 SSD 256GB OPAL2 TLC PCIe-NVMe 512GB OPAL2 TLC PCIe-NVMe 1024GB OPAL2 TLC PCIe-NVMe 512GB OPAL2 MLC PCIe-NVMe 16GB Optane PCIe M.2
Interface	500GB FIPS140-2 7200rpm 7mm
Security	Optional, Selectable in BIOS
Optional Hard Disk Drive Controllers	RAID 0/1/5

## Video

Integrated Graphics	For Intel® i5-9400H Processor Graphics Intel® UHD Graphics 630 Utilized via "Hybrid Mode" in BIOS For Intel® i7-9750H Processor Graphics Intel® UHD Graphics 630
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	Utilized via "Hybrid Mode" in BIOS For Intel® i7-9850H Processor Graphics Intel® UHD Graphics 630 Utilized via "Hybrid Mode" in BIOS For Intel® i9-9880H Processor Graphics Intel® UHD Graphics 630 Utilized via "Hybrid Mode" in BIOS For Intel® Xeon® E-2276M Processor Processor Graphics Intel® UHD Graphics P630 Utilized via "Hybrid Mode" in BIOS
Discrete Graphics	NVIDIA Quadro T1000, T2000, RTX 3000, RTX 4000, RTX 5000
Adapter	None
Bus Interface	PEG

## Display

Resolutions	FHD / UHD
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## Camera

Resolution	HD 720p / IR Camera
Frames per Second	30 fps
Focus	Fixed 50cm
Camera Interface	USB 2.0
IR Camera	Yes

## Keyboard

Number of Keys	US : 105 / UK : 106 / JP : 110
Numpad	Yes
Size	100% ISO
Function Key Features	Yes
Backlit	Yes
Keyboard size	Como 2018 Full size KB with NumPad (Top loading)
Key stroke	1.8mm
Key pitch	19.05 mm (Vertical & Horizontal)
Keyboard backlight	Optional
Keyboard thickness	4.55mm

## Touchpad / Fingerprint Reader

TrackPoint Details	COMO TrackPoint module (t5.55mm)
Finger Print Reader Model	8x8 FPR, MoC w/o LED Prometheus 8x8
Multi-Touch	Yes
Resolution	1000 ppi
TouchPad/Trackpad thickness	0.8mm +/- 0.1mm
TouchPad/Trackpad type	TouchPad
Trackpad size	99mm x 58.4mm
Trackpad material/finish	Mylar surface

## I/O – Ports and Connectors

USB	2x USB-A 3.1 Gen1 (1x Powered) 1 x USB-C
Thunderbolt	2 x Thunderbolt 3 (USB Type-C)
HDMI	1x HDMI (2.0) DP1.4
Audio Combo Jack	1x Microphone & Headphone Combo Jack (3.5mm)
Media Card Reader	Dedicated Media Card Reader (UHS-II)
Smart Card Reader	1x Smart Card Reader
Power Connector	DC-In
Docking Port	Docking Via Thunderbolt 3 / USB-C
VirtualLink	None
Network adapter	Gigabit Ethernet (RJ45)

## Power Connector

Main	DC-In
USB-C	2x Thunderbolt 3 (USB-C/DP/PD)

## Ethernet

Vendor	Intel
Count	x1
EEPROM	BIOS/MEFW SPI ROM TBT FW SPI ROM VBIOS SPI ROM
Speeds	10/100/1000 Mbps
Functions	Wake On LAN MAC Address Pass Through PXE Boot Flash Over LAN

	Flash Over LAN
Connectors	RJ45

## WWAN

Model	Fibocom L850-GL CAT9 M.2
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## Near Field Communications

Model	Foxconn P/N T77H747.01 (NXP NPC300)
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## Audio

Vendor	Realtek
Type	Intel High Definition Audio (2 channel)
Internal Speaker	2 channel
Connectors	Microphone & Headphone Combo Jack (3.5mm)
Chipset	ALC3286
Number of Channels	4-channel DAC, 4-channel ADC
Number of Bits/Audio Resolution	16/20/24-bit PCM format
Sampling Rate (Recording/Playback)	44.1K/48K/96K/192KHz sample rate
Signal to Noise Ratio	Mic In: 95dB FSA Headphone Out@32ohm: 100dB FSA
Analog Audio	None
Dolby Digital	Dolby ATMOS
Digital Out (S/PDIF)	No
Speaker Power Rating	2W@4ohm/ch

## Power adapter

Type	Slim 170W AC Adapter	Slim 230W AC Adapter
Dimensions	240cc (142 x 77 x 22mm)	353cc (160 x 87 x 25.4mm)
Input Voltage	450g	710g
Disclaimers	100-240V	100-240V

## Security

TPM	Version 2.0
Asset ID	Yes
vPro	Intel vPro for WS

## Chassis Information

Format	Clamshell
Color	Midnight Black
Thermal Solutions	Internal Dual FAN, Intelligent Cooling
Dimensions	Length 14.86 inches 377.4 millimeters Width 9.93 inches 252.3 millimeters Height 0.96 inches (front) 24.5mm (front) (Thinnest) 1.16 inches (rear) 29.4mm (rear) (Thickest) 1.29 (rear w/ feet) 32.7mm (rear w/ feet)
Weight	with 6 cell 90WHr Battery, Min 5.51 lbs / 2.45kg Max 5.81 lbs/2.636 kg

## Packaging Parameters

Height (mm)	341
Width (mm)	105
Depth (mm)	493

## Security & Serviceability

Self Healing BIOS	Yes
Access Panel	Removeable bottom cover
Number of Screws	See Hardware Maintenance Manual for Details
Swappable Components	Bottom cover, memory module, M.2 solid-state drive, speaker assembly, coin-cell battery, TrackPoint pointing cap, keyboard, WLAN Card, WWAN Card, Power Button Cable, Hinge Caps, LCD Unit, Chassis Assembly, Dummy Smart Card Reader, System Board,
Storage Slots	3 slots
Memory	4 SODIMM slots
Restore CD/DVD/USB Set	None, Restore Media available via Lenovo Customer Support Center
Cable Lock Support	Security-lock slot, Optional Kensington Cable Lock

Cable Lock Support	Security Lock Slot, Optional Kensington Cable Lock
Power-On Password	Yes
Hard Disk Password	Yes; User and Master hard disk password
Supervisor Password	Yes
NIC LEDs (integrated)	None
Security Chip	Yes (for TMP 2.0)
Access Panel Key Lock	Bottom Cover Tamper Detection
Boot Sequence Control	Yes

## Operating Environment

Operating - Air Temperature	At altitudes up to 2438 m (8000 ft) - Operating: 5°C to 35°C (41°F to 95°F)
Non Operating - Air Temperature	At altitudes up to 2438 m (8000 ft) - Storage: 5°C to 43°C (41°F to 109°F)
Humidity	Operating: 8% to 95% at wet-bulb temperature 23°C (73°F) Storage: 5% to 95% at wet-bulb temperature 27°C (81°F)
Corrosive Gas	G1
Particulates	P1

## SECTION II: SUPPORTED COMPONENTS

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### Supported Components

Processor	Intel® Core™ i5-9400H (2.9 GHz/6 Core/9M/V-Pro) Intel® Core™ i7-9750H processor (2.6 GHz/6 Core/12M) Intel® Core™ i7-9850H vPro processor (2.6 GHz/6 Core/12M/V-Pro) Intel® Core™ i9-9880H vPro processor (2.3 GHz/8 Core/16M/V-Pro) Intel® Xeon™ E-2276M v7 vPro processor (2.7 GHz/6 Core/12M/V-Pro)
Memory Support	DDR4 2666MHz SO-DIMM
Chipset (PCH)	Mobile Intel® CM246 Chipset
Size of BIOS Flash	8MB for Non-vPro model, 16MB for vPro model
Super I/O	None
Clock	Crystal
Audio	Realtek High Definition Audio
Ethernet	Intel® Ethernet Connection I219

### Memory

System Capacity Options	8GB 16GB 32GB 64GB 128GB
non-ECC	8GB DDR4 2666 SoDIMM 16GB DDR4 2666 SoDIMM 32GB DDR4 2666 non-ECC SoDIMM
Brand of non-ECC Memory	Samsung SK Hynix Micron
ECC	8GB DDR4 2666 ECC SoDIMM 16GB DDR4 2666 ECC SoDIMM 32GB DDR4 2666 ECC SoDIMM
Brand of ECC Memory	SK Hynix Samsung
Memory clock frequency(MHz)	2666 MHz

## Storage

2.5" SAS Hard Disk Drive (HDD)	None
2.5" SATA Hard Disk Drive (HDD)	500GB 7200rpm 7mm HDD 1TB 7200rpm 7mm HDD 2TB 5400rpm 7mm HDD 500GB FIPS140-2 7200rpm 7mm
2.5" SATA Solid State Drive (SSD)	None
M.2 (NGFF) PCIe Solid State Drive (SSD)	256GB SATA (M.2 2280) 256GB Opal 2 PCIe TLC NVMe 3X2 (M.2 2280) 512GB Opal 2 PCIe TLC NVMe 3X2 (M.2 2280) 512GB Opal 2 PCIe MLC NVMe 3X2 (M.2 2280) 1TB Opal 2 PCIe TLC NVMe 3X2 (M.2 2280) 2TB Opal 2 PCIe TLC NVMe 3X2 (M.2 2280)
2.5" PCIe Solid State Drive (SSD)	None
Brand of Drive	Seagate Samsung Toshiba Intel
Intel Optane Storage Technology	None
RAID	Optional, Selectable in BIOS
RAID Level and Requirements	RAID-0/1/5

## Removeable Media

Media Card Reader Specifications	UHS-II
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## SECTION III: Supported Component Detail

### CPU Specifications

CPU	Intel® Core™ i5-9400H (2.9 GHz/6 Core/9M/V-Pro)	Intel® Core™ i7-9750H processor (2.6 GHz/6 Core/12M)	Intel® Core™ i7-9850H vPro processor (2.6 GHz/6 Core/12M/V-Pro)	Intel® Core™ i9-9880H vPro processor (2.3 GHz/8 Core/16M/V-Pro)	Intel® Xeon™ E-2276M v7 vPro processor (2.7 GHz/6 Core/12M/V-Pro)
Integrated Graphics	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics 630	Intel® UHD Graphics P630
# of Cores	6	6	6	8	6
# of Threads	6	12	12	16	12
Processor Base Frequency	2.90 GHz	2.60 GHz	2.60 GHz	2.30 GHz	2.70 GHz
Max Turbo Frequency	4.10 GHz	4.50 GHz	4.60 GHz	4.80 GHz	4.40 GHz
Cache	9 MB	12 MB	12 MB	16 MB	12 MB
TDP	65W	35 - 45 W	35 - 45 W	35 - 45 W	35 - 45 W
Intel ARK Spec Link	<a href="#">Intel Core i5-9400H</a>	<a href="#">Intel Core i7-9750H</a>	<a href="#">Intel Core i7-9850H</a>	<a href="#">Intel Core i9-9880H</a>	<a href="#">Intel Xeon E-2276M</a>

### Display Specifications

Model	FHD	FHD	UHD Non-Touch	OLED with Touch
Resolution	FHD (1920 x 1080)	FHD (1920 x 1080)	4K UHD (3840 x 2160)	4K UHD (3840 x 2160)
Diagonal	15.6"	15.6"	15.6"	15.6"
Aspect Ratio	Ratio 16:9	Ratio 16:9	Ratio 16:9	Ratio 16:9
Backlight	LED	LED	LED	OLED
PPI	FHD : 141	FHD : 141	UHD : 282	UHD : 282
Active Area	FHD : 344.16mm x 193.59mm	FHD : 344.16mm x 193.59mm	UHD : 344.2176mm x 193.6224	UHD : 344.2176mm x 193.6224
Refresh Rate	Max 60Hz	Max 60Hz	Max 60Hz	Max 60Hz
Contrast Ratio	FHD : Typ 700	FHD : Typ 1200	UHD : Typ 1200	UHD : Typ 100000
Viewing Angle (*1)	FHD: 85/85/85/85 degree	FHD: 85/85/85/85 degree	UHD: 85/85/85/85 degree	UHD: 85/85/85/85 degree
Color gamut	FHD 100% sRGB	FHD 100% sRGB	UHD 100%	UHD 100% DCI

Color gamut	FHD: 100% sRGB	FHD: 100% sRGB	UHD: 100% Adobe	UHD: 100% DCI-P3
Brightness	300 nits FHD w/o touch	500 nits for FHD w/o touch HDR400	500 nits w/o touch HDR400	400 cd/m2 (Peak 540 cd/m2 10% area) HDR500
Contrast	FHD: 700:1	FHD: 1200:1	UHD: 1200:1	UHD: 100,000:1
Color Depth	FHD: 16M (RGB 6-bit + FRC)	FHD: Native 1B (RGB 6-bit + FRC)	UHD: Native 1B (RGB 8-bit data driver)	UHD: Native 1B (RGB 8-bit + FRC)
Interface	FHD: eDP 1.2	FHD: eDP 1.4	UHD: eDP 1.3	UHD: eDP 1.4
Panel ID Recognition	EDID in BIOS Table	EDID in BIOS Table	EDID in BIOS Table	EDID in BIOS Table
Weight	FHD: 304g	FHD: 305g	UHD: 300g	UHD: 200g
Color Calibrator	None	None	X-Rite Pantone Color Calibration	X-Rite Pantone Color Calibration
Panel Technology	IPS, Anti-Glare	IPS, Anti-Glare	IPS, Anti-Glare	OLED, Anti-Reflection / Anti-Smudge
Touch Panel	None	None	None	10-Finger Touch Panel with Pen Controller, Wacom. Pen Tilt support.

## HDD Specifications

2.5" SATA Hard Disk Drive (HDD)	Yes
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## HDD Storage Device Specifications

Connector	SATA
Transfer Rate (Gb/sec)	6.0Gb/s

## HDD Performance

Spindle Speed(RPM)	5400RPM&7200RPM
Power off to Spindle Stop(sec)	10 max
DC Power to Drive Ready(sec)	No Power to ATA Command Accept(seconds) 500G/1TB(1 Platter) - 3 2TB(2 Platter) - 4
Receipt of Start Unit Command to Drive Ready(sec)	Standby to Ready(seconds) 3 Max Unloaded to Ready(seconds) 1 Max

Average Latency(msec)	10 Max
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## HDD Power Management

Input (VDC)	12V
Typical (Watts)	5400-> 5.0, 7200-> 5.5 (Spind up)(Max)
Idle (Watts)	5400-> 1.1, 7200-> 1.3 (Typcial)

## HDD Dimensions

Height (mm - Max)	7.0 +/- 0.2
Width (mm)	69.85 +/- 0.25
Depth (mm - Max)	100.2 +/- 0.25
Weight (grams)	5400rpm - 95 Max 7200rpm - 95 Max

## HDD Temperature

Operating(C) Ambient	0 to 55
Operating(C) Base Casting	Surface Temperature (disk enclosure side): 60C for 5400RPM 63C for 7200RPM Surface Temperature (card side of device): 63C
Non-Operating(C) Ambient	-40 to 65
Gradient(C per Hour)	20 max

## HDD Shock

Operating(Gs @ 2ms)	350
Non-Operating(Gs @ 2ms)	N/A (1000G/1ms)

## SSD Specifications

2.5" SATA Solid State Drive (SSD)	N/A
M.2 (NGFF) PCIe Solid State Drive (SSD)	2x M.2 2280 PCIe & SATA

2.5" PCIe Solid State Drive (SSD)	N/A
Intel Optane Storage Technology	N/A

## Solid State Storage Devices

Supported Types	M.2
Dimensions inches/centimeters (W x D x H)	22.0 (+-0.15) x 80.0 (+-0.15) x 2.3 (max)
Size	M.2 2280
Interface Type	PCIe NVMe
Read/Write IOPS Specifications	Read: 250K (512GB/1TB/2TB), 200K (256GB) Write: 240K (512GB/1TB/2TB), 190K (256GB) IOPS, 4K Random, 32 q depth, 4 threads
Bandwidth Performance	PCIe Gen3x4 (8Gb/S)
Power Consumption (Max)	5.0W
Active(AVG)	5.0W (Sequential read)
Idle	5mW (Low power state)
Min MTBF	2,000,000 (h)
Min Sequential Read	3000MB/s (512GB/1TB/2TB), 2900MB/s (256GB)
Min Sequential Write	1600MB/s (512GB/1TB/2TB), 900MB/s (256GB)
Hardware Encryption	Yes

## Discrete Graphics Adapter

GPU Name	Quadro T1000	Quadro T2000	Quadro RTX3000	Quadro RTX4000	Quadro RTX5000
CUDA Processing Cores	768	1024	2304	2560	3072
GPU Memory	4GB	4GB	6GB	8GB	16GB
Memory Bandwidth	128GBps	128GBps	336GBps	448GBps	448GBps
Memory Type	GDDR5	GDDR5	GDDR6	GDDR6	GDDR6
Memory Interface	128-bit	128-bit	192-bit	256-bit	256-bit
TGP Max Power Consumption	50W	60W	80W	80W	80W
Display Port	1.4	1.4	1.4	1.4	1.4
OpenGL	4.6	4.6	4.6	4.6	4.6
Shader Model	5.1	5.1	5.1	5.1	5.1
DirectX	12.1	12.1	12.1	12.1	12.1
PCIe Generation	3	3	3	3	3
Floating-Point Performance	2.6	3.5	6.4	8	9.4

VR Ready	Not Available	Not Available	Yes	Yes	Yes
Simultaneous Multi-Projection	Yes	Yes	Yes	Yes	Yes
NVIDIA FXAA/TXAA Antialiasing	Yes	Yes	Yes	Yes	Yes
NVIDIA nView Display Management Technology	Yes	Yes	Yes	Yes	Yes
GPU Direct for Video	Not Available	Yes	Yes	Yes	Yes
Vulkan Support	Yes	Yes	Yes	Yes	Yes
NVIDIA Optimus	Yes	Yes	Yes	Yes	Yes

## WLAN

Model	Intel® Wi-Fi 6 AX200 (Gig+)
Antenna Diversity	Supported
MIMO	Supported
Radio ON/OFF Control	Supported
Connector interface	M.2 CNVio
Operating Temperature (Adapter Shield)	0c to +80c
Humidity Non-Operating	50%~90% Rh non condensing (at temperatures of 25c to 35c)
Operating Systems	Microsoft Windows 10*, Linux*(limited feature support), Chrome*
Wi-Fi Alliance	Wi-Fi CERTIFIED* a/b/g/n/ac/ax with wave 2 features, WMM*, WMM-PS*, WPA*, WPA2*, WPS2*, Protected Management Frames, Wi-Fi Miracast* as Source, and Wi-Fi Direct (For Microsoft Windows* only)
IEEE WLAN Standard	IEEE 802.11a/b/g/n/ac/ax, 802.11d,802.11e, 802.11h, 802.11i, 802.11w, 802.11r, 802.11k, 802.11v, pending OS support; Fine Timing Measurement based on 802.11-2016
Roaming	Support seamless roaming between access points
Bluetooth*	BT5.1
Regulatory	All compliance
US Government	FIPS12, FISMA
Product Safety	UL,C-UL,CB (IEC 60950-1)

## Battery

Dimension	L: 74.95mm*W: 204.5mm*T 13.66mm
Weight	MAX 410g
Type (Chemistry and Cell)	Li-Polymer (3S2P), 6-cell
Voltage	11.25V
Battery Life	On Charge Time (0- 100%) * 120 min

	Off Charge Time (0 - 80%) ** 58 min Off Charge Time (0 - 100%) ** 118 min
Battery Capacity	90Wh
Charging Time	No Quick charge capability On Charge Time (0- 100%) * 131min Off Charge Time (0 - 80%) ** 65 min Off Charge Time (0 - 100%) ** 125 min
Operating Temperature Range	between 10°C (50°F) and 35°C (95°F)
Warranty	1 Year/ 3 Year SB10K97665 need new cell longevity test, plan finish 2019/07/17.
Coin Cell Battery (Model)	CR2032-J056(MHLF)

## SECTION IV: BIOS / Certifications / Standards / Environmental

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### BIOS Specifications

WMI Support	Yes, if it is BIOS Setup change by WMI.
ROM-Based Setup Utility (F1)	Yes
Replicated Setup	Yes, it supported with SRSETUP tool.
Boot Control	Yes, it means Boot order change.
Discrete Mode	Yes
Asset Tag	Yes
Remote Wakeup/Remote Shutdown	Yes, if Remote wakeup is Wake on LAN from S4/S5. I don't know the Remote shutdown situation.
Per-port Control	Yes, if it is I/O port enable/disable by BIOS Setup.
Adaptive Cooling	Yes, if it is thermal & fan control.
Security	Yes, BIOS password / Hard disk password / Finger print
Intel(R) AMT (includes ASF 2.0)	Yes. If you select vPro model
Intel(R) TXT	Yes. If you select vPro model

### EMC & Safety

EMC	Published, Certified Existing Reports EMC - Australia EMC - Belarus EMC - Canada EMC - China
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	<p>EMC – EU/EFTA  EMC – Japan  EMC – Kazakhstan  EMC – New Zealand  EMC – Russia  EMC – South Korea  EMC – Taiwan  EMC – USA/Territories  Not Applicable / Not Required  EMC – Israel  EMC – Moldova  EMC – Serbia  EMC – Turkey  EMC – Uzbekistan  EMC – Vietnam</p>
Safety	<p>To access the latest User Guide and Safety and Warranty Guide, go to:  <a href="https://support.lenovo.com">https://support.lenovo.com</a>  Low Halogen Declaration of Conformance  TNOT-2017-0040  Section 9 – Low Halogen Scorecard  Izod Test – EPEAT Compliant  Homologation PCR B Compliant  In the following countries: Albania, Algeria, Andorra, Angola, Antigua and Barbuda, Argentina, Armenia, Aruba, Australia, Azerbaijan, Bahamas, Bahrain, Bangladesh, Barbados, Belarus, Belize, Benin, Bermuda, Bolivia, Botswana, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Cayman Islands, Central African Republic, Chad, China, Colombia, Comoros, Congo, Costa Rica, Djibouti, Dominican Republic, Egypt, El Salvador, Eritrea, Ethiopia, EU/EFTA, Fiji, Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Haiti, Honduras, Hong Kong, India, Indonesia, Israel, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kuwait, Laos, Lebanon, Liberia, Macau, Madagascar, Malawi, Malaysia, Mali, Mauritania, Mauritius, Mexico, Moldova, Mongolia, Morocco, Mozambique, Namibia, Nepal, New Zealand, Nicaragua, Niger, Nigeria, Oman, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Qatar, Russia, Saudi Arabia, Senegal, Serbia, Seychelles, Sierra Leone, Singapore, South Africa, South Korea, Sri Lanka, Swaziland, Taiwan, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Turkey, Turkmenistan, Uganda, Ukraine, United Arab Emirates, Uruguay, USA/Territories, Uzbekistan, Venezuela, Vietnam, Zambia, Zimbabwe, Brazil – Inmetro 170 Govt Bids, Guinea-Bissau, Lesotho</p>

## Environmentals

Energy Star	<p>ENERGY STAR® Version 7.1  For more information about ENERGY STAR, go to:  <a href="https://www.energystar.gov">https://www.energystar.gov</a></p>
EPEAT	EPEAT Certification Available on select models
IT ECO declaration	<p>The latest environmental information about Lenovo products is available at:  <a href="https://www.lenovo.com/ecodeclaration">https://www.lenovo.com/ecodeclaration</a></p>
Hazardous Substances	<p>The latest environmental information about Lenovo products is available at:  <a href="https://www.lenovo.com/ecodeclaration">https://www.lenovo.com/ecodeclaration</a>  European Union RoHS  This Lenovo product, with included parts (cables, cords, and so on) meets the requirements of Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (“RoHS recast” or “RoHS 2”).  For more information about Lenovo worldwide compliance on RoHS, go to:  <a href="https://www.lenovo.com/rohs-communication">https://www.lenovo.com/rohs-communication</a></p>

# Manageability

Industry Standard Specifications	This product meets the following industry standard specifications for manageability functionality:
Remote Manageability Software Solutions	Lenovo ThinkManagement Console Microsoft System Center Configuration Manager LANDesk Management Suite for Lenovo Vantage Technologies ( <a href="http://www.landesk.com/lenovo">www.landesk.com/lenovo</a> )
System Software Manager	Lenovo ThinkStation supports software management tools from the ThinkVantage System Update suite: System Update Update Retriever
Service, Support, and Warranty	On-site Warranty and Service: Three-years, limited warranty and service offering delivers on-site, next business-day service for parts and labor and includes free telephone support 8am to 5pm. Global coverage ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering.