ThinkPad W540 Platform Specifications

Positioning
Mobile workstation; two spindles

Processor
4th Generation Intel® Core™ i5 / i7 / i7 Extreme Processor

Processor Number	# of Cores	# of Threads	Base Frequency	Max Turbo Frequency	Cache	Memory Speed	Processor Graphics
i5-4200M	2	4	2.5 GHz	3.1 GHz	3MB	DDR3L-1600	Intel HD Graphics 4600
i5-4210M			2.6 GHz	3.2 GHz	3MB		
i5-4330M			2.8 GHz	3.5 GHz	3MB		
i7-4600M			2.9 GHz	3.6 GHz	4MB		
i7-4700MQ	4	8	2.4 GHz	3.4 GHz	6MB		
i7-4710MQ			2.5 GHz	3.5 GHz	6MB		
i7-4800MQ			2.7 GHz	3.7 GHz	6MB		
i7-4810MQ			2.8 GHz	3.8 GHz	6MB		
i7-4900MQ			2.8 GHz	3.8 GHz	8MB		
i7-4910MQ			2.9 GHz	3.9 GHz	8MB		
i7-4930MX			3 GHz	3.9 GHz	8MB		

Memory
dual-core model: 16GB max[7], two 204-pin SO-DIMM sockets
quad-core model: 32GB max, four 204-pin SO-DIMM sockets, only 4+4, 8+8, 4+4+4+4, and 8+8+8+8 combinations supported
All: PC3-12800 1600MHz DDR3L, non-parity, dual-channel capable

Optical *(optional)*
DVD burner, 9.5mm Ultrabay slim, removable

Ultrabay
One modular bay for removable devices (right side, cold swap), 9.5mm high, bottom access

Storage
Some: Solid State Drive (SSD) / SATA 6.0Gb/s, 2.5" wide, 7mm high
Some: Hard Disk Drive (HDD) / SATA 6.0Gb/s, 2.5" wide, 7mm or 9.5mm high, Active Protection System™
All: removable, upgradable, supports the second disk, Shock Mounted

M.2 SSD
Some: M.2 Solid State Drive (SSD), via M.2 card slot, exclusive with WWAN card

Widescreen display
Some: **15.6"** (396mm) **FHD (1920x1080)**, anti-glare, LED backlight, 300 nits, 16:9 aspect ratio, 500:1 contrast ratio
Some: **15.5"** (394mm) **3K (2880x1620)**, anti-glare, LED backlight, 350 nits, 16:9 aspect ratio, 1000:1 contrast ratio, **IPS**

Multi-touch
None

Color calibration
Optional: Pantone® color calibrator by X-Rite® color calibration sensor in palm rest, LED indicator

Camera *(optional)*
HD720p resolution, wide view angle, low light sensitive, face tracking, fixed focus

Graphics
NVIDIA® Optimus™ technology, auto-switch between discrete and integrated graphics, **Intel HD Graphics 4600** in processor, and **NVIDIA Quadro® K1100M** or **K2100M**, PCI Express® x16, **2GB** memory, supports external analog monitor via VGA and digital monitor via Mini DisplayPort / Thunderbolt™; supports three independent displays;
Max external resolution: 3840x2160@60Hz (DisplayPort via MiniDP cable); 3840x2160@60Hz (Thunderbolt); 1920x1200@60Hz (VGA)

Keyboard
6-row, spill-resistant, multimedia Fn keys, numeric keypad, optional LED backlight

UltraNav™
TrackPoint® pointing device and Mylar surface touchpad, integrated five buttons, multi-touch

ThinkLight™
None

Dimensions[3]
15.6W" (WxDxH): 14.83" x 9.77" x 1.10-1.16"; 376.6mm x 248.1mm x 27.9-29.5mm

Weight[2]
6-cell: starting at 5.57 lb (2.53kg); *9-cell:* starting at 5.95 lb (2.70kg)

Case material
Glass-Fiber Reinforced Plastic

Battery type
Li-Ion 6-cell *(56Wh)* or 9-cell *(99.9Wh)*, HW Authentication

Max battery life[10]
6-cell: up to 6.2 hr; *9-cell:* up to 11.1 hr

AC adapter
dual-core: 135-watt AC adapter; *quad-core:* 170-watt AC adapter

Chipset
Mobile Intel QM87 Express Chipset

ExpressCard
One slot (ExpressCard/34)

Smart card reader
Optional: Smart card reader

Media reader
4-in-1 reader (MMC, SD, SDHC, SDXC), supports UHS-II SD card

Ports
Two USB 3.0, two USB 2.0 (one Always On), VGA, Mini DisplayPort / Thunderbolt, Ethernet (RJ-45), Dock connector

Audio support
HD Audio, Realtek® ALC3232 codec, Dolby® Home Theater® v4 / stereo speakers, 1W x 2 / dual array microphone, combo audio/microphone jack

WLAN[4]
One of the following, configurable by model:
- ThinkPad 11b/g/n, 2x2, Wi-Fi + Bluetooth combo adapter, M.2 card
- Intel Wireless-N 7260, 2x2, Wi-Fi + BT combo adapter, M.2 card
- Intel Dual Band Wireless-N 7260, 2x2, Wi-Fi + BT combo adapter, M.2 card
- Intel Dual Band Wireless-AC 7260, 2x2, Wi-Fi + BT combo adapter, M.2 card

WWAN *(optional)*
One of the following, configurable by model (mutually exclusive with M.2 SSD):
- Wireless WAN upgradable
- Wireless WAN, Sierra Wireless EM7355, Qualcomm® Gobi™ 4G LTE/ HSPA+/EVDO/GSM/GPRS/EDGE, GPS, M.2 card (US models)
- Wireless WAN, Ericsson® N5321, HSPA+ 21Mbps/GSM/GPRS/EDGE, GPS, M.2 card (WE models)
- Wireless WAN, Sierra Wireless EM7345, Intel 4G LTE/HSPA/GSM/GPRS/EDGE, GPS, M.2 card (WE models)

SIM card *(optional)*
One of the following, configurable by model:
- AT&T® or Verizon® LTE (4G), contract required with service provider (US models)
- Lenovo SIM, out-of-box service, pay-as-you-go via credit card, no contract required (WE models)
- User selectable, contract required with service provider

Bluetooth™
Bluetooth 4.0 wireless, integrated in Wi-Fi + Bluetooth combo adapter

Ethernet
Intel Ethernet Connection I217-LM (Clarkville)

NFC
Optional: Near Field Communication

Security
Power-on password, hard disk password, supervisor password, security keyhole

Security chip
Trusted Platform Module, TCG 1.2-compliant

vPro *(optional)*
Intel vPro Technology

Fingerprint reader
Optional: Fingerprint reader on the palm rest, swipe sensor

Limited warranty[12]
One of the following, configurable by model:
- 1-year depot repair service
- 3-year/1-yr battery depot repair service
- 3-year/1-yr battery limited onsite service[24]
- 3-year/1-yr battery limited onsite service, IWS (International Warranty Service[17])

Preload

Windows® 7 Professional 64 preinstalled through downgrade rights in Windows 8 / 8.1 Pro 64-bit
- Lenovo Solution Center
- ThinkVantage Product Recovery
- Rescue and Recovery™
- ThinkVantage System Update
- Lenovo Cloud Storage by SugarSync
- PC Device Stage
- Adobe® Reader®
- Nitro Pro
- Evernote®
- Skype™
- Microsoft® Office preloaded; purchase a product key to activate
- Norton™ Internet Security (30 days of virus definitions)
- Cyberlink PowerDVD (DVD±RW)
- Cyberlink Power2Go (DVD±RW)
- Cyberlink PowerProducer (DVD±RW)

Some: Windows 8 / 8.1 64-bit
Some: Windows 8 / 8.1 Pro 64-bit
- Lenovo Solution Center
- Lenovo Support
- Lenovo Companion
- ThinkVantage System Update
- Lenovo Reach (Windows 8.1 model)
- Hightail - Metro (Windows 8.1 model)
- Lenovo Cloud Storage by SugarSync - Metro (Windows 8 model)
- Lenovo Cloud Storage by SugarSync (Windows 8 model)
- PC Device Stage
- AccuWeather
- Amazon Kindle
- Nitro Pro
- Evernote
- Skype
- Rara Streaming
- Norton Studio
- Microsoft Office preloaded; purchase a product key to activate
- Norton Internet Security (30 days of virus definitions)
- Cyberlink PowerDVD(DVD±RW)
- Cyberlink Power2Go (DVD±RW)
- Cyberlink PowerProducer (DVD±RW)

For ISV certifications, please visit www.lenovo.com/support/ISV

Environment
EPEAT™ Gold; ENERGY STAR® 6.0; RoHS-compliant

Model	20BG0044++
Product	W540
Region	WE
Machine Type	20BG
TopSeller	TopSeller
Processor	i7-4810MQ (4C, 2.8 / 3.8GHz, 6MB, 1600MHz)
vPro	vPro
Graphics	NVIDIA Quadro K2100M
Memory	8GBx1
Display	15.6" FHD (1920x1080)
Storage	500GB 7200rpm
RAID	No
Optical	DVD±RW
WLAN &Bluetooth	Intel 7260 ac + BT4.0
WWAN / M.2 SSD	WWAN upgradable
SIM Card	None
Smart Card Reader	Smart Card Reader
Camera	720p
Backlit Keyboard	Backlit Keyboard
Numeric Keypad	Numeric Keypad
Fingerprint Reader	Fingerprint Reader
NFC	None
Color Calibrator	X-Rite
Battery Cells	9-cell (99.9Wh)
Power Adapter (watt)	170W
Preload	Windows 8.1 DG Windows 7 Pro 64
Base Warranty	3-year onsite
Global	No
Ann Date (mm/yy)	06/14


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