

Dell Precision 3930 Rack

Technical Guidebook



Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

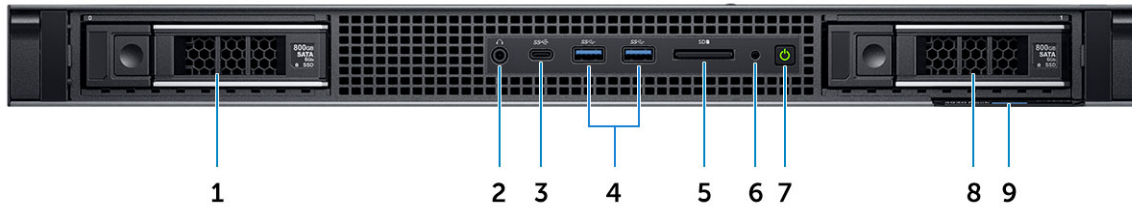
© 2019 Dell Inc. or its subsidiaries. All rights reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.

1 Chassis overview.....	5
Front view.....	5
Back view.....	5
System board layout.....	6
2 Technical specifications.....	7
System information.....	7
Power supply unit.....	7
Processor.....	8
Memory.....	9
Dell Precision 3930 rack memory matrix.....	10
Storage.....	10
Audio.....	11
Video card.....	11
Communication.....	13
PCoIP remote access host cards.....	14
Media card-reader.....	15
System board connectors.....	15
Ports and connectors.....	16
Operating system specifications.....	16
Operating conditions.....	17
Environmental.....	17
3 Engineering specification.....	18
System dimensions - physical.....	18
Audio.....	18
Communications – Integrated Network Card.....	19
Hard drives.....	21
500 GB 2.5-inch 7200 RPM SED FIPS SATA Hard Drive	21
2.5-inch 1 TB 7200 RPM SATA Hard Drive.....	21
2.5-inch 2 TB 5400 RPM SATA Hard Drive.....	22
3.5-inch 500 GB 7200 RPM SATA Hard Drive.....	23
3.5-inch 2 TB 7200 RPM HDD Hard Drive.....	23
3.5-inch 4 TB 7200 RPM SATA Enterprise Hard Drive.....	24
3.5-inch 8 TB 7200 RPM Enterprise SATA Hard Drive.....	24
2.5-inch 256 GB SATA SSD Class 20.....	25
2.5-inch 512 GB SATA SSD Class 20.....	25
2.5-inch 1 TB SATA SSD Classs 20.....	26
256 GB M.2 NVMe PCIe SED SSD Class 40.....	26
512 GB M.2 NVMe PCIe SED SSD Class 40.....	27
512 GB M.2 NVMe PCIe SSD Class 50.....	27
1 TB M.2 NVMe PCIe SSD Class 50.....	28
2 TB M.2 NVMe PCIe SSD Class 40.....	28

M.2 Intel Optane Memory 32 GB.....	29
HDD Storage Matrix.....	30
M.2 Storage Matrix.....	33
Graphics options.....	33
NVIDIA Quadro P400.....	33
NVIDIA Quadro P620.....	34
NVIDIA Quadro P1000.....	35
NVIDIA Quadro P2000.....	35
NVIDIA Quadro P4000.....	36
NVIDIA Quadro P5000.....	36
NVIDIA Quadro P6000.....	37
NVIDIA RTX4000.....	38
NVIDIA RTX5000.....	38
NVIDIA RTX6000.....	39
NVIDIA GTX 1080.....	40
NVIDIA RTX2080B.....	40
AMD WX3200.....	41
RadeonPro WX4100.....	41
Slot_Matix_Zuma_P.....	42
Chassis enclosure and ventilation requirements.....	42
3930 Rack common accessories.....	43
Cables Dongles Adapters.....	43
Expansion Cards.....	43
External Storage.....	44
Input devices.....	44
Stands and mounts.....	44
Monitor.....	44
4 Getting help.....	46
Contacting Dell.....	46

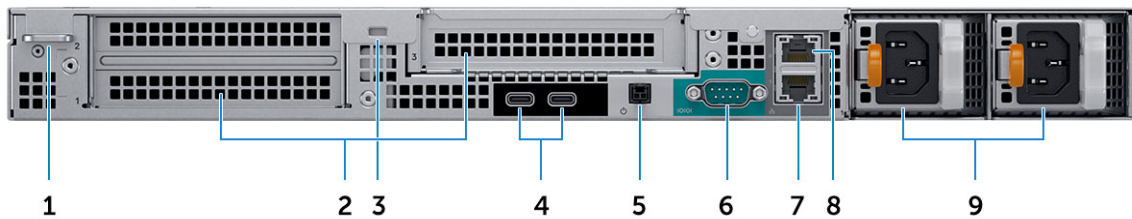
Chassis overview

Front view



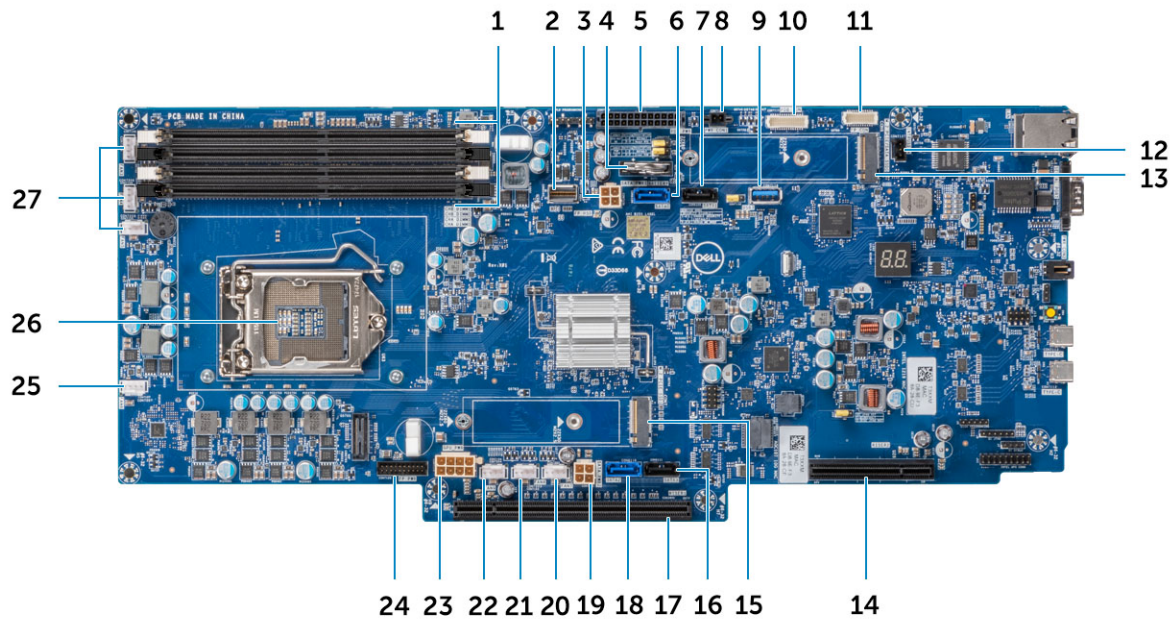
- | | | | |
|---|--------------------------|---|--------------------------|
| 1 | Hard drive slot 0 | 2 | Audio port |
| 3 | USB Type-C 3.1 Gen2 port | 4 | USB Type-A 3.1 Gen1 port |
| 5 | SD card reader slot | 6 | Drive activity light |
| 7 | Power button | 8 | Hard drive slot 1 |
| 9 | Service tag | | |

Back view



- | | | | |
|---|---------------------|---|--|
| 1 | Padlock ring | 2 | Expansion card slots |
| 3 | Security cable slot | 4 | USB Type-C 3.1 Gen2 (with UMA video support) |
| 5 | Remote power switch | 6 | Serial port |
| 7 | 10 GB Network port | 8 | 1 GB Network port |
| 9 | Power supply units | | |

System board layout



- | | | | |
|----|--|----|------------------------------------|
| 1 | Memory Slots | 2 | Front panel HSD |
| 3 | Left SATA power connector | 4 | Coin cell battery |
| 5 | Power distribution board power connector | 6 | SATA 0 connector |
| 7 | SATA 1 connector | 8 | Power connector 1 |
| 9 | USB Type-A 3.1 Gen1 | 10 | Power distribution board connector |
| 11 | Front panel connector | 12 | Intrusion switch connector |
| 13 | M.2 PCIe connector (SSD0) | 14 | PCIe slot |
| 15 | M.2 PCIe connector (SSD1) | 16 | SATA 3 connector |
| 17 | PCIe slot | 18 | SATA 2 connector |
| 19 | Right SATA power connector 2 | 20 | Fan 7 power connector |
| 21 | Fan 8 power connector | 22 | Fan 9 power connector |
| 23 | GPU power connector | 24 | Front panel power connector |
| 25 | Fan 6 power connector | 26 | Processor |
| 27 | Fan 5/4/3 power connector | | |

Technical specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

System information

Table 1. System information

Feature	Specification
Chipset	Intel C246 chipset
DRAM bus width	64-bit
FLASH EPROM	SPI 256 MB
PCIe bus	100 MHz
External bus frequency	DMI 3.0-8GT/s

Power supply unit

This topic lists the power supply units information.

Table 2. 550 Watts

Feature	Specifications
Power Supply Wattage	550 W (Dual PSUs provide redundancy not increased power)
AC input Voltage Range	100–240 VAC
AC input current (low AC range/high AC range)	7.4 A / 3.7 A
AC input Frequency	50 HZ / 60 HZ.

Table 3. 3.0 V CMOS Battery

Brand	Type	Voltage	Composition	Life
PANASONIC	CR-2302L/BN	3 V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0 V End-Voltage: 1000 hours or longer
Varta	6032-101-501	3V	Lithium Manganese Dioxide	Continuous Discharge Under 15 kΩ Load to 2.0V End-Voltage: 1000 hours or longer

Brand	Type	Voltage	Composition	Life
Duracell	DL2032	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.0 V End-Voltage: 1000 hours or longer
			Manganese	
			Dioxide	
Maxwell	CR2032	3V	Lithium	Continuous Discharge Under 15 kΩ Load to 2.0 V End-Voltage: 1000 hours or longer
			Manganese	
			Dioxide	

Processor

NOTE: Processor numbers are not a measure of performance. Processor availability is subject to change and may vary by region/country.

Table 4. Processor specifications

Type	UMA Graphics
Intel Xeon E Processor E-2288G (8 Core, 3.7 GHz, 16 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2286G (6 Core, 4.0 GHz, 12 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2278G (8 Core, 3.4 GHz, 16 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2276G (6 Core, 3.8 GHz, 12 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2246G (6 Core, 3.6 GHz, 12 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2236 (6 Core, 3.4 GHz, 12 MB Cache)	Not Supported
Intel Xeon E Processor E-2226G (6 Core, 3.4 GHz, 12 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2224G (4 Core, 3.5 GHz, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2224 (4 Core, 3.4 GHz, 8 MB Cache)	Not Supported
Intel Xeon E Processor E-2186G (6 Core HT 3.8 Ghz, 4.7 GHz Turbo, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2176G (6 Core HT 3.7 Ghz, 4.7 GHz Turbo, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2174G (4 Core HT 3.8 Ghz, 4.7 GHz Turbo, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2146G (6 Core HT 3.5 GHz, 4.5 Ghz Turbo, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2136 (6 Core HT 3.3 Ghz, 4.5 Ghz Turbo, 8 MB Cache)	Not Supported
Intel Xeon E Processor E-2134 (4 Core HT 3.5 Ghz, 4.5 Ghz Turbo, 8 MB Cache)	Not Supported

Type	UMA Graphics
Intel Xeon E Processor E-2124G (4 Core, 3.4 GHz, 4.5 Ghz Turbo, 8 MB Cache)	Integrated Intel UHD P630
Intel Xeon E Processor E-2124 (4 Core 3.4 GHz, 4.5 Ghz Turbo, 8 MB Cache)	Not Supported
Intel Core i3-8100 Processor (4 Core, 3.6 GHz, 6 MB Cache)	Integrated Intel UHD 630
Intel Core i5-8500 Processor (6 Core, 3.0 GHz up to 4.1 GHz Turbo, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i5-8600 Processor (6 Core, 3.1 GHz up to 4.3 GHz Turbo, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i5-8600K Processor (6 Core, 3.6 GHz up to 4.3 GHz Turbo, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i7-8700 Processor (6 Core, 3.2 GHz up to 4.6 GHz Turbo, 12 MB Cache)	Integrated Intel UHD 630
Intel Core i7-8700K Processor (6 Core, 3.7 GHz up to 4.7 GHz Turbo, 12 MB Cache)	Integrated Intel UHD 630
Intel Core i3-9100 Processor (4 Core, 3.6 GHz, 6 MB Cache)	Integrated Intel UHD 630
Intel Core i5-9400 Processor (8 Core, 2.9 GHz, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i5-9500 Processor (6 Core, 3.0 GHz, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i5-9600 Processor (6 Core, 3.1 GHz, 9 MB Cache)	Integrated Intel UHD 630
Intel Core i7-9700 Processor (8 Core, 3.0 GHz, 12 MB Cache)	Integrated Intel UHD 630
Intel Core i7-9700K Processor (8 Core, 3.6 GHz, 12 MB Cache)	Integrated Intel UHD 630
Intel Core i9-9900 Processor (8 Core, 3.1 GHz, 16 MB Cache)	Integrated Intel UHD 630
Intel Core i9-9900K Processor (8 Core, 3.6 GHz, 16 MB Cache)	Integrated Intel UHD 630

Memory

Table 5. Memory specifications

Feature	Specification
Minimum memory configuration	4 GB
Maximum memory configuration	128 GB
Number of slots	4
DIMM type	UDIMM
Maximum memory supported per slot	32 GB
Memory options	4 GB - 1 x 4 GB (Non-ECC)

Feature	Specification
	8 GB - 2 x 4 GB (Non-ECC) 8 GB - 1 x 8 GB (ECC) 16 GB - 2 x 8 GB (Non-ECC) 16 GB - 2 x 8 GB (ECC) 32 GB - 4 x 8 GB (Non-ECC) 32 GB - 4 x 8 GB (ECC) 64 GB - 2 x 32 GB (Non-ECC) 64 GB - 4 x 16 GB (Non-ECC) 64 GB - 4 x 16 GB (ECC) 128 GB - 4 x 32 GB (Non-ECC)
	NOTE: ECC memory is only supported with Xeon E Processor and Core i3 Processor SKUs.
Type	DDR4 UDIMM Non-ECC/ECC memory
Speed	2666 MHz

Dell Precision 3930 rack memory matrix

The Dell Precision 3930 rack memory matrix outlines an order by Channel/DIMM-number in which DIMMs are populated in the memory slots

Main Memory					CHB		CHA		MOD #	CPU
Config	ECC/non-ECC	Total	DPC	Frequency	DIMM1	DIMM0	DIMM1	DIMM0		
2x8GB	ECC	16GB	1	2667		8GB		8GB	4879G	
4x8GB	ECC	32GB	2	2667	8GB	8GB	8GB	8GB	H5JK2	
4x16GB	ECC	64GB	2	2667	16GB	16GB	16GB	16GB	YGNTN	
2x4GB	non-ECC	8GB	1	2667		4GB		4GB	Y5GVC	
2x8GB	non-ECC	16GB	1	2667		8GB		8GB	R3YC2	
4x8GB	non-ECC	32GB	2	2667	8GB	8GB	8GB	8GB	XJRPK	
4x16GB	non-ECC	64GB	2	2667	16GB	16GB	16GB	16GB	3F5PX	
2x32GB	non-ECC	64GB	1	2667		32GB		32GB	983D4	
4x32GB	non-ECC	128GB	2	2667	32GB	32GB	32GB	32GB	983D4	
Population order:					4th	2nd	3rd	1st		

NOTE: To achieve optimized memory performance a single DIMM needs to be populated in both Channels A and Channel B regardless of the DIMM-number. Mixing of memory DIMM sizes is not supported.

Storage

Table 6. Storage specifications

Type	Form factor	Interface	Security option	Capacity
Four 2.5 inches Front load Hard-Disk Drives (HDD)	Approximately (2.76 x 3.959 x 0.276 inches)	Up to 6Gb/s (SATA 3.0)	OPAL /SED FIPS	Up to 8 TB
Two 3.5 inches Front load Hard-Disk Drives (HDD)	Approximately (5.79 x 4 x 1)	Up to 6Gb/s (SATA 3.0)	NA	Up to 16 TB

Type	Form factor	Interface	Security option	Capacity
Two solid state drives (SSD)	M.2 2280	2x PCIe x4 NVMe on the system board (not in a bay), Up to 32 Gbps 2x M.2 PCIe x4 NVMe on Dell Ultraspeed Drive Duo Card (populated in PCIe slot 2 on Riser 1A)	SED/OPAL	Up to 4 TB

NOTE: Your computer will either support two 3.5 inch hard-drives or four 2.5 inch hard-drives, depending on the configuration.

NOTE: Front Load Hard-Disk Drives are not hot swappable.

Audio

Table 7. Audio specifications

Feature	Specification
Controller	Waves MaxxAudio ProSupport
Type	Two-channel high-definition audio
Interface	- Universal audio jack - Stereo headset

Video card

Table 8. Video card specifications

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics 630	UMA	- Intel Core i3 - 8100/9100 - Intel Core i5 - 8600/8500/9400/9500/9600 - Intel Core i7 - 8700/9700/9700K - Intel Core i9 - 9900/9900K	Integrated	Shared system memory	DisplayPort supported through Rear USB Type-C port DP/HDMI/VGA/DVI supported through Rear USB Type-C port	4096 x 2304
Intel UHD Graphics P630	UMA	Intel Xeon G	Integrated	Shared system memory	DP/HDMI/VGA/DVI supported through Rear USB Type-C port	4096 x 2304
NVIDIA Quadro P400	Discrete	N/A	GDDR5	2 GB	eDP/mDP/HDMI/ supported through Rear USB Type-C portType-C	7680 x 4320

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
NVIDIA Quadro P620	Discrete	N/A	GDDR5	2 GB	mDP	2560 x 1600 x 32 bpp at 60 Hz
NVIDIA Quadro P1000	Discrete	N/A	GDDR5	4 GB	mDP	1920 x 1200 x 32 bpp at 60 Hz
NVIDIA Quadro P2000	Discrete	N/A	GDDR5	5 GB	mDP/DisplayPort	5120 x 2880
NVIDIA Quadro P4000	Discrete	N/A	GDDR5	8 GB	mDP/DisplayPort	5120 x 2880
NVIDIA RTX4000	Discrete	N/A	GDDR5	8 GB	DisplayPort / Type-C	Display port • 7680 x 4320 x 24bpp at 120 Hz • 7680 x 4320 x 36bpp at 60 Hz • 5120 x 2880 x 24bpp at 60 Hz USB type-C • 7680 x 4320 x 24bpp at 120 Hz • 7680 x 4320 x 36bpp at 60 Hz • 5120 x 2880 x 24bpp at 60 Hz
NVIDIA Quadro P5000	Discrete	N/A	GDDR5X	16 GB	mDP/DisplayPort	5120 x 2880
NVIDIA RTX5000	Discrete	N/A	GDDR6	16 GB	DisplayPort / Type-C	Display port • 7680 x 4320 x 24bpp at 120 Hz • 7680 x 4320 x 36bpp at 60 Hz • 5120 x 2880 x 24bpp at 60Hz USB type-C • 7680 x 4320 x 24bpp at 120 Hz • 7680 x 4320 x 36bpp at 60 Hz • 5120 x 2880 x 24bpp at 60 Hz
NVIDIA Quadro P6000	Discrete	N/A	GDDR5X	24 GB	mDP/DisplayPort	5120 x 2880
NVIDIA RTX6000	Discrete	N/A	GDDR6	24 GB	DisplayPort / Type-C	Display port • 7680 x 4320 x 24bpp at 120 Hz • 7680 x 4320 x 36bpp at 60 Hz

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
						5120 x 2880 x 24bpp at 60 Hz
						USB type-C
						7680 x 4320 x 24bpp at 120 Hz 7680 x 4320 x 36bpp at 60 Hz 5120 x 2880 x 24bpp at 60 Hz
NVIDIA RTX2080B	Discrete	N/A	GDDR6	8 GB	DisplayPort / HDMI	Single DP 1.4a
						7680 x 4320 (8K) at 60 Hz
						Dual DP 1.4a
						7680 x 4320 (8K) at 120 Hz
AMD WX3200	Discrete	N/A	GDDR5	4 GB	mDP	HDMI 2.0b
						4096x2160 (4K) at 60 Hz
						1 port
						7680 x 4320 at 60 Hz
						2 ports
						5120 x 2880 at 60 Hz
						4 ports
						3840 x 2160 at 60 Hz 1920 x 1080 at 60 Hz
AMD Radeon Pro WX4100	Discrete	N/A	GDDR5	4 GB	mDP/DisplayPort	5120 x 2880

① **NOTE:** Please see the processor specification section for Xeon G SKU.

① **NOTE:** Xeon SKUs with "G" suffix support Intel UHD Graphics.

① **NOTE:** If the graphics card power rating exceeds 75 Watts, then connect the graphics card power cable to the graphics card power connector on the system board. (Dual RTX4000, RTX5000 and RTX6000 will need dual power supply).

Communication

Table 9. Communication specifications

Feature	Specification
Network adapter	Integrated Intel 10/100/1000 Mb/s Ethernet (RJ45)

PCoIP remote access host cards

Table 10. Dell PCIe Quad display PCoIP remote access host card (Full height)

Dell PCIe Quad display PCoIP remote access host card (Full height)

Connector type	RJ45 x 1, mDp x 4
Displays supported	2@ 2560 x 1600 or 4@ 1920 x 1200
Imaging performance	130 Mpps 60 fps
Dongles supplied	mDP to DP x 4
Optional dongle for DMS59 to DVI graphics cards	DVI to mDP
Controller details	
Controller bus architecture (example PCIe 1.0a x 1)	PCIe Gen 1.1 x 1
Data transfer mode (example Bus-Master DMA)	N/A
Integrated memory	Flash Memory: 256 Mbit (parallel fastboot flash) System RAM: 512 MB DDR3 ECC
Power consumption (full operation per data rate connection speed)	13.15 W
Power consumption (standby operation)	N/A
Standards compliance (example 802.1P)	802.1x, Display port
Hardware certifications (example FCC, B, GS mark)	FCC B, UL, CE, VCCI, BSMI, CTICK, KCC
Boot ROM support	No
Operating system driver support in-box or web download - not factory installed	Windows 10 Pro, Red Hat Linux, Ubuntu

Table 11. Dell PCIe Dual display PCoIP remote access host card (Full height)

Dell PCIe Dual display PCoIP remote access host card (Full height)

Connector type	RJ45 x 1, mDp x 4
Displays supported	1@ 2560 x 1600 or 2@ 1920 x 1200
Imaging performance	130 Mpps 60 fps
Dongles supplied	mDP to DP x 2
Optional dongle for DMS59 to DVI graphics cards	DVI to mDP

Dell PCIe Dual display PColP remote access host card (Full height)

Controller details

Controller bus architecture (example PCIe 1.0a x 1)	PCIe Gen 1.1 x 1
Data transfer mode (example Bus-Master DMA)	N/A
Integrated memory	Flash Memory: 256 Mbit (parallel fastboot flash) System RAM: 512 MB DDR3 ECC
Power consumption (full operation per data rate connection speed)	13.15 W
Power consumption (standby operation)	N/A
Standards compliance (example 802.1P)	802.1x, Display port
Hardware certifications (example FCC, B, GS mark)	FCC B, UL, CE, VCCI, BSMI, CTICK, KCC
Boot ROM support	No
Operating system driver support in-box or web download - not factory installed	Windows 10 Pro, Red Hat Linux, Ubuntu

Media card-reader

Table 12. Media card-reader specifications

Feature	Specification
Type	One SD-card slot
Supported cards	• SD • SDHC • SDXC

System board connectors

Table 13. System board connectors

Feature	Specification
M.2 Connectors	Two (2280 Key-M)
Serial ATA (SATA) connector	Four
Riser 1A	
PCIe X16 slot	Slot 1 (bottom): Full Height Double width PClex16 Gen 3 or Single Width PClex8 Gen 3
PCIe X8 slot	Slot 2 (top): Full Height Single Width PClex8 Gen 3
Riser 1B	

Feature	Specification
PCIe-32 bit	Slot 1 (bottom): Full Height PCI 32/33 Slot 2 (top): Full Height PCI 32/33
Riser 2	
PCIe X4 slot	Fixed Riser for Slot 3 (on all chassis): Full Height Single Width PCIeX4 Gen 3

Ports and connectors

Table 14. Front ports and connectors

Feature	Specification
Memory card reader	SD 4.0 memory card reader
USB	- One USB 3.1 Gen2 Type-C port - Two USB 3.1 Gen 1 Type-A ports
Audio	Universal audio jack.

Table 15. Rear ports and connectors

Feature	Specification
USB	Two USB 3.1 Gen2 Type-C ports (with UMA video support)
Network adapter	- One 1 Gb RJ45 - One 10 Gb RJ45
Serial port	One serial port

Operating system specifications

Table 16. Operating system specifications

Feature	Specification
Operating systems supported	- Windows 10 Pro for Workstations (up to 4 cores) - Windows 10 Pro for Workstations (4 cores plus) - Windows 10 Pro Standard

NOTE: Red Hat Enterprise Linux and Ubuntu 16.04 will be released Post-RTS.

NOTE: Windows 10 Home Plus/Advanced factory installed support is Post-RTS.

Operating conditions

For information on Product Safety, EMC and Environmental data sheets http://www.dell.com/content/topics/global.aspx/about_dell/values/regulatory_compliance/dec_conform?c=us&cs=04&l=en&s=bsd&redirect=1

Table 17. Operating conditions

Test	Condition
Temperature range	- Operating: 10–35°C (50°F–95°F) for all system configurations. - Operating: 10–45°C (50°F–113°F) for specific system configurations (<=80W processors, SSDs and Enterprise HDDs, GPU=Nvidia Quadro P400, P2000, P4000). - Storage: -40°C to 65°C (-40°F to 149°F).
Relative humidity	- Operating: 10% to 85% (Max dew point temperature = 40°C) (noncondensing). - Storage: 10% to 90% (Max dew point temperature = 60°C) (noncondensing).
Airborne contaminant level	G1 as defined by ISA-S71.04-1985.
Vibration	(maximum)*: operating=0.26 GRMS; Storage=2.0 GRMS.
Shock	(maximum): operating=10 G†; Storage=71 G‡.

NOTE:

*Measured using a random vibration spectrum that simulates user environment. † Measured using a 2-microsecond half-sine pulse when the hard drive is in use.

‡ Measured using a 2-microsecond half-sine pulse when the hard drive head is in parked position.

Environmental

Table 18. Environmental

Recyclable packaging	No
MultiPack packaging	No
Energy Efficient Power Supply	80+ Platinum Standard

Engineering specification

System dimensions - physical

NOTE: System Weight and Shipping Weight are based on a typical configuration and may vary based on personal computer configuration. A typical configuration includes: Integrated graphics, two hard drives.

Table 19. System dimensions (Physical)

	Tower
Chassis Weight (lb/kg)	27.38 / 12.42
Chassis Dimensions (H x W x D)	
Height (inch/cm)	1.68 / 4.28
Width (inch/cm)	18.97 / 48.2
Depth (inch/cm)	22.73 / 57.75
	23.19 / 58.91 (With Bezel)
Shipping Weight (lb/kg – includes packaging materials)	42.63 / 19.34
Packaging Dimensions (H x W x D)	
Height (inch/cm)	8.38 / 21.3
Width (inch/cm)	23.42 / 59.5
Depth (inch/cm)	31.61 / 80.3

Audio

Table 20. Audio

Integrated Realtek ALC3234 High Definition Audio	NA
High Definition Stereo Support	NA
Number of channels	2
Number of Bits / Audio resolution	16, 20 and 24-bit resolution
Sampling rate (recording / playback)	Support 44.1K/48K/96K/192 kHz sample rates
Signal to Noise Ratio	95 dB DAC outputs, 88 dB for ADC inputs

Analog Audio	NA
Audio Jack Impedance	
Microphone	40K ohm~60K ohm
Line-in	40K ohm~60K ohm
Line-out	100~150 ohm
Headphone	1~4 ohm
Internal Speaker Power Rating	2.5 Watt (peak) 4 Ohm/ 2 Watt (average) 4 Ohm

Communications – Integrated Network Card

Table 21. Communications – Integrated Network Card

Gigabit1 ethernet LAN 10/100/1000

External Connector Type	RJ45
Data Rates Supported	10/100/1000 Mb/s
Controller Details	
Controller Bus Architecture	PCI Express Base (PCIe*) Specification v1.1 (2.5 GT/s) speed
Integrated Memory	
Data Transfer Mode (example: Bus-Master DMA)	Yes(DMA MODE)
Power Consumption (full operation per data rate connection speed)	542mW (S0 Max)
Power Consumption (standby operation)	169mW(WOL enable)
IEEE Standards Compliance	Fully compliant with: 10 BASE-T IEEE 802.3 specification compliance 100 BASE-TX IEEE 802.3 specification compliance 1000 BASE-T IEEE 802.3 specification compliance Energy Efficient Ethernet (EEE) IEEE 802.3az support [Low Power Idle (LPI) mode] IEEE 802.3u auto-negotiation conformance
Hardware Certifications	N/A
Boot ROM Support	Yes(Include in the BIOS)
Network Transfer Mode	
Network Transfer Rate	10 Mb (full-duplex)
10BASE-T (full-duplex) 20 Mbps	100 Mb (half-duplex)
100BASE-TX (half-duplex) 100 Mbps	100 Mb (full-duplex)
100BASE-TX (full-duplex) 200 Mbps	1000 Mb (full-duplex)

Gigabit1 ethernet LAN 10/100/1000

1000BASE-T (full-duplex) 2000 Mbps

Environmental

Operating Temperature	0° C to 85° C
Operating Humidity	N/A
Operating System Driver Support	Windows 10 64-bit
Manageability	N/A
Management Capabilities Alerting	N/A

Table 22. Communications – Integrated Network Card 10G

Gigabit10 ethernet LAN 10/100/1000

External Connector Type	RJ45
Data Rates Supported	2.5G BASE-T / 5G BASE-T / 10G BASE-T / 100 BASE-TX / 1000BASE-T
Controller Details	
Controller Bus Architecture	PCI Express Base (PCIe*) Specification v1.1 (8.0 GT/s) speed
Integrated Memory	Yes
Data Transfer Mode (example: Bus-Master DMA)	Yes(DMA MODE)
Power Consumption (full operation per data rate connection speed)	5.4W (S0 Max-10Gbps)
Power Consumption (standby operation)	NA
IEEE Standards Compliance	Fully compliant with: 2.5G BASE-T IEEE 802.3 specification compliance 5G BASE-T IEEE 802.3 specification compliance 10G BASE-T IEEE 802.3 specification compliance 100 BASE-TX IEEE 802.3 specification compliance 1000 BASE-T IEEE 802.3 specification compliance Energy Efficient Ethernet (EEE) IEEE MAC Security (MACsec)
Hardware Certifications	N/A
Boot ROM Support	Yes(EEPROM)
Network Transfer Mode	
Network Transfer Rate	10 Mb (full-duplex)
10BASE-T (full-duplex) 20 Mbps	100 Mb (half-duplex)
100BASE-TX (half-duplex) 100 Mbps	100 Mb (full-duplex)
100BASE-TX (full-duplex) 200 Mbps	1000 Mb (full-duplex)
1000BASE-T (full-duplex) 2000 Mbps	

Environmental

Operating Temperature	0° C to 108° C
Operating Humidity	N/A
Operating System Driver Support	Windows 10 64-bit
Manageability	N/A
Management Capabilities Alerting	N/A

Hard drives

500 GB 2.5-inch 7200 RPM SED FIPS SATA Hard Drive

Table 23. 500 GB 2.5-inch 7200 RPM SED FIPS SATA Hard Drive

Capacity (GB)	500 GB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (2.76 in. x 3.96 in. x 0.28 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	976,773,168

Power source

Power consumption (reference only)	Idle 0.7 W, Active 3.10 W
------------------------------------	---------------------------

Environmental Operating Conditions (Non-Condensing)

Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	350 G

Environmental Non-Operating Conditions (Non-Condensing)

Temperature range	-40°C to 65°C
Relative humidity range	5% to 90%

2.5-inch 1 TB 7200 RPM SATA Hard Drive

Table 24. 2.5-inch 1 TB 7200 RPM SATA Hard Drive

Capacity (GB)	1 TB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (2.76 in. x 3.96 in. x 0.38 in.)

Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	976,773,168
Power source	
Power consumption (reference only)	Idle 0.7 W, Active 3.10 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	350 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 90%

2.5-inch 2 TB 5400 RPM SATA Hard Drive

Table 25. 2.5-inch 2 TB 5400 RPM SATA Hard Drive

Capacity (GB)	2 TB HDD 5400 RPM
Dimensions (W x D x H)	Approximately (2.75 in. x 3.937 in. x 0.276 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	3,907,029,168
Power source	
Power consumption (reference only)	Idle 0.7 W, Active 3.60 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	350 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 90%

3.5-inch 500 GB 7200 RPM SATA Hard Drive

Table 26. 3.5-inch 500 GB 7200 RPM SATA Hard Drive

Capacity (GB)	500 GB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (5.79 in. x 4.00 in. x 1.00 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	7,814,037,168
Power source	
Power consumption (reference only)	Idle 5W, Active 10 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	65 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

3.5-inch 2 TB 7200 RPM HDD Hard Drive

Table 27. 3.5-inch 2 TB 7200 RPM HDD Hard Drive

Capacity (GB)	2 TB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (5.79 in. x 4.00 in. x 1.00 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	3,907,029,168
Power source	
Power consumption (reference only)	Idle 5W, Active 10 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	5°C to 60°C

Relative humidity range	5% to 90%
Op shock (@ 2ms)	65 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 90%

3.5-inch 4 TB 7200 RPM SATA Enterprise Hard Drive

Table 28. 3.5-inch 4 TB 7200 RPM SATA Enterprise Hard Drive

Capacity (GB)	4 TB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (5.79 in. x 4.00 in. x 1.00 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours
Logical blocks	7,814,037,168

Power source

Power consumption (reference only)	Idle 5W, Active 10 W
------------------------------------	----------------------

Environmental Operating Conditions (Non-Condensing)

Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	65 G

Environmental Non-Operating Conditions (Non-Condensing)

Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

3.5-inch 8 TB 7200 RPM Enterprise SATA Hard Drive

Table 29. 3.5-inch 8 TB 7200 RPM Enterprise SATA Hard Drive

Capacity (GB)	8 TB HDD 7200 RPM
Dimensions (W x D x H)	Approximately (5.79 in. x 4.00 in. x 1.00 in.)
Interface type and maximum speed	Up to 6 Gb/s (SATA 3.0)
MTBF	550,000 hours

Logical blocks	15,628,074,336
Power source	
Power consumption (reference only)	Idle 5 W, Active 10 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	5°C to 60°C
Relative humidity range	5% to 90%
Op shock (@ 2ms)	65 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 65°C
Relative humidity range	5% to 95%

2.5-inch 256 GB SATA SSD Class 20

Table 30. 2.5-inch 256 GB SATA SSD Class 20

Capacity (GB)	256 GB SSD 7200 RPM
Dimensions (W x D x H)	Approximately (2.75 in. x 3.94 in. x 0.374 in.)
Interface type and maximum speed	Up to 6Gb/s (SATA 3.0)
Internal buffer size	12 MB
Rotational Speed	N/A

2.5-inch 512 GB SATA SSD Class 20

Table 31. 2.5-inch 512 GB SATA SSD Class 20

Capacity (GB)	512 GB SSD 7200 RPM
Dimensions (W x D x H)	Approximately (2.75 in. x 3.94 in. x 0.374 in.)
Interface type and maximum speed	Up to 6Gb/s (SATA 3.0)
Internal buffer size	12 MB
Rotational Speed	N/A

2.5-inch 1 TB SATA SSD Classs 20

Table 32. 2.5-inch 1 TB SATA SSD Class 20

Capacity (GB)	1 TB SSD 7200 RPM
Dimensions (W x D x H)	Approximately (2.75 in. x 3.94 in. x 0.374 in.)
Interface type and maximum speed	Up to 6Gb/s (SATA 3.0)
Internal buffer size	12 MB
Rotational Speed	N/A

256 GB M.2 NVMe PCIe SED SSD Class 40

Table 33. 256 GB M.2 NVMe PCIe SED SSD Class 40

Capacity (GB)	256 GB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 8 Gb/s (up to 4 lanes)
MTBF	800 K hours
Logical blocks	500,118,192
Power source	
Power consumption (reference only)	Idle 1.7 W, Active 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock (@ 2ms)	1000 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

512 GB M.2 NVMe PCIe SED SSD Class 40

Table 34. 512 GB M.2 NVMe PCIe SED SSD Class 40

Capacity (GB)	512 GB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 8Gb/s (up to 4 lanes)
MTBF	1.5 Million hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	Idle 600 mW, Active 5 mW
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	5% to 95%
Op shock (@ 2ms)	1500G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 85°C
Relative humidity range	5% to 95%

512 GB M.2 NVMe PCIe SSD Class 50

Table 35. 512 GB M.2 NVMe PCIe SSD Class 50

Capacity (GB)	512 GB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 8 Gb/s (up to 4 lanes)
MTBF	1.5 Million hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	Idle 600 mW, Active 5 mW
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C

Relative humidity range	5% to 95%
Op shock (@ 2ms)	1500 G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 85°C
Relative humidity range	5% to 95%

1 TB M.2 NVMe PCIe SSD Class 50

Table 36. 1 TB M.2 NVMe PCIe SSD Class 50

Capacity (GB)	1 TB
Dimensions (W x D x H)	Approximately (22 in. x 42 in. x 3.65 in.)
Interface type and maximum speed	PCIe Gen3 8Gb/s (up to 4 lanes)
MTBF	1.5 Million Hours
Logical blocks	2,000,430,432

Power source

Power consumption (reference only)	Idle 600 mW, Active 5 mW
------------------------------------	--------------------------

Environmental Operating Conditions (Non-Condensing)

Temperature range	0°C to 70°C
Relative humidity range	5% to 95%
Op shock (@ 2ms)	1500G

Environmental Non-Operating Conditions (Non-Condensing)

Temperature range	-40°C to 85°C
Relative humidity range	5% to 95%

2 TB M.2 NVMe PCIe SSD Class 40

Table 37. 2 TB M.2 NVMe PCIe SSD Class 40

Capacity (GB)	2 TB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 8 Gb/s (up to 4 lanes)
MTBF	800K hours

Logical blocks	2,000,409,264
Power source	
Power consumption (reference only)	Idle 1.7 W, Active 4.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock (@ 2ms)	1000G
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 Intel Optane Memory 32 GB

Table 38. M.2 Intel Optane Memory 32 GB

Capacity (GB)	32 GB
Dimensions (W x D x H)	Approximately (22.00 in. x 80.00 in. x 2.38 in.)
Interface type and maximum speed	PCIe Gen3 8 Gb/s (up to 4 lanes)
MTBF	1.6 M hours
Logical blocks	57,149,440
Power source	
Power consumption (reference only)	Deep Sleep/L1.2: 8 mW , Active 3.5 W
Environmental Operating Conditions (Non-Condensing)	
Temperature range	0°C to 70°C
Relative humidity range	5% to 95%
Op shock (@ 2ms)	1000 G/0.5 ms
Environmental Non-Operating Conditions (Non-Condensing)	
Temperature range	-10°C to 85°C
Relative humidity range	5% to 95%

HDD Storage Matrix

Precision 3930 Rack HDD Storage Configurations

HDD/SSD Storage Matrix

				4x 2.5" SATA						
See "Config Summary" tab for HDD + Zoom/M.2 config combinations				2x 3.5" SATA						
C-Config	Config Type	Device Type	Boot Drive (OS Location)	1st HDD	2nd HDD	3rd HDD	4th HDD	# of Zoom2 Card Allowed	Total Number of M.2 Devices Allowed on ME	HDD Controller options
C1	SATA JBOD	SATA HDD or SSD JBOD	1st HDD	Y				1	Up to 2	Integrated
	SATA JBOD	SATA HDD or SSD JBOD	1st HDD	Y	Y			1	Up to 2	Integrated
	SATA JBOD	SATA HDD or SSD JBOD	1st HDD	Y	Y	Y		1	Up to 2	Integrated
	SATA JBOD	SATA HDD or SSD JBOD	1st HDD	Y	Y	Y	Y	1	Up to 2	Integrated
C2	SATA RAID0	SATA HDD or SSD RAID	RAID Volume	RAID 0	RAID 0			1	Up to 2	Integrated
	SATA RAID0	SATA HDD or SSD RAID	RAID Volume	RAID 0	RAID 0	RAID 0		1	Up to 2	Integrated
	SATA RAID0	SATA HDD or SSD RAID	RAID Volume	RAID 0	RAID 0	RAID 0	RAID 0	1	Up to 2	Integrated
	SATA RAID1	SATA HDD or SSD RAID	RAID Volume	RAID 1	RAID 1			1	Up to 2	Integrated
	SATA RAID5	SATA HDD or SSD RAID	RAID Volume	RAID 5	RAID 5	RAID 5		1	Up to 2	Integrated
	SATA RAID5	SATA HDD or SSD RAID	RAID Volume	RAID 5	RAID 5	RAID 5	RAID 5	1	Up to 2	Integrated
	SATA RAID10	SATA HDD or SSD RAID	RAID Volume	RAID 10	RAID 10	RAID 10	RAID 10	1	Up to 2	Integrated

C3	Boot + SATA RAID0	SATA Boot HDD/SS D + SATA RAID	1st HDD	Boot	RAID 0	RAID 0		1	Up to 2	Integrated
	Boot + SATA RAID0	SATA Boot HDD/SS D + SATA RAID	1st HDD	Boot	RAID 0	RAID 0	RAID 0	1	Up to 2	Integrated
	Boot + SATA RAID1	SATA Boot HDD/SS D + SATA RAID	1st HDD	Boot	RAID 1	RAID 1		1	Up to 2	Integrated
	Boot + SATA RAID5	SATA Boot HDD/SS D + SATA RAID	1st HDD	Boot	RAID 5	RAID 5	RAID 5	1	Up to 2	Integrated
C5	SATA JBOD + M.2 Boot	MB M.2 Boot + SATA JBOD	MB M.2	Y				1	Up to 2	Integrated
	SATA JBOD + M.2 Boot	MB M.2 Boot + SATA JBOD	MB M.2	Y	Y			1	Up to 2	Integrated
	SATA JBOD + M.2 Boot	MB M.2 Boot + SATA JBOD	MB M.2	Y	Y	Y		1	Up to 2	Integrated
	SATA JBOD + M.2 Boot	MB M.2 Boot + SATA JBOD	MB M.2	Y	Y	Y	Y	1	Up to 2	Integrated

C6	SATA RAID0 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 0	RAID 0			1	Up to 2	Integrated
	SATA RAID0 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 0	RAID 0	RAID 0		1	Up to 2	Integrated
	SATA RAID0 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 0	RAID 0	RAID 0	RAID 0	1	Up to 2	Integrated
	SATA RAID1 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 1	RAID 1			1	Up to 2	Integrated
	SATA RAID5 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 5	RAID 5	RAID 5		1	Up to 2	Integrated
	SATA RAID5 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 5	RAID 5	RAID 5	RAID 5	1	Up to 2	Integrated
	SATA RAID10 + M.2 Boot	MB M.2 Boot + SATA RAID	MB M.2	RAID 10	RAID 10	RAID 10	RAID 10	1	Up to 2	Integrated
C8	SATA JBOD + Optane Memory	SATA HDD or SSD JBOD	1st HDD	Y				1	1	Integrated
	SATA JBOD + Optane Memory	SATA HDD or SSD JBOD	1st HDD	Y	Y			1	1	Integrated
	SATA JBOD + Optane Memory	SATA HDD or SSD JBOD	1st HDD	Y	Y	Y		1	1	Integrated
	SATA JBOD + Optane Memory	SATA HDD or SSD JBOD	1st HDD	Y	Y	Y	Y	1	1	Integrated
C10	MB M.2 Only	M.2 Boot with NO additional	MB M.2	NA	NA	NA	NA	1	Up to 2	NA
C12	MB M.2 + Zoom Only	M.2 + Zoom with No SATA	MB M.2	NA	NA	NA	NA	1	Up to 2	NA

Windows Only

M.2 Storage Matrix

Precision 3930 Rack M.2 Storage Configurations

M.2 / Zoom2 Storage Matrix

C-Config	Config Type	Device Type	(OS Location) If Boot Drive HDD Config C6, C7, C10, C11, C14	1st M.2 SSD	2nd M.2 SSD	# of M.2 on MB	# of Zoom2 Cards
C1M2	M.2	MB M.2 JBOD	M.2 1st SSD Boot	Y		1	1
	M.2	MB M.2 JBOD	M.2 1st SSD Boot	Y	Y	2	1
C2M2	M.2	MB M.2 RAID 0	M.2 RAID Volume	RAID 0	RAID 0	2	1
	M.2	MB M.2 RAID 1	M.2 RAID Volume	RAID 1	RAID 1	2	1

				Zoom2				
C-Config	Config Type	Device Type	(OS Location) If Boot Drive HDD config C8, C9, C12, C13, C15	1st M.2 SSD	2nd M.2 SSD	# of Zoom2 Cards	# of M.2 on Zoom2	Total Number of M.2 Devices Allowed on MB
C1Z	Zoom2	Zoom2 JBOD	Zoom2 1st SSD Boot	Y		1	1	2
	Zoom2	Zoom2 JBOD	Zoom2 1st SSD Boot	Y	Y	1	2	2

Graphics options

NVIDIA Quadro P400

Table 39. NVIDIA Quadro P400 specifications

Graphics memory	2 GB GDDR5
Bus type	PCIe x16 Gen3

Memory Interface	64-bit
Clock Speeds	1088 MHz graphics core (min. at P0) 2430 MHz memory
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	Up to 395Hz at 1920x1080 Up to 118Hz at 3840x2160
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL 4.5
Supported Resolutions and Max Refresh Rates (Hz)	• Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) • Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to 3 direct, 4 DP multi-stream technology

NVIDIA Quadro P620

Table 40. NVIDIA Quadro P620 specifications

Graphics memory	2 GB GDDR5
Bus type	PCI Express 3.0 x16
Memory Interface	128-bit
Clock Speeds	Base :1265 MHz / Boot :1354 MHz
Display Support	mDP
Maximum Color Depth	NA
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.5, DirectX 12.0, Vulkan 1.0
Supported Resolutions and Max Refresh Rates (Hz)	• Maximum resolution over digital port (single GPU): 2560 × 1600 × 32 bpp at 60 Hz (reduced blanking) • Maximum resolution over digital port (single GPU):1920 × 1200 × 32 bpp at 60 Hz (reduced blanking)
Numbers of Display Support	4 direct, 4x DisplayPort 1.4 Multi-Stream

NVIDIA Quadro P1000

Table 41. NVIDIA Quadro P1000 specifications

Graphics memory	4 GB GDDR5
Bus type	PCI Express 3.0 x16
Memory Interface	128-bit
Clock Speeds	Base :1265 MHz / Boot :1480 MHz
Display Support	mDP
Maximum Color Depth	NA
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.5, DirectX 12.0, Vulkan 1.0
Supported Resolutions and Max Refresh Rates (Hz)	• Maximum resolution over digital port (single GPU):1920 × 1200 × 32 bpp at 60 Hz (reduced blanking) • Maximum resolution over digital port (single GPU): 2560 × 1600 × 32 bpp at 60 Hz (reduced blanking)
Numbers of Display Support	4 direct, 4 DP 1.4 Multi-Stream

NVIDIA Quadro P2000

Table 42. NVIDIA Quadro P2000 specifications

Graphics memory	5 GB GDDR5
Bus type	PCIe x16 Gen3
Memory Interface	160-bit
Clock Speeds	1088 MHz graphics core (min. at P0) 2430 MHz memory
GPU base clock	3504 MHz (min. at P0)
Estimated Maximum Power	75 W
Display Support	eDP/mDP/HDMI/Type-C
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	Up to 395Hz at 1920x1080 Up to 118Hz at 3840x2160

Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL 4.5
Supported Resolutions and Max Refresh Rates (Hz)	- Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) - Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to four displays

NVIDIA Quadro P4000

Table 43. NVIDIA Quadro P4000 specifications

Graphics memory	8GB GDDR5
Bus type	PCIe x16 Gen3
Memory Interface	256 bit
Clock Speeds	1202 MHz graphics core (min. at P0) 2454 MHz memory
GPU base clock	3003 MHz (min. at P0)
Estimated Maximum Power	105 W
Display Support	eDP/DVI/ DisplayPort/HDMI
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	Up to 395Hz at 1920x1080 Up to 118Hz at 3840x2160
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.54 , DirectX 12.05 , Vulkan 1.04
Supported Resolutions and Max Refresh Rates (Hz)	- Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) - Max Digital : Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to four displays

NVIDIA Quadro P5000

Table 44. NVIDIA Quadro P5000 specifications

Graphics memory	16GB GDDR5X
Bus type	PCIe x16 Gen3
Memory Interface	256 bit

Clock Speeds	1164 MHz graphics core (min. at P0) 3012 MHz memory
GPU base clock	3003 MHz (min. at P0)
Estimated Maximum Power	180 W
Display Support	eDP/DVI/ DisplayPort/HDMI
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	Up to 395Hz at 1920x1080 Up to 118Hz at 3840x2160
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.54 , DirectX 12.05 , Vulkan 1.04
Supported Resolutions and Max Refresh Rates (Hz)	• Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) • Max Digital : DVI-D DL - 2560 x 1600 (8k) @ 60 Hz (mDP/ type-c to DP)
Numbers of Display Support	Up to four displays

NVIDIA Quadro P6000

Table 45. NVIDIA Quadro P6000 specifications

Graphics memory	24 GB GDDR5X
Bus type	PCIe x16 Gen3
Memory Interface	384 bit
Clock Speeds	1164 MHz graphics core (min. at P0) 3012 MHz memory
GPU base clock	3003 MHz (min. at P0)
Estimated Maximum Power	250 W
Display Support	DP 1.4 (4) + DVI-D DL + Stereo
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	Up to 395Hz at 1920x1080 Up to 118Hz at 3840x2160
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.5, DirectX 12.0, Vulkan 1.0
Supported Resolutions and Max Refresh Rates (Hz)	• Max Digital : Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz (mDP/type-c to DP) • Max Digital : Dual DisplayPort 1.4 - 5120 x 2880 (8k) @ 60 Hz (mDP/type-c to DP)
Numbers of Display Support	Up to four displays

NVIDIA RTX4000

Table 46. NVIDIA RTX4000 specifications

Graphics memory	8 GB GDDR6
Bus type	PCI Express 3.0 x16
Memory Interface	256-bit
Clock Speeds	Base :1005 MHz / Boot :1545 MHz
Display Support	DP/Type-C
Maximum Color Depth	NA
Estimated Maximum Power	160 W
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.66, DirectX 12.05, Vulkan 1.
Supported Resolutions and Max Refresh Rates (Hz)	Display port • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz USB Type-C • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz
Numbers of Display Support	3x DisplayPort , 1x USB Type-C

NVIDIA RTX5000

Table 47. NVIDIA RTX5000 specifications

Graphics memory	16 GB GDDR6
Bus type	PCI Express 3.0 x16
Memory Interface	256-bit
Clock Speeds	Base :1620 MHz / Boot :1815 MHz
Display Support	DP/Type-C
Maximum Color Depth	NA

Estimated Maximum Power	265 W
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	DirectX 12.07 Shader Model 5.1, OpenGL 4.6, Vulkan 1.1
Supported Resolutions and Max Refresh Rates (Hz)	Display port • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz USB Type-C • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz
Numbers of Display Support	4x DisplayPort , 1x USB Type-C

NVIDIA RTX6000

Table 48. NVIDIA RTX6000 specifications

Graphics memory	24 GB GDDR6
Bus type	PCI Express 3.0 x16
Memory Interface	384-bit
Clock Speeds	Base :1440 MHz / Boot :1770MHz
Display Support	DP/Type-C
Maximum Color Depth	NA
Estimated Maximum Power	295 W
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	Shader Model 5.1, OpenGL 4.66, DirectX 12.05, Vulkan 1.
Supported Resolutions and Max Refresh Rates (Hz)	Display port • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz USB Type-C • 7680 x 4320 x 24bpp at 120Hz • 7680 x 4320 x 36bpp at 60Hz • 5120 x 2880 x 24bpp at 60Hz
Numbers of Display Support	4x DisplayPort , 1x USB Type-C

NVIDIA GTX 1080

Table 49. NVIDIA GTX 1080

GPU Memory	8 GB GDDR5X
Memory Interface	256-bit
Memory Bandwidth	Up to 320 GB/s
NVIDIA CUDA Cores	2560
Max Power Consumption	180 W
Thermal Solution	Active
Display Resolution	7680x4320@60Hz
Standard Display Connectors	DP 1.42, HDMI 2.0b, DL-DVI

NVIDIA RTX2080B

Table 50. NVIDIA RTX2080B specifications

Graphics memory	8 GB GDDR6
Bus type	PCIe x16 Gen3
Memory Interface	256-bit
Clock Speeds	Base :1515 MHz / Boost :1710 MHz / Memory: 7000 MHz
Display Support	• 3 x DP • 1 x HDMI
Maximum Color Depth	Up to 10bit/color
Estimated Maximum Power	215 W
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	DirectX 12, Open GL 4.5
Supported Resolutions and Max Refresh Rates (Hz)	• Single DP 1.4a - 7680 x 4320 (8K) @ 60 Hz • Dual DP 1.4a - 7680 x 4320 (8K) @120 Hz • HDMI 2.0b - 4096 x 2160 (4K) @ 60 Hz
Numbers of Display Support	4 Direct

AMD WX3200

Table 51. AMD WX3200 specifications

Graphics memory	4 GB GDDR5
Bus type	NA
Memory Interface	128-bit
Clock Speeds	NA
Display Support	mDP
Maximum Color Depth	Up to 10bit/color
Maximum Vertical Refresh Rate	NA
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL 4.5, OpenCL 2.0, Vulkan 1.1, Shader Model 5.1
Supported Resolutions and Max Refresh Rates (Hz)	• 1 port @ 7680x4320 at 60Hz • 2 ports @ 5120x2880 at 60Hz • 4 ports @ 3840 x 2160 at 60Hz • 4 ports @ 1920 x 1080 at 60Hz
Numbers of Display Support	4x mDP 1.4

RadeonPro WX4100

Table 52. AMD RadeonPro WX4100

Graphics memory	4 GB GDDR5
Bus type	PCIe x16 Gen3
Memory Interface	128-bit
Clock Speeds	1053 MHz graphics core, 1500 MHz memory
Estimated Maximum Power	50W TGP (GPU + frame buffer)
Display Support	HDMI/mDP/eDP/USB-C
Maximum Color Depth	Maximum 4:4:4 Color Depth:12 (bits per pixel)
Maximum Vertical Refresh Rate	Up to 85Hz depending on resolution
Operating Systems Graphics/ Video API Support	DirectX 12, OpenGL 4.5
Supported Resolutions and Max Refresh Rates (Hz)	• Single DisplayPort 1.4 - 7680 x 4320 (8k) @ 30 Hz

- Dual DisplayPort 1.4 - 7680 x 4320 (8k) @ 60 Hz
- HDMI 2.0 - 4096 x2160 (4K) @ 60 Hz

Slot_Matix_Zuma_P

Precision 3930 Slot Matrix / Riser Layout

Precision 3930 Slot Matrix / Riser Layout

Zuma-P Slot Matrix - CFL																
550W PSU up to 250W GPU																
GPU Cards	Zoom2	USB Type-C 1.1	Serial Port	1GB NIC	2x 10GbE NIC	TBT3	Teradici Dual Port	Teradici Quad Port	nVidia P400	nVidia P2000	AMD WX4100	nVidia P400 no bracket	nVidia P5000	nVidia P6000	nVidia GTX 1080	
DPN	NTRCY	6G7FY	7PHFC	VRH1	FKHCC	P1KY1	MTV31	WCWRN	F2NVH	87CG5	TEC3M	GN4T7	3PYN3	EDMK4	XHYBP	
Type	Zoom2	USB Type-C	Serial Port	NIC	NIC	TBT3	PCIeP	PCIeP	ELGA	MRGAL	ELGA	MRGAH	HEGA	SHEGA	Consumer	
Lane Width	x8	x1	x1	x1	x1	x4	x1	x1	x16	x16	x16	x16	x16	x16	x16	
Slot Size	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	DW	DW	
Gen	3	3	1	1	3	3	1	1	3	3	3	3	3	3	3	
Card Length	3/4 length	half length	half length	half length	half length	half length	half length	half length	3/4 length	3/4 length	3/4 length	3/4 length	3/4 length	3/4 length	3/4 length	
Power	25w	18.3w	7w	7w	??	60w	13w	20w	30w	75w	50w	105w	180w	250w	180w	
Dongle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6 pin 43FF0	8 pin 43FF0	8 pin 43FF0	
Display Output	N/A	Type C + Alt Mode	N/A	N/A	N/A	N/A	2x mDP (Inputs)	4x mDP (Inputs)	3x mDP	4x DP	4x mDP	4x DP	DVI-D, 4x DP	DVI-D, 4x DP	DL DVI, HDMI, 3x DP 1.4	
Supported OS	All	All	All	All	All	All	All	All	All	All	Win10 Only	All	All	All	Win10 Only	
Card Priority	Riser1A (PCIe only)	Slot Priority	Max Allowed													
100	GFX (DW)	1	1													
200	GFX (SW)	1, 2	2							X	X	X	X			
300	Zoom2	2	1	X												
400	Teradici (P25 or P45)	2, 3	1				X	X								
500	NIC	2, 3	2			X	X									
600	USB 3.1	2, 1	2			X										
700	TBT	3	1			X										
800	Serial	2, 3, 1	1			X										

Note 1: Graphics should always be populated in slot 1 first.

Note 2: The Zoom2 card can only be populated in slot 2

Note 3: The Sunix USB3.1 card can NOT be populated in slot 3

Zuma-P Riser Layout			
	Slot 1	Slot 2	Slot 3
Riser 1A	x16 3/4L/FH/DW	x8 (x16 connector) 3/4L/FH/SW	
Riser 2			x4 (x8 open ended connector) 3/4L/FH/SW
Slot Power	225w + 75w	75w + 75w	25w
All PCIe slots are gen3			
Riser 1B	PCI 32 Bit FL/FH/DW	PCI 32 Bit FL/FH/SW	
Slot Power	25W	25W	

Chassis enclosure and ventilation requirements

Enclosure Ventilation

If your enclosure has doors, they need to be of a type that allows at least 30% airflow through the enclosure (front and back).

Do not block your computer ventilation(front and back) by stuff to permit the proper airflow.

Do not seal your computer top venting completely in order to provide better Graphic card cooling capability.

Enclosure Minimum Clearance

Leave a 14 cm (5.5 in.) minimum clearance on all vented sides of the computer to permit the airflow required for proper ventilation.

Recommended Enclosure

Do not install your computer in an enclosure that does not allow airflow / dusty environment / temperate over 35 and 45 degrees centigrade for specific system configurations. Do not put any objects to directly block air-vent. This restricts the airflow and impacts your computer's performance, possibly causing it to overheat.

Regulatory and Environmental Compliance

Product related conformity assessment and regulatory authorizations including Product Safety, Electromagnetic Compatibility (EMC), Ergonomics, and Communication Devices relevant to this product may be viewed at www.dell.com/regulatory_compliance. The Regulatory Datasheet for this product is located at http://www.dell.com/regulatory_compliance.

Details of Dell's environmental stewardship program to conserve product energy consumption, reduce or eliminate materials for disposal, prolong product life span and provide effective and convenient equipment recovery solutions may be viewed at www.dell.com/environment. Product related conformity assessment, regulatory authorizations, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed by clicking the Design for Environment link on the webpage.

3930 Rack common accessories

Accessories for 3930 Rack

Cables Dongles Adapters

Table 53. Supported Cables Dongles Adapters

- Dell Adapter - USB Type-C to DisplayPort
- Dell Adapter - USB Type-C to HDMI
- Dell Adapter - USB Type-C to VGA
- Dell Adapter - USB Type-C to USB-A 3.0

Expansion Cards

Supported expansion cards

Table 54. Supported expansion cards

- Intel i210-single port 1GB Ethernet Network Daughter Card (1 x 1 Gb port)
- Intel X550-Dual Port 10Gbe (2 x 10 Gb ports)
- Serial Port PCIe Card (1 port)
- Thunderbolt Type-C card (2 ports)
- USB 3.1 10Gb/s Type-C card (2 ports)
- Dell Precision Ultra-Speed Duo (x8) with active cooling and support for up to 2 M.2 NVMe PCIe SSDs
- Dual and Quad display Teradici PCoIP PCIe remote workstation access cards

External Storage

Table 55. Supported external storage

Dell USB Slim DVD +/- RW Drive

Input devices

Table 56. Supported input devices

3Dconnexion CAD mouse

3Dconnexion SpaceMouse Pro wireless

3Dconnexion SpaceMouse wireless

Dell canvas

Dell multimedia keyboard

Dell wireless keyboard and mouse

Dell wireless keyboard and mouse

Dell premier wireless keyboard and mouse

Dell optical mouse

Dell laser scroll USB 6-buttons silver and black mouse

X-Rite colorimeter display Pro

Dell Wyse 5030

Dell Wyse 5050 AIO

Amulet hotkey DXZ4

Stands and mounts

Table 57. Supported stands and mounts

Dell dual monitor arm

Dell dual monitor stand 2

Monitor

Table 58. Supported monitors

Dell 24 monitor

Dell UltraSharp 25 monitor

Dell UltraSharp 27 monitor

Dell UltraSharp 38 monitor

Dell UltraSharp 25 monitor
Dell UltraSharp 27 monitor
Dell UltraSharp 27 monitor
Dell UltraSharp 27 monitor
Dell UltraSharp 30 monitor
Dell UltraSharp 30 monitor
Dell UltraSharp 32 monitor
Dell UltraSharp 32 monitor
Alienware 25 monitor
Dell UltraSharp 27 monitor
Dell UltraSharp 25 monitor
Dell UltraSharp 34 monitor
Dell UltraSharp 24 monitor
Dell 24 monitor
Dell 43 multi-client monitor
Dell UltraSharp 27 monitor
Dell UltraSharp 29 monitor
Dell 24 monitor
Dell UltraSharp 27 ultrathin monitor
Dell UltraSharp 24 monitor

Getting help

Contacting Dell

NOTE: If you do not have an active Internet connection, you can find contact information on your purchase invoice, packing slip, bill, or Dell product catalog.

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

- 1 Go to **Dell.com/support**.
- 2 Select your support category.
- 3 Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
- 4 Select the appropriate service or support link based on your need.