Precision 3280 CFF

Technical Guidebook

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DELL Technologies

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.

Contents

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Views of Precision 3280 CFF

Front

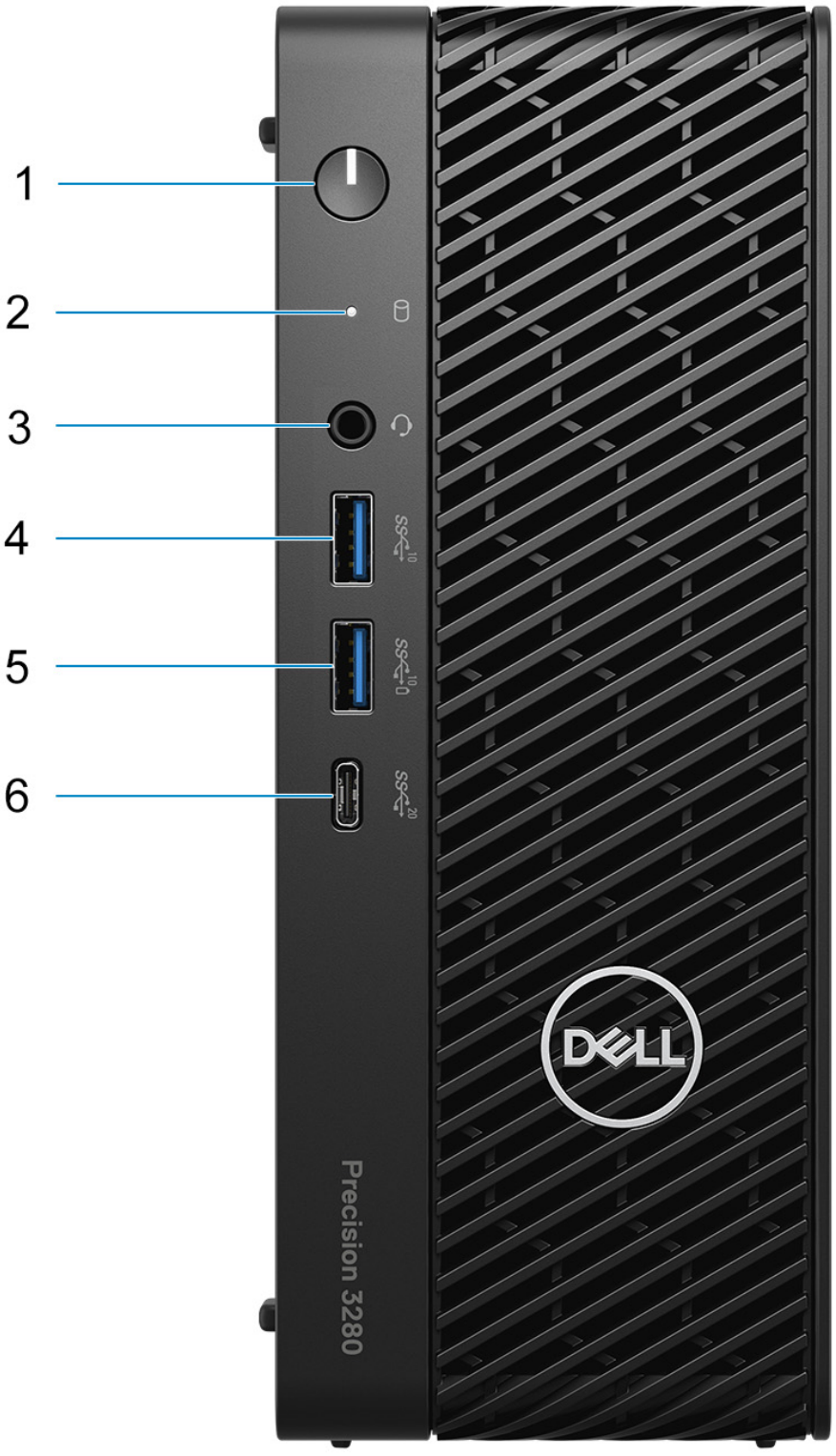

Figure 1. Front view

1. **Power button with diagnostic LED**

   Press to turn on the computer if it is turned off, in sleep state, or in hibernate state.

2. **Hard-drive activity light**

   Turns on when the computer reads from or writes to the hard drive.

   NOTE: Hard-drive activity light is supported only on computers that are shipped with hard drive.

3. **Universal audio port**

   Connect headphones or a headset (headphone and microphone combo).

4. **USB 3.2 Gen 2 (10 Gbps) port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

5. **USB 3.2 Gen 2 (10 Gbps) port with PowerShare**

   Connect devices such as external storage devices and printers.

   Provides data transfer speeds up to 10 Gbps. PowerShare enables you to charge connected USB devices.

6. **USB 3.2 Type-C Gen 2x2 (20 Gbps) port**

   Connect devices such as external storage devices, printers, and external displays. Provides data transfer rate of up to 20 Gbps.

   NOTE: Connected USB devices will not charge when the computer is turned off or in a sleep state. To start charging connected devices, turn on the computer.

Back

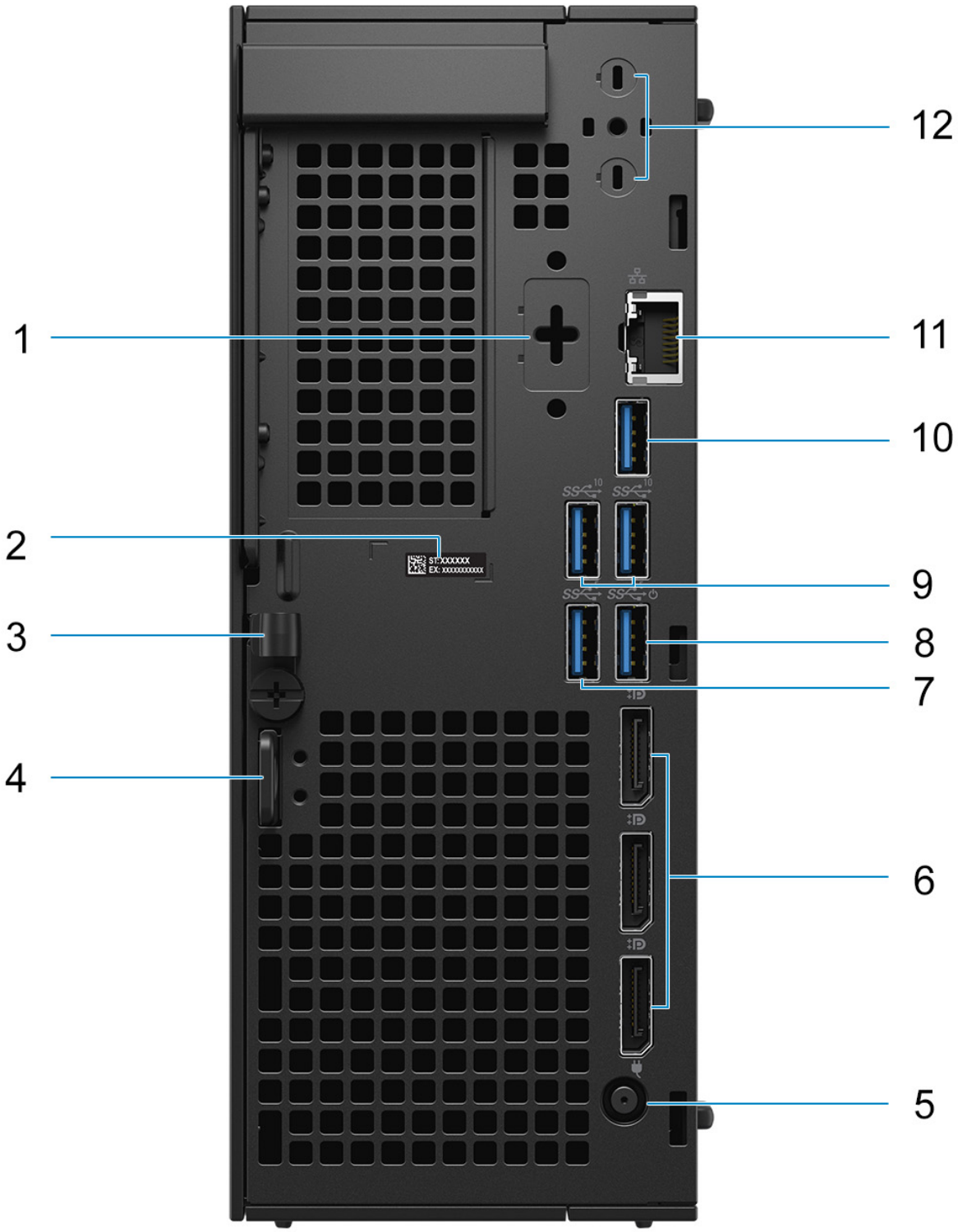

Figure 2. Back view

1. **Optional port (HDMI 2.1/Displayport 1.4a (HBR3)/VGA/USB Type-C with DisplayPort Alt mode)**

   The port available at this location may vary depending on the optional I/O card that is installed on your computer.

   - **HDMI 2.1 port**

     Connect to a TV, external display, or another HDMI-in enabled device. Maximum resolution that is supported up to 4096 x 2160 @60 Hz.

   - **DisplayPort 1.4a (HBR3 support)**

     Connect an external display or a projector. Maximum resolution that is supported up to 5120 x 3200 @60 Hz.

   - **VGA port**

     Connect an external display or a projector. Maximum resolution that is supported up to 1920 x 1200 @60 Hz.

   - **USB Type-C with DisplayPort port**

     Connect devices such as external storage devices and printers. Provides data transfer speeds of up to 10 Gbps. Maximum resolution supported up to 5120x3200 @60Hz with a Type-C to DisplayPort adapter.

2. **Service Tag label**

   The Service Tag is a unique alphanumeric identifier that enables Dell service technicians to identify the hardware components in your computer and access warranty information.

3. **DC-in cable clip**

   For power-adapter cable routing.

4. **Side cover release latch**

   Release to allow to open the side cover.

5. **Power cord connector port**

   Connect a power cable to provide power to your computer.

6. **Three DisplayPort 1.4a (HBR2) ports**

   Connect an external display or a projector.

7. **USB 3.2 Gen 1 (5 Gbps) port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 5 Gbps.

8. **USB 3.2 Gen 1 (5 Gbps) with Smart Power On port**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 5 Gbps.

9. **Two USB 3.2 Gen 2 (10 Gbps) ports**

   Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

10. **One USB 3.2 Gen 2 (10 Gbps) port**

    Connect devices such as external storage devices and printers. Provides data transfer speeds up to 10 Gbps.

11. **RJ45 port 10/100/1000 Mbps**

    Connect an Ethernet (RJ45) cable from a router or a broadband modem for network or Internet access, with a transfer rate of 10/100/1000 Mbps.

12. **External antenna connector ports**

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Specifications of Precision 3280 CFF

Dimensions and weight

The following table lists the height, width, depth, and weight of your Precision 3280 CFF.

Table 1. Dimensions and weight

Description	Values
Height	206.00 mm (8.11 in.)
Width	79.30 mm (3.12 in.)
Depth	178.00 mm (7.00 in.)
Weight **NOTE:** The weight of your computer depends on the configuration ordered and manufacturing variability.	• Minimum - 1.83 kg (4.03 lbs) • Maximum - 2.54 kg (5.59 lbs)

Processor

The following table lists the details of the processors that are supported in your Precision 3280 CFF.

Table 2. Processor

Description	Option one	Option two	Option three	Option four	Option five
Processor type	Intel Core i3-14100	Intel Core i5-14500 vPro	Intel Core i5-14600 vPro	Intel Core i7-14700 vPro	Intel Core i9-14900 vPro
Processor wattage	60W	65W **NOTE:** In Optimized mode, the 65W CPU run at 80W PL1 min.	65W **NOTE:** In Optimized mode, the 65W CPU run at 80W PL1 min.	65W **NOTE:** In Optimized mode, the 65W CPU run at 80W PL1 min.	65W **NOTE:** In Optimized mode, the 65W CPU run at 80W PL1 min.
Processor core count	4	14	14	20	24
Processor thread count	8	20	20	28	32
Processor speed	3.5 GHz to 4.7 GHz Turbo	2.6 GHz to 5.0 GHz Turbo	2.7 GHz to 5.2 GHz Turbo	2.1 GHz to 5.4 GHz Turbo	2.0 GHz to 5.8 GHz Turbo
Processor cache	12 MB	24 MB	24 MB	33 MB	36 MB
Integrated graphics	Intel UHD Graphics 730	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770	Intel UHD Graphics 770

Chipset

The following table lists the details of the chipset that is supported in your Precision 3280 CFF.

Table 3. Chipset

Description	Values
Chipset	W680
Processor	Intel Core i3/i5/i7/i9
DRAM bus width	64-bit DIMM
Flash EPROM	16 MB + 32 MB
PCIe bus	Up to Gen4

Operating system

Your Precision 3280 CFF supports the following operating systems:

- Windows 11 Home, 64-bit
- Windows 11 Pro, 64-bit
- Windows 11 Pro National Education, 64-bit
- Windows 11 Pro for Workstations
- Red Hat Linux 9.4 Enterprise
- Ubuntu Linux 22.04 LTS, 64-bit

Memory

The following table lists the memory specifications that are supported by your Precision 3280 CFF.

Table 4. Memory specifications

Description	Values
Memory slots	Two-DIMM slots
Memory type	DDR5
Memory speed	Maximum speed: 5600 MT/sMaximum memory speed varies by the following configuration on each channel. If the two DIMM configuration is not symmetrical, the maximum speed may drop.
Maximum memory configuration	64 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB, 16 GB, and 32 GB
Memory configurations supported	• 8 GB: 1 x 8 GB, DDR5, 5600 MT/s, Non-ECC • 16 GB: 2 x 8 GB, DDR5, 5600 MT/s, Non-ECC, dual-channel • 16 GB: 1 x 16 GB, DDR5, 5600 MT/s, Non-ECC • 32 GB: 2 x 16 GB, DDR5, 5600 MT/s, Non-ECC, dual-channel

Table 4. Memory specifications (continued)

Description	Values
	• 64 GB: 2 x 32 GB, DDR5, 5600 MT/s, Non-ECC, dual-channel • 16 GB: 1 x 16 GB, DDR5, 5600 MT/s, ECC • 32 GB: 2 x 16 GB, DDR5, 5600 MT/s, ECC, dual-channel • 32 GB: 1 x 32 GB, DDR5, 5200 MT/s, ECC • 64 GB: 2 x 32 GB, DDR5, 5200 MT/s, ECC, dual-channel

Memory matrix

The following table lists the memory configurations supported on your Precision 3280 CFF.

Table 5. Memory matrix for Non-ECC

Configuration	Slots	
	DIMM1	DIMM2
8 GB DDR5	8 GB	N/A
16 GB DDR5	8 GB	8 GB
16 GB DDR5	16 GB	N/A
32 GB DDR5	16 GB	16 GB
64 GB DDR5	32 GB	32 GB

Table 6. Memory matrix for ECC

Configuration	Slots	
	DIMM1	DIMM2
16 GB DDR5	16 GB	N/A
32 GB DDR5	16 GB	16 GB
32 GB DDR5	32 GB	N/A
64 GB DDR5	32 GB	32 GB

External ports and slots

The following table lists the external ports of your Precision 3280 CFF.

Table 7. External ports and slots

Description	Values
Network port	One RJ45 (1 GbE) Ethernet port
USB ports	Front: • One USB 3.2 Gen 2x2 (20 Gbps) Type-C port • Two USB 3.2 Gen 2 (10 Gbps) with PowerShare ports Rear: • One USB 3.2 Gen 1 (5 Gbps) with smart power on port • One USB 3.2 Gen 1 (5 Gbps) • Three USB 3.2 Gen 2 (10 Gbps) ports

Table 7. External ports and slots (continued)

Description	Values
Audio port	One Universal Audio port
Video port(s)	• Three DisplayPort 1.4a (HBR2) ports • One Optional Port (HDMI 2.1/DisplayPort 1.4a (HBR3)/VGA/USB Type-C with DisplayPort Alt mode) **NOTE:** Download and install the latest Intel Graphics driver from Dell Support Site to enable multiple displays.
Media-card reader	N/A
Power-adapter port	One Power-adapter port
Security-cable slot	One Kensington security-cable slot

Internal slots

The following table lists the internal slots of your Precision 3280 CFF.

Table 8. Internal slots

Description	Values
M.2	• One M.2 2230 slot for WiFi and Bluetooth card • Two M.2 2230/2280 Gen4 PCIe NVMe SSD **NOTE:** To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at Dell Support Site.

Ethernet

The following table lists the wired Ethernet Local Area Network (LAN) specifications of your Precision 3280 CFF.

Table 9. Ethernet specifications

Description	Values
Model number	Intel I219-LM
Transfer rate	10/100/1000 Mbps

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Precision 3280 CFF.

Table 10. Wireless module specifications

Description	Option one	Option two
Model number	Intel AX211	Qualcomm WCN6856-DBS
Transfer rate	2400 Mbps	Up to 3571 Mbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz	2.4 GHz/5 GHz/6 GHz

Table 10. Wireless module specifications (continued)

Description	Option one	Option two
	NOTE: The 6 GHz frequency is supported on computers that are installed with the Windows 11 operating system only.	**NOTE:** The 6 GHz frequency is supported on computers that are installed with the Windows 11 operating system only.
Wireless standards	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax)	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP	• 64-bit and 128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card	5.3	5.3
	NOTE: The version of the Bluetooth wireless card may vary depending on the operating system that is installed on your computer.	

Audio

The following table lists the audio specifications of your Precision 3280 CFF.

Table 11. Audio specifications

Description		Values
Audio controller		Realtek ALC3204
Stereo conversion		24-bit DAC (Digital-to-Analog) and ADC (Analog-to-Digital)
Internal audio interface		Intel HDA (high-definition audio)
External audio interface		One Universal Audio port
Number of speakers		One (optional)
Internal-speaker amplifier		Integrated in ALC3204 (Class-D 2 W)
External volume controls		Keyboard shortcut controls
Speaker output:		
	Average speaker output	2 W
	Peak speaker output	2.2 W
Subwoofer output		Not supported
Microphone		Not supported

Storage

This section lists the storage options on your Precision 3280 CFF.

- M.2 SSD Boot + Optional M.2 SSDs – This configuration enables boot on M.2 NVMe SSD with up to an additional NVMe SSD. No SATA hard drive are configured in this option.
- M.2 SSD storage on slot 2 requires a heat-sink.
- RAID 0/1 available.

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2280 SSD	Gen 4 PCIe NVMe, Class 35	256 GB
M.2 2280 SSD	Gen 4 PCIe NVMe, Class 40	Up to 4 TB
M.2 2280 Opal Self-Encrypting SSD	Gen 4 PCIe NVMe, Class 40	Up to 1 TB

Storage matrix

The following table lists the storage configurations that are supported on your Precision 3280 CFF.

Table 13. Storage matrix

Configuration ID	Configuration		M.2 Slot on System board	Second M.2 Slot on System board
1	Internal M.2 SSD Boot		Yes	No
2	Internal M.2 SSD Boot	Optional SSD	Yes	Yes
3	Internal M.2 SSD Boot	Optional SSD	Yes	Yes
4	Internal M.2 SSD Boot	Optional SSD	RAID 0 or 1	RAID 0 or 1
5	Internal M.2 SSD Boot	Optional SSD	RAID 0 or 1	RAID 0 or 1

NOTE: M.2 SSD storage on slot 2 requires a heat-sink.

RAID (Redundant Array of Independent Disks)

For optimal performance when configuring drives as a RAID volume, Dell Technologies recommends drive models that are identical.

NOTE: RAID is not supported on Intel Optane configurations.

RAID 0 (Striped, Performance) volumes benefit from higher performance when drives are matched because the data is split across multiple drives: any I/O operations with block sizes larger than the stripe size splits the I/O and become constrained by the slowest of the drives. For RAID 0 I/O operations where block sizes are smaller than the stripe size, whichever drive the I/O operation targets determine the performance, which increases variability and results in inconsistent latencies. This variability is particularly pronounced for write operations, and it can be problematic for applications that are latency sensitive. One such example of this is any application that performs thousands of random writes per second in small block sizes.

RAID 1 (Mirrored, Data Protection) volumes benefit from higher performance when drives are matched because the data is mirrored across multiple drives: all I/O operations must be performed identically to both drives, thus variations in drive performance when the models are different, results in the I/O operations completing only as fast as the slowest drive. While this does not suffer the variable latency issue in small random I/O operations as with RAID 0 across heterogeneous drives, the impact is nonetheless large because the higher performing drive becomes limited in all I/O types. One of the worst examples of constrained performance here is when using unbuffered I/O. To ensure that writes are fully committed to nonvolatile regions of the RAID volume, unbuffered I/O bypasses cache (for example by using the Force Unit Access bit in the NVMe protocol) and

the I/O operation will not complete until all the drives in the RAID volume have completed the request to commit the data. This kind of I/O operation completely negates any advantage of a higher performing drive in the volume.

Care must be taken to match not only the drive vendor, capacity, and class, but also the specific model. Drives from the same vendor, with the same capacity, and even within the same class, can have different performance characteristics for certain types of I/O operations. Thus, matching by model ensures that the RAID volume is comprised of a homogeneous array of drives that deliver all the benefits of a RAID volume without incurring the additional penalties when one or more drives in the volume are lower performing.

Precision 3280 CFF supports RAID with more than one hard drive configuration.

Power adapter

The following table lists the power adapter specifications of your Precision 3280 CFF.

Table 14. Power adapter specifications

Description	Option one	Option two
Type	180 W AC adapter	280 W AC adapter
Connector dimensions:		
External diameter	7.40 mm (0.29 in.)	7.40 mm
Internal diameter	5.10 mm (0.20 in.)	5.10 mm
Input voltage	100 VAC - 240 VAC	100-120 VAC; 200-240 VAC
Input frequency	50 Hz–60 Hz	50 Hz–60 Hz
Input current (maximum)	2.34 A	4 A
Output current (continuous)	9.23 A	14.36 A
Rated output voltage	19.50 VDC	19.50 VDC
Temperature range:		
Operating	0°C-40°C (32°F–104°F)	0°C-40°C (32°F–104°F)
Storage	-40°C-70°C (-40°F-158°F)	-40°C-70°C (-40°F-158°F)

CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Precision 3280 CFF.

Table 15. GPU—Integrated

Controller	Memory size	Processor
Intel UHD Graphics 730	Shared system memory	Intel Core i3-14100
Intel UHD Graphics 770	Shared system memory	Intel Core i5-14500 vPro, i5-14600 vPro, i7-14700 vPro, and i9-14900 vPro processors

Multiple display support matrix

The following table lists the multiple display support matrix for your Precision 3280 CFF.

Table 16. Multiple display support matrix

Description	Option 1	Option 2
Integrated Graphics Card	UHD Graphics 730 with 3 Display Port	UHD Graphics 770 with 3 Display Port
Optional Module	• Optional card with VGA (1920 x 1200 @ 60 Hz) • Optional card with DP 1.4a (HBR3) (5120 x 3200 @ 60 Hz) • Optional card with HDMI 2.1 (4096 x 2160 @ 60 Hz) • Optional card with Type-C (5120 x 3200 @ 60 Hz)	• Optional card with VGA (1920 x 1200 @ 60 Hz) • Optional card with DP 1.4a (HBR3) (5120 x 3200 @ 60 Hz) • Optional card with HDMI 2.1 (4096 x 2160 @ 60 Hz) • Optional card with Type-C (5120 x 3200 @ 60 Hz)
Supported 4K Displays	DP1.4a HBR2, 4096 x 2304 @ 60 Hz	DP1.4a HBR2, 4096 x 2304 @ 60 Hz
Supported 5K Displays	5K tiled resolution (5120x2880) support on DP panels. **NOTE:** Requires two DP cables driven through two separate DDIs from the source, and using DP-SST (Single Stream Transport) mechanism.	5K tiled resolution (5120x2880) support on DP panels. **NOTE:** Requires two DP cables driven through two separate DDIs from the source, and using DP-SST (Single Stream Transport) mechanism.

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Precision 3280 CFF.

Table 17. GPU—Discrete

Controller	Memory size	Memory type
NVIDIA RTX 4000 SFF Ada Generation	20 GB	GDDR6
NVIDIA RTX 2000 Ada Generation	16 GB	GDDR6
NVIDIA T1000 **NOTE:** NVIDIA T1000 graphics card requires Fan duct installation.	8 GB	GDDR6
NVIDIA T400	4 GB	GDDR6

Video port resolution

The following table lists the video port resolution for your Precision 3280 CFF.

Table 18. Video port resolution

Graphics card	Video ports	Maximum supported resolution
NVIDIA RTX 4000 SFF Ada Generation	Four DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC

Table 18. Video port resolution (continued)

Graphics card	Video ports	Maximum supported resolution
		NOTE: DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA RTX 2000 Ada Generation	Four mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA T1000	Four mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires three DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready
NVIDIA T400	Three mini-DP 1.4 ports	7680 x 4320 @24 bpp at 120 Hz **NOTE:** Requires two DPs 1.4a and DSC **NOTE:** DisplayPort 1.2 Certified, DisplayPort 1.3 and 1.4 ready

Hardware security

The following table lists the hardware security of your Precision 3280 CFF.

Table 19. Hardware security

Hardware security
Kensington security-cable slot
Padlock loop
Chassis intrusion switch
Chassis lock slot support
Lockable cable covers
Supply chain tamper alerts
SafeID including Trusted Platform Module (TPM) 2.0
Smart card keyboard (FIPS)
Microsoft 10 Device Guard and Credential Guard (Enterprise SKU)
Microsoft Windows Bitlocker
Local hard drive data wipe through BIOS (Secure Erase)
Self-encrypting storage drives (Opal, FIPS)
Trusted Platform Module TPM 2.0
China TPM

Table 19. Hardware security (continued)

Hardware security
Intel Secure Boot
Intel Authenticate
SafeBIOS: includes Dell Off-host BIOS
Verification, BIOS Resilience, BIOS
Recovery, and additional BIOS Controls

Environmental

The following table lists the environmental specifications of your Precision 3280 CFF.

Table 20. Environmental

Feature	Values
Recyclable packaging	Yes
BFR/PVC—free	No
Vertical orientation packaging support	Yes
MultiPack packaging	Yes (Except Brazil)
Energy-Efficient Power Supply	Standard
ENV0424 compliant	Yes

NOTE: Wood-based fiber packaging contains a minimum of 35% recycled content by total weight of wood-based fiber. Packaging that contains without wood-based fiber can be claimed as Not Applicable. The anticipated required criteria for EPEAT 2018.

Regulatory compliance

The following table lists the regulatory compliance of your Precision 3280 CFF.

Table 21. Regulatory compliance

Regulatory compliance
Product Safety, EMC and Environmental Datasheets
Dell Regulatory Compliance Home page
Responsible Business Alliance Policy

Operating and storage environment

This table lists the operating and storage specifications of your Precision 3280 CFF.

Airborne contaminant level: G1 as defined by ISA-S71.04-1985

Table 22. Computer environment

Description	Operating	Storage
Temperature range	10°C-35°C (50°F-95°F)	-40°C-65°C (-40°F-149°F)
Relative humidity (maximum)	20% to 85% (non-condensing) (non-condensing, Max dew point temperature = 26°C)	0% to 95% (non-condensing) 5% to 95% (non-condensing, Max dew point temperature = 33°C)
Vibration (maximum)*	0.52 GRMS random at 5 Hz-350 Hz	2.0 GRMS random at 5 Hz-500 Hz
Shock (maximum)	40G Bottom half-sine pulse (2.5 ms)	105G half-sine pulse (2.5 ms)
Altitude range	-15.2 m to 3048 m (4.64 ft to 10,000 ft)	-15.2 m to 10,668 m (4.64 ft to 35,000 ft)
CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.		

* Measured using a random vibration spectrum that simulates the user environment.

† Measured using a 2 ms half-sine pulse.

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Engineering specifications

Physical system dimensions

The following table provides the physical dimensions of your Precision 3280 CFF.

NOTE: System weight and shipping weight are based on a typical configuration and may vary based on your system configuration. A typical configuration includes integrated graphics, one hard drive, and one optical drive.

Table 23. Physical system dimensions—World wide

Feature	Values
Chassis volume	2.9 L
Chassis Weight	• Minimum—4.03 lb (1.83 kg) • Maximum—5.59 lb (2.54 kg)
Chassis dimensions	
Height	206.00 mm (8.11 in.)
Width	79.3 mm (3.12 in.)
Depth	178.00 mm (7.00 in.)
Shipping Weight (includes packaging materials)	12.41 lb (5.63 kg)
Packaging dimensions	
Height	211.00 mm (8.31 in.)
Width	599.00 mm (23.85 in.)
Depth	273.00 mm (10.75 in.)

Table 24. Physical system dimensions—EMEA GS

Feature	Values
Chassis volume	2.9 L
Chassis Weight	• Minimum—4.03 lb (1.83 kg) • Maximum—5.59 lb (2.54 kg)
Chassis dimensions	
Height	206.00 mm (8.11 in.)
Width	79.3 mm (3.12 in.)
Depth	178.00 mm (7.00 in)
Shipping Weight (includes packaging materials)	14.05 lb (6.37 kg)
Packaging dimensions	
Height	211.00 mm (8.31 in.)
Width	599.00 mm (23.85 in.)
Depth	273.00 mm (10.75 in.)

Add-in card dimensions

Slot limitations

The following table lists the system board connector and maximum add-in card allowable dimensions of your Precision 3280 CFF.

Table 25. Slot limitations of add-in cards

Feature	Values
PCIe x8 connector	1
Voltage	3.3 V/12 V
Height	2.731 in. (68.90 mm)
Length	6.6 in. (167.65 mm)
Maximum wattage	75 W

Table 26. M.2 2230 slot for Wi-Fi card

Feature	Values
Voltage	3.3 V
Width	0.86 in. (22.00 mm)
Length	1.18 in. (30.00 mm)
Thickness	0.14 in. (3.65 mm)
Maximum wattage	6.6 W

Table 27. M.2 2280 slot for solid state drive

Feature	Values
Voltage	3.3 V
Width	0.86 in. (22.00 mm)
Length	3.14 in. (80.00 mm)
Thickness	0.15 in. (3.80 mm)
Maximum Wattage	8.25 W

PCIe add-in cards

Serial port PCIe card, Low Profile

Table 28. Serial port PCIe card, Low Profile

Feature	Values
Interface	• RS-232 • IEEE1284
Data rates	• 50 bps ~115.2 Kbps (serial) • maximum 1.8 Mbps (parallel)
Controller details	
Controller	SUNIX SUN2212 (16C950 UART compatible)

Table 28. Serial port PCIe card, Low Profile (continued)

Feature	Values
Controller bus architecture	• PCI Express 2.0 • Single-Lane (x1)
Driver support	Windows 10 (64-bit)
Half-height serial add-in dongle	Optional
Environment	
Operating temperature	0°C to 60°C (32°F–140°F)
Operating humidity	5% to 95% RH
Storage temperature	-20°C to 85°C (-4°F to 185°F)

i226 PCIe x1 2.5 GbE NIC Card

The following table lists the i226 PCIe x1 2.5 GbE NIC Card specifications.

Table 29. i226 PCIe x1 2.5 GbE NIC Card specifications

Feature	Values
RJ45 connection	Compatibility with cable lengths up to 100 mts using • CAT5e • CAT6 • CAT6A
Interface	PCIe
Data rate supported per port	2.5/1 GbE and 100/10 Mbps
Controller details	
Controller	Intel Ethernet Controller i226
Controller bus architecture	PCI Express 3.1 x1
Driver support	N/A
Bracket	Full-height bracket installed. Low-profile bracket in package.
Environment	
Operating temperature	0°C to 55°C (32°F to 131°F)
Operating humidity	Maximum: 90% non-condensing relative humidity at 35°C
Storage temperature	-40°C to 70°C (-40°F to 158°F)

USB 3.2 Gen 2 PCIe card, Low Profile

The following table lists the USB 3.2 Gen 2 PCIe card, Low Profile specifications.

Table 30. USB 3.2 Gen 2 PCIe card, Low Profile specifications

Feature	Values
Interface	Universal Serial Bus 3.1/3.0/2.0/1.1
Speed	• SuperSpeed (10 Gbps) • SuperSpeed (5 Gbps) • High Speed (480 Mbps) • Full Speed (12 Mbps)

Table 30. USB 3.2 Gen 2 PCIe card, Low Profile specifications (continued)

Feature	Values
	• Low Speed (1.5 Mbps)
Number of ports	Two
Printed circuit board connector	USB 3.1 USB Type-A port
Controller details	
Controller	PCI Express USB3.1 Host controller, As media ASM 3142
Controller bus architecture	PCI Express Spec 3.0, Dual Lane (x 2)
USB standard	eXtensible Host Controller Interface (xHCI) Rev 1.1
Power	
Source	PCIe Bus Power
Output Capacity	USB Type-A Port: +5 VDC/Maximum 0.9 A/each port **NOTE:** Total power output capacity is limited by system power supply.
Over Current Protection	USB Type-A Port: +5 VDC/1.5 A/each port/Power switch
Power Consumption	1.1 W @ 3.3 V (board only without power output to USB device)
Environment	
Operating temperature	0°C to 60°C (32°F to 140°F)
Operating humidity	5 to 95% RH
Storage temperature	-20°C to 70°C (-4°F to 158°F)

Ethernet

Intel Ethernet Connection i219-LM

The following table lists the i219-LM specifications.

Table 31. Intel Ethernet Connection i219-LM specifications

Feature	Values
External connector type	RJ45
Data rate	10/100/1000 Mbps
Controller Details	
Controller bus architecture	PCI Express base specification revision 1.1
Integrated memory	Yes
Data transfer mode	Yes (Bus-Master DMA)
Power consumption (Full operation per data rate connection speed)	542 mW (Max)
Power consumption (Standby operation)	76 mW (Max)
IEEE standards compliance	802.3
Hardware certifications	N/A
Boot ROM support	EEPROM (Located in SPI)

Table 31. Intel Ethernet Connection i219-LM specifications (continued)

Feature	Values
Network Transfer Mode	
Network transfer rate	10 Mb (full/half-duplex)
10BASE-T (full-duplex) 20 Mbps	100 Mb (full/half-duplex)
100BASE-TX (half-duplex) 100 Mbps	1000 Mb (full-duplex)
Environmental	
Operating temperature range	0°C–85°C (32°F–185°F)
Operating humidity	20% to 80% (non condensing)
Operating system driver Support	• Windows (x64) • Ubuntu • Neokylin
Manageability	• Wakeup On LAN • PXE 2.1
Management capabilities alerting	Optional Intel Standard Manageability (must be made at time of purchase).

This term does not connote an actual operating speed of 1 Gb/sec. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Wireless module

Intel AX211, 2x2 MIMO, 2400 Mbps, 2.4/5/6 GHz, Wi-Fi 6E (WiFi 802.11ax), Bluetooth 5.3

The following table lists the Intel AX211 specifications.

NOTE: Wi-Fi 6 is supported in regions where Wi-Fi 6E is unavailable.

Table 32. Intel AX211 specifications

Description	Specifications
Host interface	CNVio
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160 MHz channel use, MU-MIMO, new 6 GHz band
Wi-Fi Alliance certifications	Wi-Fi CERTIFIED 6, Wi-Fi CERTIFIED a/b/g/n/ac,WMM, WMM-Power Save, WPA2, WPA3, WPS, PMF,Wi-Fi Direct, Wi-Fi Agile Multiband **NOTE:** Other names and brands may be claimed as the property of others.
Operating frequency bands	• 2.4 GHz • 5 GHz • 6 GHz
Data rate	• 2.4 GHz 40M: Up to 574 Mbps • 5/6 GHz 80M: Up to 1.2 Gbps • 5/6 GHz 160M: Up to 2.4 Gbps

Table 32. Intel AX211 specifications (continued)

Description	Specifications
Power consumption	Optimized power modes (sleep states) reduce power consumption during periods of inactivity
Security methods	• WPA2 Personal and Enterprise • WPA3
Authentication protocols	• 802.1X EAP-TLS • EAP-TTLS/MSCHAPv2 • PEAPv0 -MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA)
Encryption	• 64-bit and 128-bit WEP • TKIP • 128-bit AES-CCMP • 256-bit AES-GCMP
Product safety	• UL • C-UL • CB (IEC60950-1)
Management capabilities alerting	Support for Intel AMT
Government compliance	• FIPS 140-2 • FISMA
Client utility	Intel PRO/Set wireless software v22 and later
Antenna diversity	Supported
Radio On/Off	Supported
Roaming	Support seamless roaming between access points
Wake on wireless	Supported
Wireless display	Native Miracast support by Windows
Wireless PAN standard	• Dual Mode Bluetooth 5.3 • BLE
Bluetooth data rates	Up to 3 Mbps
Bluetooth operating frequency bands	2.4 GHz
Bluetooth profiles supported	Support for Microsoft Inbox Bluetooth Wireless Card profiles in Windows
Bluetooth data encryption	128-bit encryption
Bluetooth output power	Power class 1
Operating temperature	0°C to + 50°C (Full performance at shield temperatures up to 80°C)
Storage temperature	-40°C to +70°C
Humidity	Up to 90% RH non-condensing (at temperatures of 25°C to 35°C)

Qualcomm WCN6856, 2x2, Wi-Fi 6E DBS, Bluetooth 5.3

The following table lists the Intel Qualcomm WCN6856 specifications.

Table 33. Qualcomm WCN6856 specifications

Description	Specifications
Host interface	• Wi-Fi - PCIe • Bluetooth - USB
Network standard	IEEE 802.11a/b/g/n/ac/ax, 160MHz channel use, MU-MIMO
Wi-Fi Alliance certifications	• 802.11 a/b/g/n/ac R2/ax R2 • WMM • WMM-PS • WPA3 • WPS2 • PMF • WFD • Miracast • Passpoint R2 • Voice Personal
Operating frequency bands	• 2.4 GHz • 5 GHz • 6 GHz
Data rate	• 2.4 GHz 40M: Up to 691 Mbps • 5 GHz 160M: Up to 2.88 Gbps • 6 GHz 160M: Up to 2.88 Gbps • DBS mode • 2.4 GHz 40M + 5/6 GHz 160M: Up to 3.57 Gbps
Power consumption	Optimized power modes (sleep states) reduce power consumption during periods of inactivity
Authentication	• WPA and WPA2 Personal and Enterprise • WPA3 Personal and Enterprise
Authentication protocols	• 802.1X EAP-TLS • EAP-TTLS/MSCHAPv2 • PEAPv0-MSCHAPv2 (EAP-SIM, EAP-AKA, EAP-AKA)
Encryption	• 64-bit and 128-bit WEP • TKIP • 128-bit AES-CCMP • 256-bit AES-GCMP
Product safety	• UL • C-UL • CB (IEC60950-1)
Government compliance	• FIPS 140-2 • FISMA
Client utility	Intel PRO/Set wireless software v22 and later
Antenna diversity	Supported
Radio On/Off	Supported
Roaming	Support seamless roaming between access points
Wake on wireless	Supported

Table 33. Qualcomm WCN6856 specifications (continued)

Description	Specifications
Wireless display	Native Miracast support by Windows
Wireless PAN standard	• Dual Mode Bluetooth 5.3 • BLE
Bluetooth data rates	Up to 3 Mbps
Bluetooth operating frequency bands	2.4 GHz
Bluetooth profiles supported	Support for Microsoft Inbox Bluetooth profiles in Windows
Bluetooth data encryption	128-bit encryption
Bluetooth output power	Power Class 1
Operating temperature	0°C to + 50°C (Full performance at shield temperatures up to 80°C)
Storage temperature	-40°C to +70°C
Humidity	Up to 90% RH non-condensing (at temperatures of 25° C to 35° C)

GPU—Integrated

Intel UHD Graphics 730

Table 34. Intel UHD Graphics 730 specifications

Intel UHD Graphics 730		
Bus Type		Integrated
Memory Type		UMA
Graphics Level		i3: GT1 (UHD)
Overlay Planes		Yes
Operating Systems Graphics/ Video API Support		DirectX 12, OpenGL (4.6)
Supports maximum resolution		• On board integrated DP1.4 (HBR2)(4096 x 2304 @ 60 Hz) • Option card with VGA (1920 x 1200 @ 60 Hz) • Option card with DP1.4 (HBR3) (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics) • Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • Option card with Type-C (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics)
Number of displays supported		Up to four displays are supported
Multiple Display Supports	2 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz)

Table 34. Intel UHD Graphics 730 specifications (continued)

Intel UHD Graphics 730		
		+ On board integrated DP1.4 (4096x2304 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
	3 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
External connectors		• Two system-board integrated DP1.4 HBR2 + One video option (VGA/DP1.4 HBR3/ HDMI2.0/USB 3.2 Gen 2 type-C Alt-mode)

Intel UHD Graphics 770

Table 35. Intel UHD Graphics 770 specifications

Intel UHD Graphics 770	
Bus Type	Integrated
Memory Type	UMA

Table 35. Intel UHD Graphics 770 specifications (continued)

Intel UHD Graphics 770		
Graphics Level		i5/i7/i9: GT1 (UHD)
Overlay Planes		Yes
Operating Systems Graphics/ Video API Support		DirectX 12, OpenGL (4.6)
Supports maximum resolution		• On board integrated DP1.4 (HBR2)(4096 x 2304 @ 60 Hz) • Option card with VGA (1920 x 1200 @ 60 Hz) • Option card with DP1.4 (HBR3) (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics) • Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • Option card with Type-C (5120 x 3200 @ 60 Hz), (7680 × 4320 @ 60 Hz HDR with discrete graphics)
Number of displays supported		Up to four displays are supported
Multiple Display Supports	2 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + Option card with Type-C (5120 x 3200 @ 60 Hz)
	3 displays	• On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with VGA (1920 x 1200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card with DP1.4 (5120 x 3200 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4(4096 x 2304 @ 60 Hz) + Option card

Table 35. Intel UHD Graphics 770 specifications (continued)

Intel UHD Graphics 770		
		with HDMI 2.0 (4096 x 2160 @ 60 Hz) • On board integrated DP1.4 (4096 x 2304 @ 60 Hz) + On board integrated DP1.4 (4096 x 2160 @ 30 Hz)+ Option card with Type-C (5120 x 3200 @ 60 Hz)
External connectors		Two system-board integrated DP1.4 HBR2 + One video option (VGA/DP1.4 HBR3/ HDMI2.0/USB 3.2 Gen 2 type-C Alt-mode)

GPU—Discrete

NVIDIA RTX 4000 SFF Ada Generation, 20 GB GDDR6

The following table lists the NVIDIA RTX 4000 SFF Ada Generation specifications.

Table 36. NVIDIA RTX 4000 SFF Ada Generation specifications

Description	Values
GPU Memory	20 GB GDDR6
Memory Interface	160-bit
Memory Bandwidth	360 GB/s
NVIDIA CUDA Cores	6144
System Interface	PCI Express 4.0 x16
Max Power Consumption	70 W
Thermal Solution	Active
Form Factor	Height: 4.39 in./111.75 mm and Length: 9.58 in./243.15 mm, Single Slot
Display Connectors	4x DP 1.4a
Max Simultaneous Displays	4 direct, 4 DP 1.4 Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.7 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 12.2 • DirectCompute • OpenCL 3.0

NVIDIA RTX 2000 Ada Generation, 16 GB, GDDR6

The following table lists the NVIDIA RTX 2000 Ada Generation specifications.

Table 37. NVIDIA RTX 2000 Ada Generation specifications

Description	Values
GPU Memory	16 GB GDDR6
Memory Interface	128-bit
Memory Bandwidth	224 GB/s
NVIDIA CUDA Cores	2816
System Interface	PCI Express 4.0 x 8
Max Power Consumption	70 W
Thermal Solution	Active
Form Factor	Height: 2.7 in./68.58 mm and Length: 9.58 in./167.64 mm, Dual Slot
Display Connectors	4x Mini DisplayPort 1.4a
Max Simultaneous Displays	4 direct, 4 Mini DisplayPort 1.4 Multi-Stream
Display Resolution	• 2x 7680 x 4320 @ 60 Hz • 4x 5120 x 2880 @ 60 Hz • 4x 4096 x 2160 @ 120 Hz
Graphics APIs	• Shader Model 6.6 • OpenGL 4.6 • DirectX 12 • Vulkan 1.3
Compute APIs	• CUDA 11.6 • DirectCompute • OpenCL 3.0

NVIDIA T1000, 8 GB GDDR6

The following table lists the NVIDIA T1000 specifications.

Table 38. NVIDIA T1000 specifications

Feature	Values
GPU frequency	1065 MHz
DirectX 12	12
Shader model	5.17
Open CL	3
Open GL	4.6
GPU memory interface	128 bits
PCIe bus	PCIe 3.0 x16
Display support	Four mini-DP 1.2 Certified, 1.3/1,4 Ready
Graphics memory configuration	8 GB, GDDR6
Graphics memory clock speed	5001 MHz

Table 38. NVIDIA T1000 specifications (continued)

Feature	Values
Active fan sink	4-pin embedded fan controller
Slot number	Single Slot
PCB form factor	Half Height
PCB layer	N/A
PCB solder mask	N/A
Bracket form factor	Low Profile or Full Height
Maximum resolution	7680 x 4320 x 24 bpp at 120 Hz (Requires two DPs 1.4a and DSC)
Power consumption	50 W

NVIDIA T400, 4 GB GDDR6

The following table lists the NVIDIA T400 specifications.

Table 39. NVIDIA T400 specifications

Feature	Values
GPU frequency	420 MHz
DirectX 12	12
Shader model	5.17
Open CL	3
Open GL	4.6
GPU memory interface	64 bits
PCIe bus	PCIe 3.0 x16
Display support	Three mini-DP 1.2 Certified, 1.3/1,4 Ready
Graphics memory configuration	4 GB, GDDR6
Graphics memory clock speed	5001 MHz
Active fan sink	4-pin embedded fan controller
Slot number	Single Slot
PCB form factor	Half Height
PCB layer	N/A
PCB solder mask	N/A
Bracket form factor	Low Profile
Maximum resolution	7680 x 4320 x 24 bpp at 120 Hz (Requires two DPs 1.4a and DSC)
Power consumption	30 W

Video port and resolution matrix

The following table lists the Video port and resolution matrix on your Precision 3280 CFF.

Table 40. Video port and resolution matrix

Port type	DP++ 1.4/HDCP 2.3 port (UMA and Discrete Graphics)	HDMI-OUT port—HDMI 1.4a (UMA Graphics)	HDMI-OUT port—HDMI 2.1 (Discrete Graphics)
Maximum resolution—single display	4096 x 2304 @ 60 Hz	4096 x 2160 @ 30 Hz	4096 x 2160 @ 60 Hz
Maximum resolution—dual MST	4096 x 2304 @ 60 Hz, 1400 x 1050 @ 60 Hz or 2880 x 1800 @ 60 Hz, 2880 x 1800 @ 60 Hz	Not applicable	Not applicable
Maximum resolution—triple MST	4096 x 2304 @ 60 Hz, 1360 x 768 @ 60 Hz, 640 x 480 @ 60 Hz or 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz	Not applicable	Not applicable
Maximum resolution—quad MST	4096 x 2304 @ 60 Hz, 4096 x 2304 @ 60 Hz, 1360 x 768 @ 60 Hz, 640 x 480 @ 60 Hz or 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz, 2304 x 1440 @ 60 Hz	Not applicable	Not applicable

Storage

M.2 2280, 256 GB, TLC PCIe NVMe Gen4, Class 35 SSD

The following table lists the M.2 2280, 256 GB SSD specifications.

Table 41. 256 GB SSD specifications

Description	Values
Capacity	256 GB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTTF	1.4M hours
Logical blocks	500,118,192
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4) • Active: 4 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C

Table 41. 256 GB SSD specifications (continued)

Description	Values
Relative humidity range	5% to 95%

M.2 2280, 512 GB, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 512 GB SSD specifications.

Table 42. 512 GB SSD specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L1.2) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280, 1 TB, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 1 TB SSD specifications.

Table 43. 1 TB SSD specifications

Description	Values
Capacity	1 TB
Height (approximate)	2.38 mm (0.17 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours

Table 43. 1 TB SSD specifications (continued)

Description	Values
Logical blocks	2,000,409,264
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L1.2) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280, 2 TB, PCIe NVMe Gen4 x4, Class 40 SSD

The following table lists the M.2 2280, 2 TB SSD specifications.

Table 44. 2 TB SSD specifications

Description	Values
Capacity	2 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	4,000,797,360
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L1.2) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280, 512 GB, PCIe NVMe Gen4 x4, Opal Self-Encrypting Class 40 SSD

The following table lists the M.2 2280, 512 GB SSD, self-encrypting drive specifications.

Table 45. 512 GB SSD, self-encrypting drive specifications

Description	Values
Capacity	512 GB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	1,000,215,216
Power source	
Power consumption (reference only)	• Idle: 5 mW (PS4 - L12) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

M.2 2280, 1 TB, PCIe NVMe Gen4 x4, Opal Self-Encrypting Class 40 SSD

The following table lists the M.2 2280, 1 TB SSD, self-encrypting drive specifications.

Table 46. 1 TB SSD, self-encrypting drive specifications

Description	Values
Capacity	1 TB
Height (approximate)	2.38 mm (0.09 in.)
Width (approximate)	22 mm (0.87 in.)
Depth (approximate)	80 mm (3.15 in.)
Interface type	PCIe Gen4
Speed (maximum)	64 Gb/s (up to 4 lanes)
MTBF	1.4M hours
Logical blocks	2,000,409,264
Power source	

Table 46. 1 TB SSD, self-encrypting drive specifications (continued)

Description	Values
Power consumption (reference only)	• Idle: 5 mW (PS4 - L12) • Active: 5 W
Environmental operating conditions (non-condensing)	
Temperature range	0°C to 70°C
Relative humidity range	10% to 90%
Op shock	1500G
Environmental non-operating conditions (non-condensing)	
Temperature range	-40°C to 70°C
Relative humidity range	5% to 95%

Power adapter

The following table lists the power adapter specifications of your Precision 3280 CFF.

Table 47. Power adapter specifications

Description		Option one	Option two
Type		180 W AC adapter	280 W AC adapter
Connector dimensions:			
	External diameter	7.40 mm (0.29 in.)	7.40 mm
	Internal diameter	5.10 mm (0.20 in.)	5.10 mm
Power-adapter dimensions:			
	Height	22 mm (0.8 in.)	22 mm (0.8 in.)
	Width	66 mm (2.6 in.)	66 mm (2.6 in.)
	Depth	130 mm (5.1 in.)	143 mm (5.6 in.)
Input voltage		100 VAC - 240 VAC	100-120 VAC; 200-240 VAC
Input frequency		50 Hz–60 Hz	50 Hz–60 Hz
Input current (maximum)		2.34 A	4 A
Output current (continuous)		9.23 A	14.36 A
Rated output voltage		19.50 VDC	19.50 VDC
Temperature range:			
	Operating	0°C-40°C (32°F–104°F)	0°C-40°C (32°F–104°F)
	Storage	-40°C-70°C (-40°F-158°F)	-40°C-70°C (-40°F-158°F)
Compliance			
Erp Lot6 Tier 2 requirement		Yes	Yes
80Plus compliant		Yes	Yes

Table 47. Power adapter specifications (continued)

Description	Option one	Option two
Energy Star 8.0 compliant	Yes	Yes
GS mark compliant	Yes	Yes
NCTC Anti Power Surge certification	Yes	Yes
NCTC Anti Lightning Strike certification	Yes	Yes
NCTC Anti Static Electricity Certification	Yes	Yes

CMOS battery

The following table lists the CMOS battery specifications of your Precision 3280 CFF.

Table 48. CMOS battery

Brand	Type	Voltage	Composition	Battery life
SHUNWO, DOUBLE BEST, VIC-DAWN	CR2032	3.0 V	Lithium metal	Continuous Discharge Under 15 kΩ Load to 2.0 V End-Voltage. 20℃±2℃ 940 Hrs. or Longer.910 Hrs.or Longer after 12 mo.

Accessories

The following table lists the supported accessories on your Precision 3280 CFF.

Table 49. Accessories

Accessories
3Dconnexion SpaceMouse Wireless - 3DX-700066
Dell Slim Soundbar - SB521A
Dell Pro Wireless Headset - WL5022
Dell Pro Wireless Keyboard and Mouse - KM5221W

Security

Software security

The following table lists the software security details of your Precision 3280 CFF.

Table 50. Software security

Software security
Certificate Based Authentication (CBA)/Authenticated BIOS Interface (ABI)
McAfee Small Business Security 30-Day Free Trial
Dell Encryption Personal
Dell Encryption Enterprise
Dell Encryption External Media

Table 50. Software security (continued)

Software security
Dell Data Protection | BitLocker Manager (DDP | BLM)
Dell Trusted Device (SafeBIOS)
Digital Device Identity and Secured Component Verification
Secure BIOS Baseline
Secured-core PC
Dell SupportAssist for PCs
Dell SupportAssist OS Recovery (Excalibur)

Trusted Platform Module

The following table lists the Trusted Platform Module (TPM) of your Precision 3280 CFF.

Table 51. Trusted Platform Module (TPM)

TPM: Nuvoton NPCT760JABYX
SPI interface
TPM 2.0
FIPs 140-2 certificate

Mil-SPEC

The Precision 3280 CFF meets military specifications for the following MIL-STD 810H tests:

Table 52. Military specifications

Test Category	Test Method	Test Parameters
Non-operating altitude test	Method 500.6 Procedure I	Test specification: • Altitude: 15,000 ft • Temperature: 21°C • Duration: 1 hour
Operating altitude test	Method 500.6 Procedure II	Test specification: • Altitude: 15,000 ft • Temperature: 21°C • Duration: 1 hour
Non-operating high temperature test	Method 501.7 Procedure I	Test specification: • Temperature: 33°C - 71°C • High temperature cycles, climatic category A1 - Hot dry • Duration: 168 hours constant
Operating high temperature test	Method 501.7 Procedure II	Test specification: • Temperature: 32°C - 49°C • High temperature cycles • Duration: 120 hours constant

Table 52. Military specifications (continued)

Test Category	Test Method	Test Parameters
Non-operating low temperature test	Method 502.7 Procedure I - Storage	Test specification: • Temperature: -51°C • Duration: 24 hours
Operating low temperature test	Method 502.7 Procedure II - Operation	Test specification: • Temperature: -29°C • Duration: 24 hours
Humidity test	Method 507.6 Procedure I	Induced B3 • Duration: Hot-humid, 15 days exposure Induced B3, Non-operating
Mechanical shock test - I Bench handling	Method 516.8 Procedure VI	Test specification: • The lifted edge of the chassis has been raised 100 mm (4 in.) above the horizontal bench top.
Blowing dust test	Method 510.7 Procedure I	Test specification: • Temperature: 25°C and 60°C • Dust concentration: (10.6±7) g/m³ • Air flow velocity: 1.5 m/s to 8.9 m/s • Relative humidity: 30% • Duration: 12 hours
Operating vibration test	Method 514.8 Procedure I	Refer table 514.6C-II: Category 4 - common carrier
Shock material to be packaged non-operating	Method 516.8 Procedure II	Test specification: • Pulse shape: Trapezoidal • Acceleration: 30 g • Velocity change: 304 inch/second • Shock direction: 6 faces (±X, ±Y, ±Z axes) • No. of shock: 1 shock/ face (total 6 shocks)
Crash hazard shock test Non-operating	Method 516.8 Procedure V	Test specification: • Pulse shape: Half-sine • Acceleration: 185 g • Pulse duration: 2 ms • Shock direction: 12 faces (±X, ±Y, ±Z axes) • No. of shock: 1 shock/ face (total 12 shocks)

Acoustic noise emission information tower

The following table lists the acoustic noise emission information of your Precision 3280 CFF.

Table 53. Precision 3280 CFF with 14th Generation Intel Core i9-14900 vPro processor/32 GB memory

Component	Test Configuration
CPU	14th Generation Intel Core i9-14900 vPro

Table 53. Precision 3280 CFF with 14th Generation Intel Core i9-14900 vPro processor/32 GB memory (continued)

Component	Test Configuration
Memory	32 GB
Hard drive (#, capacity)	N/A
ODD	N/A
Graphics Adapter	NVIDIA RTX 4000 Ada Generation

Table 54. Declared Sound Power (LWAd)

Operating Mode	Declared Sound Power(LWAd)
Idle	3.66
Hard drive Operating	N/A
CPU Stressed (50% loading)	3.66
ODD Operating	N/A

Table 55. A-Weighted Sound Pressure Level (dB)

Declared Sound Pressure (LpA)				
	Tabletop System		Floor Standing System	
Operating Mode	Operator Position	Bystander Position	Operator Position	Bystander Position
Idle	28.9	23.6	22.1	20.1
CPU Stressed (50% loading)	28.8	23.5	22.1	20.0

All tests are conducted according to ISO 7779 and declared according to ISO 9296 except CPU Stressed. This test mode is not specified in ISO 7779, but was measured using the same microphone distances and measurement techniques that are defined for the other reported operating modes.

Declared Sound Power rounded to the nearest tenth of a bel per ISO 9296 section 4.4.2.

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).

Enclosure minimum clearance

Leave a 10.20 cm (4 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°C. 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.

Open desk minimum clearance

If your computer is installed in a corner, on a desk, or under a desk, leave at least 5.10 cm (2 in.) clearance from the back of the computer to the wall to permit the airflow required for proper ventilation.

System management features

Dell commercial systems come with a number of systems management options that are include by default for In-Band management with our Dell Client Command Suite. In-Band management meaning that the Operating System is functional and the device is connected to a network so that it can be managed. The Dell Client Command Suite of tools can be leveraged individually or with a systems management console like SCCM, LANDESK, KACE, etc.

We also offer Out-of-Band management as an option. Out-of-band management is when the system does not have a functional operating system or is turned off and you still want to be able to manage the system in that state.

Dell Client Command Suite for in-band systems management

Dell Client Command Suite is a free toolkit available for download, for all Latitude Rugged tablets at dell.com/support, that automates and streamlines systems management tasks, saving time, money, and resources. It consists of the following modules that can be used independently, or with a variety of systems management consoles such as SCCM.

Dell Client Command Suite's integration with VMware Workspace ONE Powered by AirWatch, now allows customers to manage their Dell client hardware from the cloud, using a single Workspace ONE console.

Dell Command | Deploy enables easy operating system (OS) deployment across all major OS deployment methodologies and provides numerous system-specific drivers that have been extracted and reduced to an OS-consumable state.

Dell Command I Configure is a graphical user interface (GUI) admin tool for configuring and deploying hardware settings in a pre-OS or post-OS environment, and it operates seamlessly with SCCM and Airwatch and can be self-integrated into LANDesk and KACE. Simply, this is all about the BIOS. Command I Configure allows you to remotely automate and configure over 150+ BIOS settings for a personalized user experience.

Dell Command I PowerShell Provider can do the same things as Command I Configure, but with a different method. PowerShell is a scripting language that allows customers to create a customized and dynamic configuration process.

Dell Command I Monitor is a Windows Management Instrumentation (WMI) agent that provides IT admins with an extensive inventory of the hardware and health-state data. Admins can also configure hardware remotely by using command line and scripting.

Dell Command | Update (end-user tool) is factory-installed and allows admins to individually manage and automatically present and install Dell updates to the BIOS, drivers, and software. Command I Update eliminates the time-consuming hunting and pecking process of update installation.

Dell Command I Update Catalog provides searchable metadata that allows the management console to retrieve the latest system-specific updates (driver, firmware or BIOS). The updates are then delivered seamlessly to end-users using the customer's systems management infrastructure that is consuming the catalog (like SCCM).

Dell Command | vPro Out of Band console extends hardware management to systems that are offline or have an un-reachable OS (Dell exclusive features).

Dell Command | Integration Suite for System Center - This suite integrates all the key components of the Client Command Suite into Microsoft System Center Configuration Manager 2012 and Current Branch versions.

Out-of-band systems management

Intel Standard Manageability option **must be configured in our factory at the time of purchase, as it is NOT field upgradable.** It offers out-of-band management and DASH compliance (Certification Registry).

4

Dell Optimizer

This section details the Dell Optimizer specifications of your Precision 3280 CFF.

On Precision 3280 CFF with Dell Optimizer, the following features are supported:

- **Express Connect**—Automatically joins the access point with the strongest signal, and directs bandwidth to conferencing applications when in use.
- **ExpressResponse**—Prioritizes the most important applications. Applications open faster and perform better.
- **AudioOptimization**—The audio feature enhances the audio functionality during your online meetings. The audio feature helps filter the background noise, stabilize volume, and prioritize preferred voice streaming during online meetings.

For more information about configuring and using these features, see Dell Optimizer User Guide.

5

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 56. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	Dell Site
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	Windows Support Site Linux Support Site
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified using a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at Dell Support Site. For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles	1. Go to Dell Support Site. 2. On the menu bar at the top of the Support page, select **Support** > **Support Library**. 3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see Dell Support Site.

NOTE: Availability of the services may vary depending on the country or region, and product.

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