

Dell Precision 3541

Setup and specifications guide



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.

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Set up your Precision 3541

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

1. Connect the power adapter and press the power button.



NOTE: To conserve battery power, the battery might enter power saving mode. Connect the power adapter and press the power button to turn on the computer.

2. Finish Windows setup.

Follow the on-screen instructions to complete the setup. When setting up, Dell recommends that you:

- Connect to a network for Windows updates.
 - NOTE:** If connecting to a secured wireless network, enter the password for the wireless network access when prompted.
- If connected to the internet, sign-in with or create a Microsoft account. If not connected to the internet, create an offline account.
- On the **Support and Protection** screen, enter your contact details.

3. Locate and use Dell apps from the Windows Start menu—Recommended

Table 1. Locate Dell apps







Resources	Description
	My Dell Centralized location for key Dell applications, help articles, and other important information about your computer. It also notifies you about the warranty status, recommended accessories, and software updates if available.
	SupportAssist

Table 1. Locate Dell apps (continued)

Resources	Description
	<p>Pro-actively checks the health of your computer's hardware and software. The SupportAssist OS Recovery tool troubleshoots issues with the operating system. For more information, see the SupportAssist documentation at www.dell.com/support.</p> <p> NOTE: In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.</p>
	<p>Dell Update</p> <p>Updates your computer with critical fixes and latest device drivers as they become available. For more information about using Dell Update, see the knowledge base article SLN305843 at www.dell.com/support.</p>
	<p>Dell Digital Delivery</p> <p>Download software applications, which are purchased but not pre-installed on your computer. For more information about using Dell Digital Delivery, see the knowledge base article 153764 at www.dell.com/support.</p>


4. Create recovery drive for Windows.

 **NOTE:** It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows.

For more information, see [Create a USB recovery drive for Windows](#).

Create a USB recovery drive for Windows

Create a recovery drive to troubleshoot and fix problems that may occur with Windows. An empty USB flash drive with a minimum capacity of 16 GB is required to create the recovery drive.

 **NOTE:** This process may take up to an hour to complete.

 **NOTE:** The following steps may vary depending on the version of Windows installed. Refer to the [Microsoft support site](#) for latest instructions.

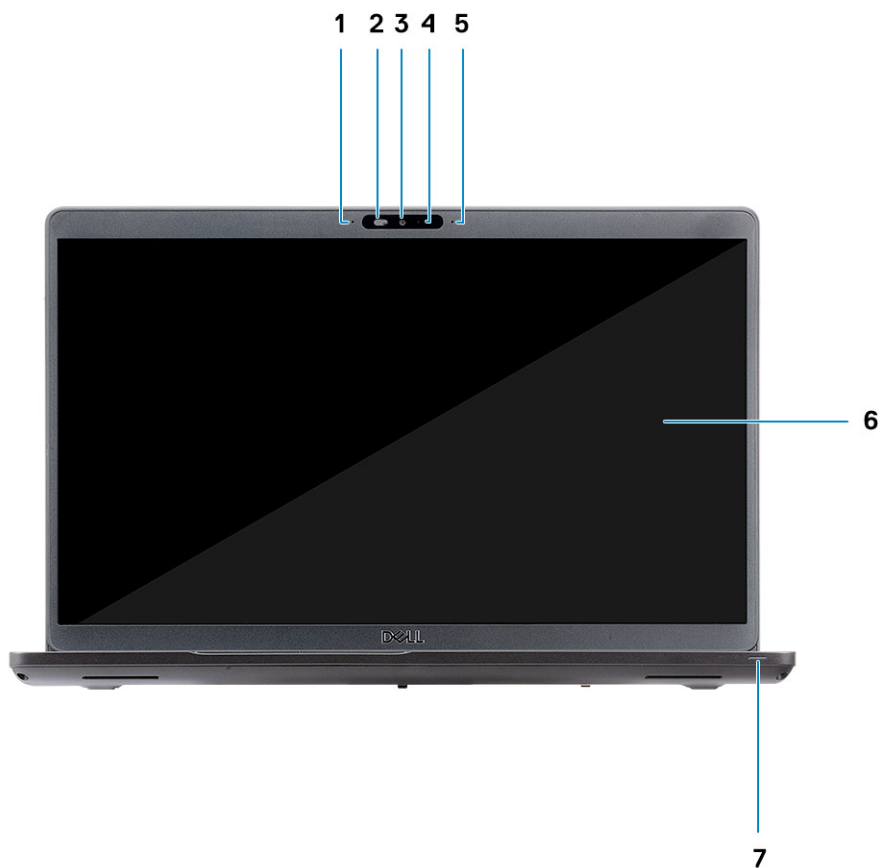
1. Connect the USB flash drive to your computer.
2. In Windows search, type **Recovery**.
3. In the search results, click **Create a recovery drive**.
The **User Account Control** window is displayed.
4. Click **Yes** to continue.
The **Recovery Drive** window is displayed.
5. Select **Back up system files to the recovery drive** and click **Next**.
6. Select the **USB flash drive** and click **Next**.
A message appears, indicating that all data in the USB flash drive will be deleted.
7. Click **Create**.
8. Click **Finish**.
For more information about reinstalling Windows using the USB recovery drive, see the *Troubleshooting* section of your product's *Service Manual* at www.dell.com/support/manuals.

Chassis overview

Topics:

- Display view
- Left view
- Right view
- Palmrest view
- Bottom view

Display view



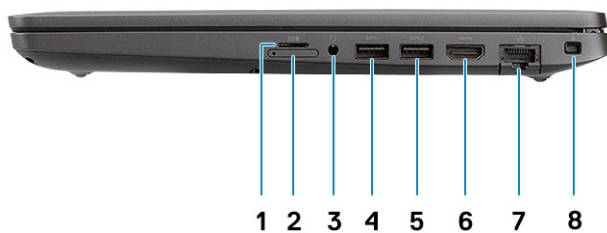
1. Array microphone
2. Camera shutter
3. Camera
4. Camera status light
5. Array microphone
6. LCD panel
7. LED activity light

Left view



1. Power connector port
2. USB 3.1 Gen 2(USB Type-C) port with Thunderbolt
3. USB 3.1 Gen 1 port
4. Smart card reader (optional)

Right view



1. microSD card reader
2. micro-SIM card slot (optional)
3. Headset/ Microphone port
4. USB 3.1 Gen 1 port
5. USB 3.1 Gen 1 port with PowerShare
6. HDMI port
7. Network port
8. Wedge-shaped lock slot

Palmrest view

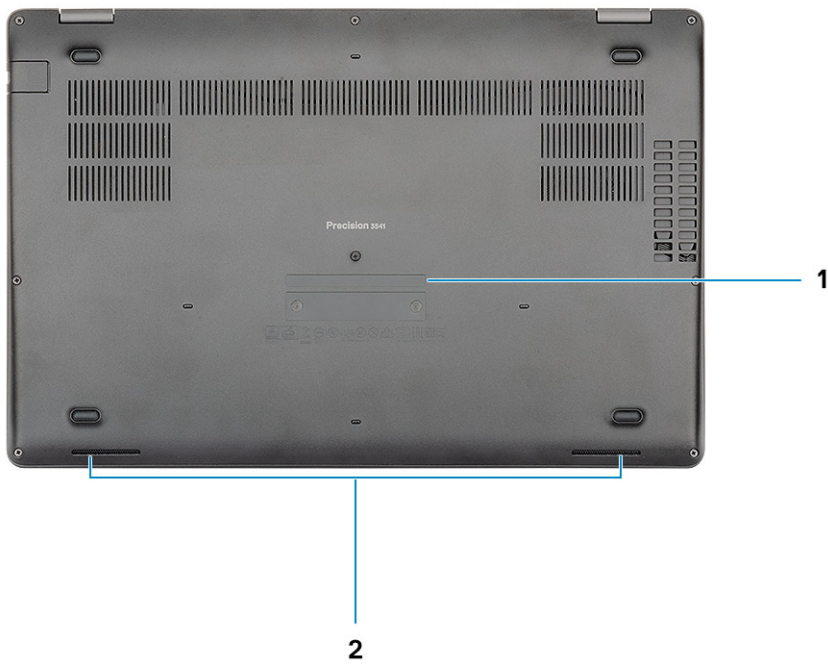


1. Power button with optional fingerprint
2. Keyboard
3. Fingerprint reader (optional)
4. Touchpad



1. Power button with optional fingerprint
2. Keyboard
3. Contactless smart card reader (optional)
4. Touchpad

Bottom view



1. Service tag label
2. Speakers

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.

Topics:

- [Chipset](#)
- [Processors](#)
- [Memory](#)
- [Ports and connectors](#)
- [Storage](#)
- [Dimensions and weight](#)
- [Operating system](#)
- [Communications](#)
- [Mobile broadband](#)
- [Audio](#)
- [Media-card reader](#)
- [Keyboard](#)
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- [Fingerprint reader \(optional\)](#)
- [Video](#)
- [Computer environment](#)
- [Security](#)
- [Security options—Contacted smartcard reader](#)
- [Security options—Contactless smartcard reader](#)
- [Security Software](#)

Chipset

Table 2. Chipset

Description	Values
Chipset	CM246
Processor	9th Generation Intel Core i5/i7/i9 or Xeon
DRAM bus width	Dual 64 bit
Flash EPROM	24/32 MB (32 MB for Vpro SKU)
PCIe bus	PCIe 3.0

Processors

Table 3. Processors

Description	Values					
Processors	9th Generation Intel Core i5-9300H	9th Generation Intel Core i5-9400H	9th Generation Intel Core i7-9750H	9th Generation Intel Core i7-9850H	9th Generation Intel Core i9-9880H	Mobile Intel Xeon E-2276M
Wattage	35 W	35 W	35 W	35 W	35 W	35 W
Core count	4	4	6	6	8	6
Thread count	8	8	12	12	16	12
Speed	4.1 GHz	4.3 GHz	4.5 GHz	4.6 GHz	4.8	4.7
Cache	8M	8M	12M	12M	16M	12M
Integrated graphics	Intel UHD Graphics 630	Intel UHD Graphics 630	Intel UHD Graphics 630	Intel UHD Graphics 630	Intel UHD Graphics 630	Intel UHD Graphics P630

Memory

Table 4. Memory specifications

Description	Values
Slots	Two-SODIMM slots
Type	<ul style="list-style-type: none"> • Dual-channel DDR4 • Optional ECC memory for Mobile Intel Xeon Processor
Speed	2667 MHz
Maximum memory	32 GB
Minimum memory	4 GB
Memory size per slot	16 GB
Configurations supported	<ul style="list-style-type: none"> • 8 GB DDR4 (2 x 4 GB) • 8 GB DDR4 (1 x 8 GB) • 16 GB DDR4 (2 x 8 GB) • 16 GB DDR4 (1 x 16 GB) • 32 GB DDR4 (2 x 16 GB) • 4 GB DDR4 (1 x 4GB) - Non-ECC only

Ports and connectors


Table 5. External ports and connectors

Description	Values
External:	

Table 5. External ports and connectors (continued)

Description	Values
Network	One RJ-45, 10/100/1000
USB	<ul style="list-style-type: none"> Two USB 3.1 Gen 1 port One USB 3.1 Gen 1 with PowerShare One USB 3.1 Gen 2 (Type-C) with Thunderbolt
Audio	One Universal Jack (headset + mic phone in + line in support) port
Video	One HDMI 2.0 port
Media card reader	One SD-card slot (Optional), One microSD- card slot
Docking port	Supported
Power adapter port	One
Security	Wedge-shaped lock slot

Table 6. Internal ports and connectors

Description	Values
Internal:	
M.2	One M.2 2280/2230 slot for solid-state drive  NOTE: To learn more about the features of different types of M.2 cards, see the knowledge base article SLN301626 .

Storage

Your computer supports one of the following configurations:

- One hard-disk drive + One Solid-state drive with 3 or 4-cell battery
- One solid-state drive with 6-cell battery

Table 7. Storage specifications

Storage type	Interface type	Capacity
2.5-inch 5400rpm hard-disk drive	SATA up to 6 Gbps	Up to 2 TB
2.5 inch 7200rpm Hard-drive drive	SATA up to 6 Gbps	Up to 1 TB
M.2 2230 solid-state drive PCIe NVMe	PCIe Gen3x2 NVMe, up to 16 Gbps	Up to 512 GB
M.2 2280 solid-state drive PCIe NVMe	PCIe Gen3x4 NVMe, up to 32 Gbps	Up to 2 TB
M.2 2280 solid-state drive Class 20	SATA Class 20	Up to 512 GB

Dimensions and weight

Table 8. Dimensions and weight

Description	Values
Height:	
Front	21.9 mm (0.86 in.)
Rear	24.5 mm (0.96 in.)
Width	359.1 mm (14.13 in.)
Depth	236.25 mm (9.30 in.)
Weight	1.97 kg (4.34 lb) <i>i</i> NOTE: The weight of your computer depends on the configuration ordered and the manufacturing variability.

Operating system

- Windows 10 Home (64-bit)
- Windows 10 Professional (64-bit)
- Windows 10 Pro for Workstations (64-bit)
- Ubuntu 18.04
- Red Hat 7.5

Communications

Ethernet

Table 9. Ethernet specifications

Description	Values
Model number	Integrated Connection I219-LM/I219-V Ethernet (RJ-45)
Transfer rate	10/100/1000

Wireless module

Table 10. Wireless module specifications

Description	Values		
Model number	Intel Dual Band Wireless AC 9560 (802.11ac) 2x2 + Bluetooth 5.0	Qualcomm QCA61x4A (DW1820) 802.11ac Dual Band (2x2) Wireless Adapter + Bluetooth 4.2	Intel AX200 + Bluetooth 5.0
Transfer rate	1.73 Gbps	<ul style="list-style-type: none"> • 802.11ac - Up to 867 Mbps • 802.11n - Up to 450 Mbps • 802.11a/g - Up to 54 Mbps • 802.11b - Up to 11 Mbps 	2400 Mbps

Table 10. Wireless module specifications (continued)

Description	Values		
Frequency bands supported	2.4/ 5 GHz (160 MHz)	2.4 GHz (802.11b/g/n) and 5 GHz (802.11a/n/ac)	2.4/ 5 GHz
Wireless standards	WiFi 802.11b/g/a/n/ac,	<ul style="list-style-type: none"> 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac Dual-mode Bluetooth 4.2, BLE (HW ready, SW depends on OS) 	<ul style="list-style-type: none"> WiFi 802.11a/b/g Wi-Fi 4 (WiFi 802.11n) Wi-Fi 5 (WiFi 802.11ac) Wi-Fi 6 (WiFi 802.11ax)
Encryption	64/128-bit encryption	128-bit encryption	<ul style="list-style-type: none"> 64-bit/128-bit WEP AES-CCMP TKIP
Bluetooth	Bluetooth 5.0	Bluetooth 4.2	Bluetooth 5.0

Mobile broadband

Table 11. Intel XMM 7360 Global LTE-Advanced

Description	Values
Model number	Intel XMM 7360 Global LTE-Advanced

Audio

Table 12. Audio specifications

Description	Values	
Controller	Realtek ALC3204	
Stereo conversion	Supported	
Internal interface	Intel HDA	
External interface	Universal Audio Jack	
Speakers	2	
Internal speaker amplifier	Supported (Audio codec built-in amplifier)	
External volume controls	Keyboard shortcut controls	
Speaker output:		
	Average	2 W
	Peak	2.5 W
Subwoofer output	Not supported	
Microphone	Dual-array microphones	

Media-card reader

Table 13. Media-card reader specifications

Description	Values
Type	<ul style="list-style-type: none">• One microSD-card slot• One SD-card slot (Optional)
Cards supported	<ul style="list-style-type: none">• MicroSD• SD-card (optional)

Keyboard

Table 14. Keyboard specifications

Description	Values
Type	Standard keyboard
Layout	QWERTY
Number of keys	<ul style="list-style-type: none">• United States and Canada: 102 keys• United Kingdom: 103 keys• Japan: 106 keys
Size	X=18.06 mm (0.73 in.) key pitch Y=19.05 mm (0.75 in.) key pitch
Shortcut keys	<p>Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. To type the alternate character, press Shift and the desired key. To perform secondary functions, press Fn and the desired key.</p> <p>NOTE: You can define the primary behavior of the function keys (F1–F12) changing Function Key Behavior in BIOS setup program.</p> <p>Keyboard shortcuts</p>

Camera

Table 15. Camera specifications

Description	Values
Number of cameras	One
Type	<ul style="list-style-type: none">• Optional RGB HD 720p camera• Optional IR camera
Location	Front camera
Sensor type	CMOS sensor technology
Resolution	
Camera	

Table 15. Camera specifications (continued)

Description		Values
	Still image	HD resolution (1280 x 720)
	Video	HD resolution (1280 x 720) at 30 fps
	Infrared camera	
	Still image	340x340
	Video	340x340 at 30 fps
Diagonal viewing angle		
	Camera	87 degree
	Infrared camera	53 degree

Touchpad

Table 16. Touchpad specifications

Description		Values
Resolution:		
	Horizontal	1221
	Vertical	661
Dimensions:		
	Horizontal	PCB: 101.7 mm/ active area: 99.5 mm
	Vertical	PCB: 55.2 mm/ active area: 53 mm

Touchpad gestures

For more information about touchpad gestures for Windows 10, see the Microsoft knowledge base article [4027871](https://support.microsoft.com/4027871) at support.microsoft.com.

Power adapter

Table 17. Power adapter specifications

Description	Values	
Type	E5 90 W	E4 130 W
Diameter (connector)	7.4mm	7.4 mm
Input voltage	100 to 240 VAC	100 to 240 VAC
Input frequency	50 to 60 Hz	50 to 60 Hz
Input current (maximum)	1.6 A	1.8 A

Table 17. Power adapter specifications (continued)

Description		Values	
Output current (continuous)		4.62 A (continuous)	6.7 A (continuous)
Rated output voltage		19.5 VDC	19.5 VDC
Temperature range:			
	Operating	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)
	Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Battery

Table 18. Battery specifications

Description		Values			
Type	3 Cell 51 WHr ExpressCharge Capable Battery	4 Cell 68 WHr ExpressCharge Capable Battery	4 Cell 68 WHr Long Cycle life Battery	6 Cell 97 WHr ExpressCharge Capable Battery	
Voltage	11.40 VDC	15.2 VDC	15.2 VDC	11.4 VDC	
Weight (maximum)	250 g (0.55 lb)	340 g (0.75 lb)	340 g (0.75 lb)	470 g (1.04 lb)	
Dimensions:					
	Height	7.05 mm (0.28 in.)	7.05 mm (0.28 in.)	7.05 mm (0.28in.)	7.7 mm (0.30 in.)
	Width	95.9 mm (3.78 in.)	95.9 mm (3.78 in.)	95.9 mm (3.78in.)	82.0 mm(3.22 in.)
	Depth	181 mm (7.13 in.)	233 mm (9.17 in.)	233 mm (9.17in.)	332 mm (13.1 in.)
Temperature range:					
	Operating	Charge: 0°C to 50°C, 32°F to 122°F; Discharge: 0°C to 60°C, 32°F to 139°F	Charge: 0°C to 50°C, 32°F to 122°F; Discharge: 0°C to 60°C, 32°F to 139°F	Charge: 0°C to 50°C, 32°F to 122°F; Discharge: 0°C to 60°C, 32°F to 139°F	Charge: 0°C to 50°C, 32°F to 122°F; Discharge: 0°C to 60°C, 32°F to 139°F
	Storage	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)
Operating time	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.				

Table 18. Battery specifications (continued)

Description	Values			
Charging time (approximate)	<ul style="list-style-type: none"> • Standard charge: 0°C to 50°C: 4 hours • Express Charge: 0°C to 15°C: 4 hours; 16°C to 45°C: 2 hours; 46°C to 50°C: 3 hours <p>i NOTE: Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, <i>Me and My Dell</i> on https://www.dell.com/</p>	<ul style="list-style-type: none"> • Standard charge: 0°C to 50°C: 4 hours • Express Charge: 0°C to 15°C: 4 hours; 16°C to 45°C: 2 hours; 46°C to 50°C: 3 hours <p>i NOTE: Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, <i>Me and My Dell</i> on https://www.dell.com/</p>	<ul style="list-style-type: none"> • Standard charge: 0°C to 50°C: 4 hours • Express Charge: 0°C to 15°C: 4 hours; 16°C to 45°C: 2 hours; 46°C to 50°C: 3 hours <p>i NOTE: Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, <i>Me and My Dell</i> on https://www.dell.com/</p>	<ul style="list-style-type: none"> • Standard charge: 0°C to 50°C: 4 hours • Express Charge: 0°C to 15°C: 4 hours; 16°C to 45°C: 2 hours; 46°C to 50°C: 3 hours <p>i NOTE: Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, <i>Me and My Dell</i> on https://www.dell.com/</p>
Life span (approximate)	300 discharge/charge cycles	300 discharge/charge cycles	300 discharge/charge cycles	300 discharge/charge cycles
Coin-cell battery	CR-2032	CR2032	CR2032	CR2032
Operating time	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.

Display

Table 19. Display specifications

Description		Values		
Type		High definition (HD)	Full High definition (FHD)	Full High definition (FHD) (optional)
Panel technology		Twisted Nematic (TN)	Wide Viewing Angle (WVA)	Wide Viewing Angle (WVA)
Luminance (typical)		220 nits	300 nits	220 nits
Dimensions (active area):				
	Height	193.6 mm (7.62 in.)	193.6 mm (7.62 in.)	193.6 mm (7.62 in.)
	Width	344.2 (13.55 in.)	344.2 (13.55 in.)	344.2 (13.55 in.)
	Diagonal	394.9 mm (15.54 in.)	394.9 mm (15.54 in.)	394.9 mm (15.54 in.)
Native resolution		1366x768	1920x1080	1920 x 1080
Megapixels		1.05	2.07	2.07
Color gamut		45% (NTSC)	72% (NTSC)	45% (NTSC)
Pixels per inch (PPI)		100	141	141
Contrast ratio (min)		500:1	700:1	700:1
Response time (max)		25	25	35
Refresh rate		60 Hz	60 Hz	60 Hz
Horizontal view angle		40(L)/40(R) degrees	80(L)/80(R) degrees	80(L)/80(R) degrees
Vertical view angle		10(U)/30(D) degrees	80(U)/80(D) degrees	80(U)/80(D) degrees
Pixel pitch		0.252X0.252	0.179X0.179	0.179X0.1791
Power consumption (maximum)		4.2	4.6	4.2
Anti-glare vs glossy finish		Anti-glare	Anti-glare	Anti-glare
Touch options		No	No	Yes

Fingerprint reader (optional)

Table 20. Fingerprint reader specifications

Description	Values
Sensor technology	Capacitive
Sensor resolution	363 PPI
Sensor area	7.4 mm x 5.96 mm

Video

Table 21. Discrete graphics specifications

Discrete graphics			
Controller	External display support	Memory size	Memory Type
Nvidia Quadro P620	NA	VRAM 4 GB	GDDR5

Table 22. Integrated graphics specifications

Integrated graphics			
Controller	External display support	Memory size	Processor
Intel UHD Graphics 630	<ul style="list-style-type: none"> One HDMI 2.0 port One optional USB Type-C Port support VGA and DisplayPort 	Shared system memory	<ul style="list-style-type: none"> 9th Generation Intel Core i5-9300H 9th Generation Intel Core i5-9400H 9th Generation Intel Core i7-9750H 9th Generation Intel Core i7-98500H 9th Generation Intel Core i9-9880H
Intel UHD Graphics P630	<ul style="list-style-type: none"> One HDMI 2.0 port One optional USB Type-C Port support VGA and DisplayPort 	Shared system memory	Mobile Intel Xeon E-2276M

Computer environment

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

Table 23. Computer environment

	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	10% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.37 GRMS
Shock (maximum)	140 G†	160 G†
Altitude (maximum)	0 m to 3048 m (0 ft to 10,000 ft)	0 m to 10668 m (32 ft to 19234.4 ft)

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

† Measured using a 2 ms half-sine pulse when the hard drive is in use.

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

Security

Table 24. Security

Feature	Specifications
Trusted Platform Module (TPM) 2.0	Integrated on the system board
Firmware TPM	Optional
Windows Hello Support	Yes, optional fingerprint on power button Optional IR camera
Cable lock	Noble lock
Dell Smartcard Keyboard	Optional
FIPS 140-2 certification for TPM	Yes
ControlVault 3 Advanced Authentication with FIPS 140-2 Level 3 Certification	Yes, for FPR, SC and CSC/NFC
Fingerprint Reader Only	Touch Fingerprint reader in power button tied to ControlVault 3
Contacted Smart Card and ControlVault 3	FIPS 201 Smart card reader certification/SIPR

Security options—Contacted smartcard reader

Table 25. Contacted smartcard reader

Title	Description	Dell ControlVault 3 Smartcard reader
ISO 7816 -3 Class A Card Support	Reader capable of reading 5V powered smartcard	Yes
ISO 7816 -3 Class B Card Support	Reader capable of reading 3V powered smartcard	Yes
ISO 7816 -3 Class C Card support	Reader capable of reading 1.8V powered smartcard	Yes
ISO 7816-1 Compliant	Specification for the reader	Yes
ISO 7816 -2 Compliant	Specification for smartcard device physical characteristics (size, location of connection points, etc.)	Yes
T=0 support	Cards support character level transmission	Yes
T=1 support	Cards support block level transmission	Yes
EMVCo Compliant	Compliant with EMVCo (for electronic payment standards) smartcard standards as posted to www.emvco.com	Yes
EMVCo Certified	Formally certified based on EMVCO smartcard standards	Yes
PC/SC OS interface	Personal Computer/Smart Card specification for integration of hardware readers into personal computer environments	Yes

Table 25. Contacted smartcard reader (continued)

Title	Description	Dell ControlVault 3 Smartcard reader
CCID driver compliance	Common driver support for Integrated Circuit Card Interface Device for OS level drivers.	Yes
Windows Certified	Device certified by Microsoft WHCK	Yes
FIPS 201 (PIV/HSPD-12) Compliant via GSA	Device compliant with FIPS 201/PIV/HSPD-12 requirements	Yes

Security options—Contactless smartcard reader

Table 26. Contactless smartcard reader

Title	Description	Dell ControlVault 3 Contactless Smartcard reader with NFC
Felica Card Support	Reader and software capable of supporting Felica contactless cards	Yes
ISO 14443 Type A Card Support	Reader and software capable of supporting ISO 14443 Type A contactless cards	Yes
ISO 14443 Type B Card Support	Reader and software capable of supporting ISO 14443 Type B contactless cards	Yes
ISO/IEC 21481	Reader and software capable of supporting ISO/IEC 21481 compliant contactless cards and tokens	Yes
ISO/IEC 18092	Reader and software capable of supporting ISO/IEC 21481 compliant contactless cards and tokens	Yes
ISO 15693 Card Support	Reader and software capable of supporting ISO15693 contactless cards	Yes
NFC Tag Support	Supports reading and processing of NFC compliant tag information	Yes
NFC Reader Mode	Support for NFC Forum Defined Reader mode	Yes
NFC Writer Mode	Support for NFC Forum Defined Writer mode	Yes
NFC Peer-to-Peer Mode	Support for NFC Forum Defined Peer to Peer mode	Yes
EMVCo Compliant	Compliant with EMVCO smartcard standards as posted to www.emvco.com	Yes
EMVCo Certified	Formally certified based on EMVCO smartcard standards	Yes
NFC Proximity OS Interface	Enumerates NFP (Near Field Proximity) device for OS to utilize	Yes
PC/SC OS interface	Personal Computer/Smart Card specification for integration of hardware readers into personal computer environments	Yes

Table 26. Contactless smartcard reader (continued)

Title	Description	Dell ControlVault 3 Contactless Smartcard reader with NFC
CCID driver compliance	Common driver support for Integrated Circuit Card Interface Device for OS level drivers	Yes
Windows Certified	Device certified by Microsoft WHCK	Yes
Dell ControlVault support	Device connects to Dell ControlVault for usage and processing	Yes
Prox (Proximity) (125kHz) Card support	Reader and software capable of supporting Prox/Proximity/125kHz contactless cards	No


 **NOTE:** 125 Khz proximity cards are not supported.

Table 27. Supported cards

Manufacturer	Card	Supported
HID	jCOP readertest3 A card (14443a)	Yes
	1430 1L	
	DESFire D8H	
	iClass (Legacy)	
	iClass SEOS	
NXP/Mifare	Mifare DESFire 8K White PVC Cards	Yes
	Mifare Classic 1K White PVC Cards	
	NXP Mifare Classic S50 ISO Card	
G&D	idOnDemand - SCE3.2 144K	Yes
	SCE6.0 FIPS 80K Dual+ 1 K Mifare	
	SCE6.0 nonFIPS 80K Dual+ 1 K Mifare	
	SCE6.0 FIPS 144K Dual + 1K Mifare	
	SCE6.0 nonFIPS 144K Dual + 1 K Mifare	
	SCE7.0 FIPS 144K	
Oberthur	idOnDemand - OCS5.2 80K	Yes
	ID-One Cosmo 64 RSA D V5.4 T=0 card	

Security Software

Table 28. Security Software specifications

Specifications
Dell Client Command Suite
Optional Dell Data Security and Management Software <ul style="list-style-type: none"> • Dell Endpoint Security Suite Enterprise • Dell Data Guardian • Dell Encryption Enterprise

Table 28. Security Software specifications (continued)

Specifications
<ul style="list-style-type: none">• Dell Encryption Personal• Dell Threat Defense• MozyPro or MozyEnterprise• RSA NetWitness Endpoint• RSA SecurID Access• VMware Workspace ONE• Absolute Endpoint Visibility and Control

Keyboard shortcuts

NOTE: Keyboard characters may differ depending on the keyboard language configuration. Keys used for shortcuts remain the same across all language configurations.























Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. The symbol shown on the lower part of the key refers to the character that is typed out when the key is pressed. If you press shift and the key, the symbol shown on the upper part of the key is typed out. For example, if you press **2**, **2** is typed out; if you press **Shift + 2**, **@** is typed out.

The keys F1-F12 at the top row of the keyboard are function keys for multi-media control, as indicated by the icon at the bottom of the key. Press the function key to invoke the task represented by the icon. For example, pressing F1 mutes the audio (refer to the table below).

However, if the function keys F1-F12 are needed for specific software applications, multi-media functionality can be disabled by pressing **Fn + Esc**. Subsequently, multi-media control can be invoked by pressing **Fn** and the respective function key. For example, mute audio by pressing **Fn + F1**.













NOTE: You can also define the primary behavior of the function keys (F1–F12) by changing **Function Key Behavior** in BIOS setup program.

Table 29. List of keyboard shortcuts

Function key	Redefined key (for multimedia control)	Behavior
		Mute audio
		Decrease volume
		Increase volume
		Play previous track/chapter
		Play/Pause
		Play next track/chapter
		Switch to external display
		Search
		Toggle keyboard backlight (optional) NOTE: Non-backlight keyboards have F10 function key without the backlight icon and does not support toggle keyboard backlight function.
		Decrease brightness
		Increase brightness

The **Fn** key is also used with selected keys on the keyboard to invoke other secondary functions.

Table 30. List of keyboard shortcuts

Function key	Behavior
	Turn off/on wireless
	Pause/Break
	Sleep
	Toggle scroll lock
	Toggle between power and battery-status light/hard-drive activity light
	System request
	Open application menu
	Toggle Fn-key lock
	Page up
	Page down
	Home
	End


Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Topics:

- [Downloading Windows drivers](#)

Downloading Windows drivers

1. Turn on the tabletdesktopnotebook.
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your tabletdesktopnotebook, and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your tabletdesktopnotebook model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your tabletdesktopnotebook.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your tabletdesktopnotebook.
8. After the download is complete, navigate to the folder where you saved the driver file.
9. Double-click the driver file icon and follow the instructions on the screen.

BIOS setup

CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

NOTE: Depending on the computer and its installed devices, the items listed in this section may or may not be displayed.

NOTE: Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

Topics:

- [Boot menu](#)
- [BIOS overview](#)
- [Boot Sequence](#)
- [Entering BIOS setup program](#)
- [Navigation keys](#)
- [One time boot menu](#)
- [System setup options](#)
- [Updating the BIOS](#)
- [System and setup password](#)
- [Clearing BIOS \(System Setup\) and System passwords](#)

Boot menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system. Diagnostics and BIOS Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices in the system. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

The options are:

- UEFI Boot:
 - Windows Boot Manager
- Other Options:
 - BIOS Setup
 - BIOS Flash Update
 - Diagnostics
 - Change Boot Mode Settings

BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.


Boot Sequence

Boot Sequence allows you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:


- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

 **NOTE:** XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

 **NOTE:** Choosing **Diagnostics**, will display the **ePSA diagnostics** screen.

The boot sequence screen also displays the option to access the System Setup screen.

Entering BIOS setup program

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

 **NOTE:** If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

Navigation keys



 **NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the system.

Table 31. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.  NOTE: For the standard graphics browser only.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

NOTE: It is recommended to shutdown the computer if it is on.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive (if available)
 - NOTE:** XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

The boot sequence screen also displays the option to access the System Setup screen.

System setup options

NOTE: Depending on the tabletcomputerlaptop and its installed devices, the items listed in this section may or may not appear.

General options

Table 32. General

Option	Description
System Information	Displays the following information: <ul style="list-style-type: none">• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Manufacture Date, Ownership Date, and the Express Service Code.• Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM A size, and DIMM B size• Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable, and 64-Bit Technology.• Device Information: Displays Primary HDD, M.2 PCIe SSD-0, LOM MAC Address, Video Controller, Video BIOS Version, Video Memory, Panel type, Native Resolution, Audio Controller, Wi-Fi Device, and Bluetooth Device.
Battery Information	Displays the battery status health and whether the AC adapter is installed.
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list.
UEFI Boot Path Security	This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu. <ul style="list-style-type: none">• Always, Except Internal HDD—Default• Always, Except Internal HDD&PXE• Always• Never
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

System information

Table 33. System Configuration

Option	Description
Integrated NIC	<p>Allows you to configure the on-board LAN controller.</p> <ul style="list-style-type: none"> ● Disabled = The internal LAN is off and not visible to the operating system. ● Enabled = The internal LAN is enabled. ● Enabled w/PXE = The internal LAN is enabled (with PXE boot) (selected by default)
SATA Operation	<p>Allows you to configure the operating mode of the integrated hard drive controller.</p> <ul style="list-style-type: none"> ● Disabled = The SATA controllers are hidden ● AHCI = SATA is configured for AHCI mode ● RAID ON = SATA is configured to support RAID mode (selected by default)
Drives	<p>Allows you to enable or disable the various drives on-board:</p> <ul style="list-style-type: none"> ● SATA-2 (enabled by default) ● M.2 PCIe SSD-0 (enabled by default)
Smart Reporting	<p>This field controls whether hard drive errors for integrated drives are reported during system startup. The Enable Smart Reporting option is disabled by default.</p>
USB Configuration	<p>Allows you to enable or disable the integrated USB controller for:</p> <ul style="list-style-type: none"> ● Enable USB Boot Support ● Enable External USB Port <p>All the options are enabled by default.</p>
Thunderbolt Adapter Configuration	<p>This section allows Thunderbolt Adapter Configuration.</p> <ul style="list-style-type: none"> ● Thunderbolt-is enabled by default ● Enable Thunderbolt Boot Support-is disabled ● No security-is disabled ● User configuration-enabled by default ● Secure connect-is disabled ● Display port and USB Only-is disabled
USB PowerShare	<p>This option configures the USB PowerShare feature behavior.</p> <ul style="list-style-type: none"> ● Enable USB PowerShare - disabled by default <p>This feature is intended to allow users to power or charge external devices, such as phones and portable music players, using the stored system battery power through the USB PowerShare port on the notebook, while the notebook is in a sleep state.</p>
Audio	<p>Allows you to enable or disable the integrated audio controller. The option Enable Audio is selected by default.</p> <ul style="list-style-type: none"> ● Enable Microphone ● Enable Internal Speaker <p>Both the options are selected by default.</p>
Keyboard Illumination	<p>This field lets you choose the operating mode of the keyboard illumination feature. The keyboard brightness level can be set from 0% to 100%. The options are:</p> <ul style="list-style-type: none"> ● Disabled ● Dim ● Bright-enabled by default
Keyboard Backlight Timeout on AC	<p>The Keyboard Backlight Timeout dims out with AC option. The main keyboard illumination feature is not affected. Keyboard Illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are:</p> <ul style="list-style-type: none"> ● 5 sec ● 10 sec-enabled by default


Table 33. System Configuration (continued)

Option	Description
	<ul style="list-style-type: none"> • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Keyboard Backlight Timeout on Battery	<p>The Keyboard Backlight Timeout dims out with the Battery option. The main keyboard illumination feature is not affected. Keyboard illumination will continue to support the various illumination levels. This field has an effect when the backlight is enabled. The options are:</p> <ul style="list-style-type: none"> • 5 sec • 10 sec-enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Unobtrusive Mode	<ul style="list-style-type: none"> • Enable Unobtrusive Mode (disabled by default) <p>When enabled pressing Fn+Shift+B will turn off all light and sound emissions in the system. Press Fn+Shift+B to resume normal operation.</p>
Miscellaneous Devices	<p>Allows you to enable or disable the following devices:</p> <ul style="list-style-type: none"> • Enable Camera (enabled by default) • Enable Hard Drive Free Fall Protection(enabled by default) • Enable Secure Digital (SD) Card (enabled by default) • Secure Digital (SD) Card Boot • Secure Digital (SD) Card Read-Only Mode
MAC Address Pass-Through	<ul style="list-style-type: none"> • System Unique MAC Address (disabled by default) • Integrated NIC 1 MAC Address • Disabled <p>The feature replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the system. The default option is to use the Passthrough MAC address.</p>

Video

Option	Description
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LCD Brightness	Allows you to set the display brightness depending up on the power source—On Battery and On AC. The LCD brightness is independent for battery and AC adapter. It can be set using the slider.
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 **NOTE:** The video setting is visible only when a video card is installed into the system.

Security

Table 34. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.

Table 34. Security (continued)


Option	Description
System Password	Allows you to set, change, and delete the system password.
Internal HDD-2 Password	This option lets you set, change, or delete the password on the system's internal hard disk drive (HDD).
Strong Password	This option lets you enable or disable strong passwords for the system.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for a administrative password and the system password. The range of characters is between 4 and 32.
Password Bypass	<p>This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart.</p> <ul style="list-style-type: none"> ● Disabled — Always prompt for the system and internal HDD password when they are set. This option is enabled by default. ● Reboot Bypass — Bypass the password prompts on Restarts (warm boots). <p>i NOTE: The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.</p>
Password Change	<p>This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set.</p> <p>Allow Non-Admin Password Changes - This option is enabled by default.</p>
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. This option is selected by default. Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS)
TPM 2.0 Security	<p>Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system.</p> <ul style="list-style-type: none"> ● TPM On (default) ● Clear ● PPI Bypass for Enable Commands ● PPI Bypass for Disable Commands ● PPI Bypass for Clear Commands ● Attestation Enable (default) ● Key Storage Enable (default) ● SHA-256 (default) <p>Choose any one option:</p> <ul style="list-style-type: none"> ● Disabled ● Enabled (default)
Absolute	<p>This field lets you Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software.</p> <ul style="list-style-type: none"> ● Enabled - This option is selected by default. ● Disabled ● Permanently Disabled
OROM Keyboard Access	<p>This option determines whether users are able to enter Option ROM configuration screen via hotkeys during boot.</p> <ul style="list-style-type: none"> ● Enabled (default) ● Disabled ● One Time Enable
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. This option is not set by default.
Master Password Lockout	Allows you to disable master password support Hard Disk passwords need to be cleared before the settings can be changed. This option is not set by default.

Table 34. Security (continued)

Option	Description
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default.

Secure boot

Table 35. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature <ul style="list-style-type: none"> Secure Boot Enable Option is not selected.
Secure Boot Mode	Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. <ul style="list-style-type: none"> Deployed Mode (default) Audit Mode
Expert key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options are: <ul style="list-style-type: none"> PK (default) KEK db dbx If you enable the Custom Mode , the relevant options for PK, KEK, db, and dbx appear. The options are: <ul style="list-style-type: none"> Save to File- Saves the key to a user-selected file Replace from File- Replaces the current key with a key from a user-selected file Append from File- Adds a key to the current database from a user-selected file Delete- Deletes the selected key Reset All Keys- Resets to default setting Delete All Keys- Deletes all the keys <p> NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.</p>

Intel Software Guard Extensions

Table 36. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. Click one of the following options: <ul style="list-style-type: none"> Disabled Enabled Software controlled—Default
Enclave Memory Size	This option sets SGX Enclave Reserve Memory Size Click one of the following options: <ul style="list-style-type: none"> 32 MB 64 MB 128 MB—Default

Performance

Table 37. Performance

Option	Description
Multi Core Support	<p>This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores.</p> <ul style="list-style-type: none"> • All—Default • 1 • 2 • 3
Intel SpeedStep	<p>Allows you to enable or disable the Intel SpeedStep mode of processor.</p> <ul style="list-style-type: none"> • Enable Intel SpeedStep <p>This option is set by default.</p>
C-States Control	<p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> • C states <p>This option is set by default.</p>
Intel TurboBoost	<p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> • Enable Intel TurboBoost <p>This option is set by default.</p>
Hyper-Thread Control	<p>Allows you to enable or disable the HyperThreading in the processor.</p> <ul style="list-style-type: none"> • Disabled • Enabled—Default

Power management

Option	Description
AC Behavior	<p>Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.</p> <p>Default setting: Wake on AC is not selected.</p>
Enable Intel Speed Shift Technology	<ul style="list-style-type: none"> • Enable Intel Speed Shift Technology <p>Default setting: Enabled</p>
Auto On Time	<p>Allows you to set the time at which the computer must turn on automatically. The options are:</p> <ul style="list-style-type: none"> • Disabled • Every Day • Weekdays • Select Days <p>Default setting: Disabled</p>
USB Wake Support	<p>Allows you to enable USB devices to wake the system from Standby.</p>

Option	Description
	<p>i NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.</p> <ul style="list-style-type: none"> • Enable USB Wake Support
Wireless Radio Control	<p>If Enabled, this feature will sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN and/ or WWAN).</p> <ul style="list-style-type: none"> • Control WLAN radio - is disabled
Wake on LAN	<p>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</p> <ul style="list-style-type: none"> • Disabled • LAN Only • LAN with PXE Boot <p>Default setting: Disabled</p>
Block Sleep	<p>This option lets you to block entering to sleep in OS environment. When enabled system won't go to sleep.</p> <p>Block Sleep - is disabled</p>
Peak Shift	<p>This option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.</p> <ul style="list-style-type: none"> • Enable peak shift—is disabled • Set battery threshold (15% to 100%) - 15 % (enabled by default)
Advanced Battery Charge Configuration	<p>This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non work hours to improve the battery health.</p> <p>Enable Advanced Battery Charge Mode- is disabled</p>
Primary Battery Charge Configuration	<p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> • Adaptive—enabled by default • Standard—Fully charges your battery at a standard rate. • ExpressCharge—The battery charges over a shorter time using Dell's fast charging technology. • Primarily AC use • Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p>i NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>

POST behavior

Option	Description
Adapter Warnings	<p>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters.</p> <p>Default setting: Enable Adapter Warnings</p>
Numlock Enable	<p>Allows you to enable the Numlock option when the computer boots.</p> <p>Enable Network. This option is enabled by default.</p>
Fn Lock Options	<p>Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:</p> <ul style="list-style-type: none"> • Fn Lock—enabled by default • Lock Mode Disable/Standard—enabled by default

Option	Description
	<ul style="list-style-type: none"> • Lock Mode Enable/Secondary
Fastboot	<p>Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:</p> <ul style="list-style-type: none"> • Minimal • Thorough—enabled by default • Auto
Extended BIOS POST Time	<p>Allows you to create an extra preboot delay. The options are:</p> <ul style="list-style-type: none"> • 0 seconds—enabled by default. • 5 seconds • 10 seconds
Full Screen Log	<ul style="list-style-type: none"> • Enable Full Screen Logo—not enabled
Warnings and errors	<ul style="list-style-type: none"> • Prompt on warnings and errors—enabled by default • Continue on warnings • Continue on warnings and errors

Manageability

Option	Description
Intel AMT Capability	<p>Allows you to provision AMT and MEBx Hotkey function is enabled, during the system boot.</p> <ul style="list-style-type: none"> • Disabled • Enabled - by default • Restrict MEBx Access
MEBx Hotkey	<p>When enabled Intel AMT can be provisioned using the local provisioning file via a USB storage device.</p> <ul style="list-style-type: none"> • Enable USB Provision - disabled by default
MEBx Hotkey	<p>Allows you to specify whether the MEBx Hotkey function should enable, during the system boot.</p> <ul style="list-style-type: none"> • Enable MEBx hotkey—enabled by default

Virtualization support

Option	Description
Virtualization	<p>This field specifies whether a virtual Machine Monitor (VMM) can utilize the conditional hardware capabilities provided by Intel Virtualization Technology.</p> <p>Enable Intel Virtualization Technology—enabled by default.</p>
VT for Direct I/O	<p>Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O.</p> <p>Enable VT for Direct I/O - enabled by default.</p>
Trusted Execution	<p>This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. The TPM Virtualization Technology, and the Virtualization technology for direct I/O must be enabled to use this feature.</p> <p>Trusted Execution - disabled by default.</p>

Wireless

Option Description

Wireless Device Enable	Allows you to enable or disable the internal wireless devices. <ul style="list-style-type: none">• WLAN• Bluetooth All the options are enabled by default.
-------------------------------	---

Maintenance screen

Option Description

Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: <ul style="list-style-type: none">• Internal SATA HDD/SSD• Internal M.2 SATA SDD• Internal M.2 PCIe SSD• Internal eMMC
BIOS Recovery	This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key. <ul style="list-style-type: none">• BIOS Recovery from Hard Drive—enabled by default• Always perform integrity check—disabled by default
First Power On Date	This option lets you set Ownership date. <ul style="list-style-type: none">• Set Ownership Date—disabled by default


System logs

Option Description

BIOS Events	Allows you to view and clear the System Setup (BIOS) POST events.
Thermal Events	Allows you to view and clear the System Setup (Thermal) events.
Power Events	Allows you to view and clear the System Setup (Power) events.


Updating the BIOS

Updating the BIOS in Windows

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

1. Go to www.dell.com/support.

2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.


 **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
 4. Select the operating system installed on your computer.
 5. In the **Category** drop-down list, select **BIOS**.
 6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
 7. After the download is complete, browse the folder where you saved the BIOS update file.
 8. Double-click the BIOS update file icon and follow the on-screen instructions.
- For more information, see knowledge base article [000124211](https://www.dell.com/support/article/000124211) at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article [000131486](https://www.dell.com/support/article/000131486) at www.dell.com/support.


Updating the BIOS using the USB drive in Windows

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

1. Follow the procedure from step 1 to step 6 in [Updating the BIOS in Windows](#) to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article [000145519](https://www.dell.com/support/article/000145519) at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12**.
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu


Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

 **NOTE:** Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

 **CAUTION: Do not turn off the computer during the BIOS update process. The computer may not boot if you turn off your computer.**

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password


Table 38. System and setup password

Password type	Description
System password	Password that you must enter to log in to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

 **CAUTION: The password features provide a basic level of security for the data on your computer.**

 **CAUTION: Anyone can access the data that is stored on your computer if it is not locked and left unattended.**

 **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

To enter the system setup, press F12 immediately after a power-on or reboot.


1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - At least one special character: ! " # \$ % & ' () * + , - . / : ; < = > ? @ [\] ^ _ ` { | }
 - Numbers 0 through 9.
 - Upper case letters from A to Z.
 - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.

5. Press Y to save the changes.
The computer restarts.

Deleting or changing an existing system setup password


Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

To enter the System Setup, press F12 immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.
 **NOTE:** If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
The computer restarts.

Clearing BIOS (System Setup) and System passwords

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.


-  **NOTE:** For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

Getting help

Topics:

- [Contacting Dell](#)

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.