

Dell Precision 5530 2-in-1

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.

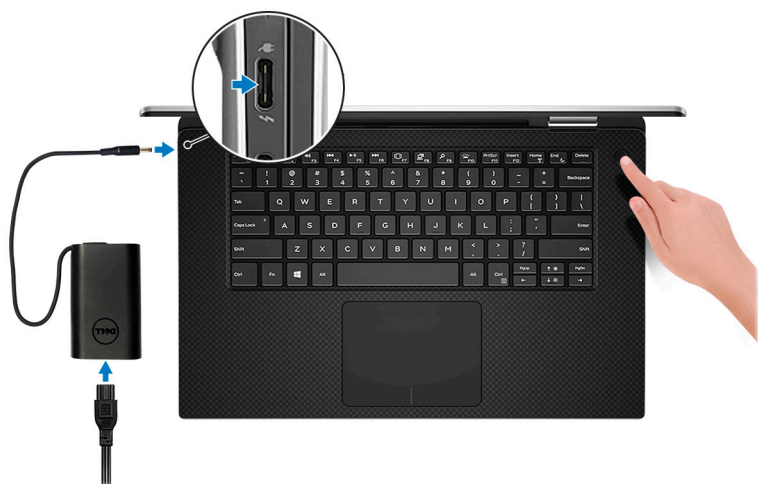
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Set up your computer

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



NOTE: To conserve battery power, the battery might enter power saving mode.

NOTE: Use any USB Type-C port to charge your computer; the primary-charging port is indicated by the power-adaptor icon.

2. Finish Windows system 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

Dell apps	Details
	Dell Product Registration Register your computer with Dell.
	Dell Help & Support Access help and support for your computer.
	SupportAssist Proactively checks the health of your computer's hardware and software.

Table 1. Locate Dell apps (continued)

Dell apps	Details
	 NOTE: Renew or upgrade your warranty by clicking the warranty expiry date in SupportAssist.
	Dell Update Updates your computer with critical fixes and important device drivers as they become available.
	Dell Digital Delivery Download software applications including software that is purchased but not pre-installed on your computer.

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

This chapter illustrates the multiple chassis views along with the ports and connectors and also explains the FN hot key combinations.

Topics:

- [Display](#)
- [Bottom](#)
- [Left](#)
- [Right](#)
- [Front](#)
- [Base](#)
- [Modes](#)
- [Dell Premium Active Pen PN579X—Optional](#)

Display

1. Infrared emitter
2. Infrared camera
3. Camera-status light
4. Camera
5. Infrared emitter

Bottom

1. Left speaker
2. Service Tag label
3. Right speaker

Left

1. Thunderbolt 3 (USB Type-C) port with Power Delivery (Primary)
2. Thunderbolt 3 (USB Type-C) port with Power Delivery
3. microSD-card slot
4. Battery-charge status button
5. Battery-charge status lights (5)
6. Dell Premium Active Pen magnets

Right

1. USB 3.1 Gen 1 (Type-C) port with Power Delivery/DisplayPort (2)
2. Headset port
3. Security-cable slot (for Noble locks)

Front

1. Power and battery-status light
2. Digital-array microphones (4)

Base

1. Touchpad
2. Left-click area
3. Right-click area
4. Power button with optional fingerprint reader

Modes

Notebook



Tablet



Stand



Tent



Dell Premium Active Pen PN579X—Optional



For more information, see www.dell.com/support.

Keyboard shortcuts

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

Table 2. List of keyboard shortcuts

Keys	Description
 F1	Mute audio
 F2	Decrease volume
 F3	Increase volume
 F4	Play previous track/chapter
 F5	Play/Pause
 F6	Play next track/chapter
 F7	Launch Task View
 F8	Switch to external display
 F9	Search
 F10	Toggle keyboard backlight
 F11	Printscreen
 F12	Insert
 + 	Turn off/on wireless

Table 2. List of keyboard shortcuts (continued)

Keys	Description
 + 	Sleep
 + 	Increase brightness
 + 	Decrease brightness
 + 	Open application menu
 + 	Toggle Fn-key lock

System 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:

- [System information](#)
- [Processor](#)
- [Memory](#)
- [Storage](#)
- [Audio](#)
- [System board connectors](#)
- [Media card-reader](#)
- [Video card](#)
- [Camera](#)
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- [Battery](#)
- [Power adapter](#)
- [Dimensions and weight](#)
- [Computer environment](#)
- [Security](#)
- [Security Software](#)

System information

Table 3. System information

Feature	Specifications
Chipset	Intel QM175 Chipset
DRAM bus width	64-bit
FLASH EPROM	SPI 32 MB
PCIe bus	100 Mhz
External bus frequency	DMI 3.0-8 GT/s

Processor

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

Table 4. Processor specifications

Type	UMA Graphics
8th Gen Intel Core™ i7-8706G processor (8M Cache, up to 4.10 GHz)	Intel HD Graphics 630
8th Gen Intel Core™ i5-8305G processor (6M Cache, up to 3.80 GHz)	Intel HD Graphics 630

Memory

Table 5. Memory specifications

Feature	Specifications
Minimum memory configuration	8 GB
Maximum memory configuration	16 GB
Number of slots	Onboard memory
Memory options	8 GB - 1 x 8 GB (optional) 16 GB - 2 x 8 GB (optional) 16 GB - 1 x 16 GB (optional)
Type	DDR4
Speed	2400 MHz

Storage

Table 6. Storage specifications

Type	Form factor	Interface	Security option	Capacity
SATA Solid-State Drive	SSD	M.2 SSD		128 GB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD		256 GB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD		512 GB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD		1 TB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD		2 TB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD	SED	256 GB
NVMe Solid-State Drive (Class 40)	NVMe	M.2 SSD	SED	512 GB

Audio

Table 7. Audio specifications

Feature	Specifications
Controller	Realtek ALC3271 with Waves MaxxAudio Pro
Type	Four-channel high-definition audio
Speakers	Two (Directional speakers)
Interface	• Universal audio jack • High quality speakers • Noise reducing array microphones • Stereo headset/mic combo
Internal speaker amplifier	2 W (RMS) per channel

System board connectors

Table 8. System board connectors specifications

Feature	Specifications
M.2 Connectors	One M2. 2280 Key-M Connector

Media card-reader

Table 9. Media card-reader specifications

Feature	Specifications
Type	One microSD card slot
Supported cards	• SD • SDHC • SDXC

Video card

Table 10. Video card specifications

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics 630	UMA	Intel CoreT i7-8706G processor Intel CoreT i5-8305G processor	Integrated	Shared system memory	DisplayPort HDMI 1.4	4096x2304
Radeon Pro WX Vega M GL graphics	Discrete		HBM2	4 GB		

Camera

Table 11. Camera specifications

Feature	Specifications	
Resolution	Camera: - Still image: 0.92 megapixels - Video: 1280x720 at 30 fps Infrared camera (optional): - Still image: 0.30 megapixels - Video: 340x340 at 60 fps	
Diagonal viewing angle	- Camera - 86.7° - Infrared camera - 66°	
Number of cameras	2	
Video Max resolution	1280x720 (HD) at 30 fps	
Still image max resolution	0.92 megapixel (HD)	
Diagonal angle	Camera Infrared Camera	- Diagonal >/ 86.7°(tolerance +/- 3%) - Vertical >/ 47° - Diagonal >/ 66° (tolerance +/- 3%) - Vertical >/ 47°

Communication specifications

Table 12. Communication specifications

Features	Specifications
Network adapter	Ethernet via USB-to-Ethernet Dongle (Optional)
Wireless	Intel Dual Band Wireless AC 8265

Wireless

Table 13. Wireless specifications

Feature	Specifications
Type	Intel 8265
Maximum transfer rate	867 Mbps
Frequency bands	2.4 GHz/5 GHz
Encryption	64-bit/128-bit WEP - AES-CCMP - TKIP

Ports and connectors

Table 14. Ports and connectors specifications

Feature	Specifications
Memory card reader	MicroSD 4.0 memory card reader
USB	- Two Thunderbolt 3 (USB Type-C) ports with Power Delivery - Two USB 3.1 Gen 1 (USB Type-C) port with Power Delivery/DisplayPort
Security	Noble wedge lock slot/Kensington lock slot
Audio	One headset (headphone and microphone combo) port 2-channel high definition audio Stereo conversion 16/20/24-bit (analog-to-digital and digital-to-analog) Internal interface - High-definition audio codec Speakers - Power/peak power: 2 W average/2.5 W peak Internal speaker amplifier 10 W per channel Internal microphone - Digital-array microphones Volume controls - Media-control shortcut keys
Video	- Two Thunderbolt 3 (USB Type-C) ports with Power Delivery - Two USB 3.1 Gen 1 (USB Type-C) port with Power Delivery

Display

Table 15. Display specifications

Feature	Specifications
Type	15.6-inch 4K Ultra HD (3840 x 2160) InfinityEdge touch display 15.6-inch FHD (1920 x 1080) InfinityEdge touch display
Height (Active area)	344.22 mm (13.55 in) 344.16 mm (13.54 in)
Width (Active area)	193.62 mm (7.62 in) 193.59 mm (7.62 in)
Diagonal	396.24 mm (15.60 in)
Luminance/Brightness (typical)	400 nits max
Refresh rate	60 Hz

Table 15. Display specifications (continued)

Feature	Specifications
Horizontal viewing angle (min)	+/- 40 degrees
Vertical viewing angle (min)	+10/- 30 degrees

Keyboard

Table 16. Keyboard specifications

Feature	Specifications
Number of keys	• 103 (U.S. and Canada) • 104 (Europe) • 106 (Brazil) • 107 (Japan)
Size	Full sized • X= 19.00 mm key pitch • Y= 19.00 mm key pitch
Backlit keyboard	Optional
Layout	QWERTY/AZERTY/Kanji

Touchpad

Table 17. Touchpad specifications

Feature	Specifications
Resolution	1219 x 919
Dimensions	• Width: 4.13 inch (105 mm) • Height: 3.14 inch (80 mm)
Multi-touch	Supports five fingers

Operating system

Table 18. Operating system

Feature	Specifications
Operating systems supported	• Windows 10 Home (64 bit) • Windows 10 Pro (64 bit) • Windows 10 ProEducation • Windows 10 MSSl (64bit) • Windows 10 Workstation (64bit)

Battery

Table 19. Battery specifications

Feature	Specifications	
Type	6-cell smart lithium-ion (75 WHr)	
Dimension	Width	305.80 mm (12.04 in)
	Depth	88.05 mm (3.47 in)
	Height	6.10 mm (0.24 in)
Weight (maximum)	0.32 kg (0.71 lb)	
Voltage	11.4 VDC	
Life span	300 discharge / charge cycles	
Charging time when the computer is off (approximate)	Standard charge	0°C to 60°C : 4 hours
	Express Charge	0°C to 35°C : 4 hours 16°C to 45°C : 2 hours 46°C to 60°C : 3 hours
Operating time	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions	
Temperature range: Operating	0°C to 35°C (32°F to 95°F)	
Temperature range: Storage	-20°C to 60°C (-40°F to 149°F)	
Coin-cell battery	CR 2032	

Power adapter

Table 20. Power adapter specifications

Feature	Specifications
Type	USB Type-C
Input Voltage	100 VAC - 240 VAC
Input current (maximum)	1.80 A
Adapter size	
Input frequency	50 Hz to 60 Hz
Output current	6.50 A
Rated output voltage	20 VDC
Temperature range (Operating)	0°C to 40° C (32°F to 104°F)
Temperature range (Non-Operating)	40°C to 70°C (-40°F to 158°F)

Dimensions and weight

Table 21. Dimensions and weight

Feature	Specifications
Height	9 mm to 16 mm (0.35 inch to 0.62 inch)
Width	354 mm (13.93 inch)
Depth	235 mm (9.25 inch)
Weight	2 kg (4.36 lb)

Computer environment

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

Table 22. 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 80% (non-condensing) i NOTE: Maximum dew point temperature = 26°C	0% to 95% (non-condensing) i NOTE: Maximum dew point temperature = 33°C
Vibration (maximum)	0.26 GRMS	1.37 GRMS
Shock (maximum)	105 G †	40 G ‡
Altitude (maximum)	-15.2 m to 3048 m (-50 ft to 10,000 ft)	-15.2 m to 10,668 m (-50 ft to 35,000 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 23. Security specifications

Feature	Specifications
Trusted Platform Module (TPM) 2.0	Integrated on the system board
Discrete TPM	Integrated on the system board
Windows Hello Support	Optional
Cable cover	Optional
Chassis intrusion switch	Optional
Dell Smartcard Keyboard	Optional

Table 23. Security specifications (continued)

Feature	Specifications
Chassis lock slot and loop support	Optional

Security Software

Table 24. Security Software specifications

Feature	Specifications
Dell Endpoint Security Suite Enterprise	Optional
Dell Data Guardian	Optional
Dell Encryption (Enterprise or Personal)	Optional
Dell Threat Defense	Optional
RSA SecurID Access	Optional
RSA NetWitness Endpoint	Optional
MozyPro or MozyEnterprise	Optional
VMware Airwatch/WorkspaceONE	Optional
Absolute Data & Device Security	Optional

System setup

System setup enables you to manage your tablet/desktop/notebook hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- [Boot menu](#)
- [Navigation keys](#)
- [System setup options](#)
- [System and setup password](#)

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

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.

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.
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.

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 25. General

Option	Description
System Information	Displays the following information: • System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code. • Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, and Memory Technology. • 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 M.2 SATA, M.2 PCIe SSD-0, Passthrough 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.
Advanced Boot Options	Allows you to select the Legacy Option ROMs option, when in UEFI boot mode. By default, no option is selected. • Enable Legacy Option ROMs • Enable Attempt Legacy Boot • Enable UEFI Network Stack
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. • Always, Except Internal HDD—Default • 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 26. System Configuration

Option	Description
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. • 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	Allows you to enable or disable the various drives on-board: • SATA-0 (enabled by default) • M.2 PCIe SSD-0 (enabled by default)

Table 26. System Configuration (continued)

Option	Description
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. The Enable Smart Reporting option is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for: • Enable USB Boot Support • Enable External USB Port All the options are enabled by default.
Dell Type-C Dock Configuration	This section allows connection to the Dell WD and TB family of docks (Type-C docks) independent of USB and Thunderbolt Adapter configuration settings. • Always Allow Dell Docks is enabled
Thunderbolt Adapter Configuration	This section allows Thunderbolt Adapter Configuration. • Enable Thunderbolt Technology Support-is enabled by default • Enable Thunderbolt Adapter Boot Support-is disabled • Enable Thunderbolt Adapter Pre-boot Modules-is disabled • Security level-No security-is disabled • Security level-User configuration-enabled by default • Security level-Secure connect-is disabled • Security level- Display port only-is disabled
Audio	Allows you to enable or disable the integrated audio controller. The option Enable Audio is selected by default. • Enable Microphone • Enable Internal Speaker Both the options are selected by default.
Keyboard Illumination	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: • Disabled • Dim • Bright-enabled by default
Keyboard Backlight Timeout on AC	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: • 5 sec • 10 sec-enabled by default • 15 sec • 30 sec • 1 min • 5 min • 15 min • Never
Keyboard Backlight Timeout on Battery	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: • 5 sec • 10 sec-enabled by default • 15 sec • 30 sec • 1 min • 5 min

Table 26. System Configuration (continued)

Option	Description
	• 15 min • Never
Touchscreen	It controls whether the screen is enabled or disabled. This option is enabled by default.
Miscellaneous Devices	Allows you to enable or disable the following devices: • Enable Camera-enabled by default • Enable Secure Digital (SD) Card-enabled by default • Secure Digital (SD) Card Boot-disabled by default • Secure Digital (SD) Card Read-Only-Mode-disabled by default

Video

Option Description

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.

 **NOTE:** The video setting is visible only when a video card is installed into the system.

Security

Table 27. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.
System Password	Allows you to set, change, and delete the system password.
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	This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart. • 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).  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.
Password Change	This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set. Allow Non-Admin Password Changes - This option is enabled by default.
Non-Admin Setup Changes	Determines whether changes to the setup option are permitted when an administrator password is set.
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)

Table 27. Security (continued)

Option	Description
TPM 2.0 Security	Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system. • TPM On (default) • Clear • PPI Bypass for Enable Commands (default) • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable (default) • Key Storage Enable (default) • SHA-256 (default) Choose any one option: • Disabled • Enabled (default)
Computrace(R)	This field lets you Activate or Disable the BIOS module interface of the optional Computrace Service from Absolute Software. Enables or disables the optional Computrace service designed for asset management. • Deactivate • Disable • Activate - This option is selected by default.
OROM Keyboard Access	This option determines whether users are able to enter Option ROM configuration screen via hotkeys during boot. • 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.
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 28. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature • Secure Boot Enable This option is selected by default.
Secure Boot Mode	Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. • 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: • PK (default) • KEK • db • dbx

Table 28. Secure Boot (continued)

Option	Description
	If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are: • 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  NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.

Intel Software Guard Extensions

Table 29. 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: • Disabled • Enabled—Default • Software controlled
Enclave Memory Size	This option sets SGX Enclave Reserve Memory Size Click one of the following options: • 32 MB • 64 MB • 128 MB—Default

Performance

Table 30. Performance

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. • All—Default • 1 • 2 • 3
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of processor. • Enable Intel SpeedStep This option is set by default.
C-States Control	Allows you to enable or disable the additional processor sleep states.

Table 30. Performance (continued)

Option	Description
	• C states This option is set by default.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • Enable Intel TurboBoost This option is set by default.
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. • Disabled • Enabled—Default

Power management

Option Description

AC Behavior

Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.

Default setting: Wake on AC is not selected.

Enable Intel Speed Shift Technology

- Enable Intel Speed Shift Technology

Default setting: Enabled

Auto On Time

Allows you to set the time at which the computer must turn on automatically. The options are:

- Disabled
- Every Day
- Weekdays
- Select Days

Default setting: Disabled

USB Wake Support

Allows you to enable USB devices to wake the system from Standby.

 **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.

- Enable USB Wake Support
- Wake on Dell USB-C dock-enabled

Wireless Radio Control

Allows the system to sense the connection to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN).

- Control WLAN radio

Default setting: This option is disabled.

Wake on WLAN

Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.

- Disabled
- WLAN

Default setting: Disabled

Block Sleep

This option lets you block entering to sleep (S3 state) in operating system environment.

Block Sleep (S3 state)

Default setting: This option is disabled

Option	Description
Peak Shift	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. • Enable peak shift—is disabled • Set battery threshold (15% to 100%) - 15 % (enabled by default)
Advanced Battery Charge Configuration	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. Enable Advanced Battery Charge Mode- is disabled
Primary Battery Charge Configuration	Allows you to select the charging mode for the battery. The options are: • 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 If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.  NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.

POST behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. Default setting: Enable Adapter Warnings
Numlock Enable	Allows you to enable the Numlock option when the computer boots. Enable Network. This option is enabled by default.
Fn Lock Options	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: • Fn Lock—enabled by default • Lock Mode Disable/Standard—enabled by default • Lock Mode Enable/Secondary
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are: • Minimal—enabled by default • Thorough • Auto
Extended BIOS POST Time	Allows you to create an extra preboot delay. The options are: • 0 seconds—enabled by default. • 5 seconds • 10 seconds
Full Screen Log Warnings and errors	• Enable Full Screen Logo—not enabled • Prompt on warnings and errors—enabled by default • Continue on warnings • Continue on warnings and errors

Manageability

Option	Description
MEBx Hotkey	Allows you to specify whether the MEBx Hotkey function should enable, during the system boot. • Enable MEBx hotkey—enabled by default

Virtualization support

Option	Description
Virtualization	This field specifies whether a virtual Machine Monitor (VMM) can utilize the conditional hardware capabilities provided by Intel Virtualization Technology. Enable Intel Virtualization Technology—enabled by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. Enable VT for Direct I/O - enabled by default.
Trusted Execution	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. Trusted Execution - disabled by default.

Wireless

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: • WLAN • Bluetooth All the options are enabled by default.  NOTE: For WLAN enable or disable controls are tied together and they cannot be enabled or disabled independently.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. • 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: • Internal SATA HDD/SSD

Option	Description
	- 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. - BIOS Recovery from Hard Drive—enabled by default - Always perform integrity check—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.

SupportAssist System Resolution

Option	Description
Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System. Options are: - Off 1 2 (Enabled by default) 3
SupportAssist OS Recovery	Allows you to recover the SupportAssist OS Recovery (Disabled Enabledby default)

System and setup password

Table 31. System and setup password

Password type	Description
System password	Password that you must enter to log on 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 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 F2 immediately after a power-on or re-boot.

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.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (:), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.
The computer reboots.

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 F2 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**, alter or delete the existing system password and press Enter or Tab.
4. Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.
 **NOTE:** If you change the System and/or Setup password, re-enter 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 reboot.

Software

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

Topics:

- [Replacement media options](#)
- [Operating system](#)
- [Downloading the audio driver](#)
- [Downloading the graphics driver](#)
- [Downloading the USB 3.0 driver](#)
- [Downloading the Wi-Fi driver](#)
- [Downloading the media-card reader driver](#)
- [Downloading the fingerprint reader driver](#)
- [Downloading the chipset driver](#)
- [Downloading the network driver](#)
- [Device drivers](#)

Replacement media options

Dell Recovery Environment allows customers to restore to the factory state only on factory installed Windows 10 systems. For more information, see knowledge base article [298453](#) at www.dell.com/support.

Resource DVD

The Resource DVD contains system drivers and utilities.

NOTE: The Resource DVD is no longer shipped with the system. Customers should be encouraged to download the latest drivers from www.dell.com/support. In case of situations where a customer is not able to go online or customer insists on receiving the Resource DVD, technical support agents may dispatch the DVD, post approval from L2/RS.

Once the user passes the welcome screen, the Resource DVD layout is displayed in a custom browser window. The Resource DVD automatically detects the installed hardware and selects the specific hardware for the computer.

Installing drivers using the resource DVD

Browse the driver list or select other options (for example-Utilities) in the browser, which displays the available files. Once you click an item, the installation page is displayed. Click the **Extract** or **Install** button to extract the appropriate driver or utility file(s) to begin the installation. Follow the on-screen instructions to install the driver.

Operating system

This computer is shipped with:

- Windows 10 Home (64-bit)
- Windows 10 Pro (64-bit)
- Windows 10 ProEducation
- Windows 10 MSSI (64-bit)
- Windows 10 Workstation (64-bit)

Downloading the audio driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.
NOTE: If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.
4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.
NOTE: Review on-screen instructions for browser-specific instructions.
8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.
NOTE: Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.
13. For manual download and installation, click **Category**.
14. Click **Audio** in the drop-down list.
15. Click **Download** to download the audio driver for your computer.
16. After the download is complete, navigate to the folder where you saved the audio driver file.
17. Double-click the audio driver file icon and follow the instructions on the screen to install the driver.

Table 32. Audio controller in device manager

Before installation	After installation
▼  Audio inputs and outputs  Speakers / Headphones (Realtek Audio)	▼  Audio inputs and outputs  Microphone Array (Realtek Audio)  Speakers / Headphones (Realtek Audio)

Downloading the graphics driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.
NOTE: If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.
4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.
NOTE: Review on-screen instructions for browser-specific instructions.
8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.

11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.
 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.
13. For manual download and installation, click **Category**.
14. Click **Video** in the drop-down list.
15. Click **Download** to download the graphics driver for your computer.
16. After the download is complete, navigate to the folder where you saved the graphics driver file.
17. Double-click the graphics driver file icon and follow the instructions on the screen to install the driver.

Downloading the USB 3.0 driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.
4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.
 **NOTE:** Review on-screen instructions for browser-specific instructions.
8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.
 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.
13. For manual download and installation, click **Category**.
14. Click **Chipset** in the drop-down list.
15. Click **Download** to download the USB 3.0 driver for your computer.
16. After the download is complete, navigate to the folder where you saved the USB 3.0 driver file.
17. Double-click the USB 3.0 driver file icon and follow the instructions on the screen to install the driver.

Downloading the Wi-Fi driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.
4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.

 **NOTE:** Review on-screen instructions for browser-specific instructions.

8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.

 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13. For manual download and installation, click **Category**.
14. Click **Network** in the drop-down list.
15. Click **Download** to download the Wi-Fi driver for your computer.
16. After the download is complete, navigate to the folder where you saved the Wi-Fi driver file.
17. Double-click the Wi-Fi driver file icon and follow the instructions on the screen to install the driver.

Downloading the media-card reader driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.

4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.

 **NOTE:** Review on-screen instructions for browser-specific instructions.

8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.

 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13. For manual download and installation, click **Category**.
14. Click **Chipset** in the drop-down list.
15. Click **Download** to download the media-card reader driver for your computer.
16. After the download is complete, navigate to the folder where you saved the media-card reader driver file.
17. Double-click the media-card reader driver file icon and follow the instructions on the screen to install the driver.

Downloading the fingerprint reader driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.

4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.

 **NOTE:** Review on-screen instructions for browser-specific instructions.

8. Click **View Drivers for My System**.
 9. Click **Download and Install** to download and install all driver updates detected for your computer.
 10. Select a location to save the files.
 11. If prompted, approve requests from **User Account Control** to make changes on the system.
 12. The application installs all drivers and updates identified.
-  **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.
13. For manual download and installation, click **Category**.
 14. Click **Security** in the drop-down list.
 15. Click **Download** to download the fingerprint reader driver for your computer.
 16. After the download is complete, navigate to the folder where you saved the fingerprint reader driver file.
 17. Double-click the fingerprint reader driver file icon and follow the instructions on the screen to install the driver.

Downloading the chipset driver

1. Turn on your computer.
2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.

 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.

4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.

 **NOTE:** Review on-screen instructions for browser-specific instructions.

8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.

 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.

13. For manual download and installation, click **Category**.
14. Click **Chipset** in the drop-down list.
15. Click **Download** to download the chipset driver for your computer.
16. After the download is complete, navigate to the folder where you saved the appropriate chipset driver file.
17. Double-click the chipset driver file icon and follow the instructions on the screen to install the driver.

Downloading the network driver

1. Turn on your computer.

2. Go to www.dell.com/support.
3. Enter the Service Tag of your computer, and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your computer model.
4. Click **Drivers & downloads**.
5. Click the **Detect Drivers** button.
6. Review and agree to the Terms and Conditions to use **SupportAssist**, then click **Continue**.
7. If necessary, your computer starts to download and install **SupportAssist**.
 **NOTE:** Review on-screen instructions for browser-specific instructions.
8. Click **View Drivers for My System**.
9. Click **Download and Install** to download and install all driver updates detected for your computer.
10. Select a location to save the files.
11. If prompted, approve requests from **User Account Control** to make changes on the system.
12. The application installs all drivers and updates identified.
 **NOTE:** Not all files can be installed automatically. Review the installation summary to identify if manual installation is necessary.
13. For manual download and installation, click **Category**.
14. Click **Network** in the drop-down list.
15. Click **Download** to download the network driver for your computer.
16. After the download is complete, navigate to the folder where you saved the network driver file.
17. Double-click the network driver file icon and follow the instructions on the screen to install the driver.

Device drivers

Intel Chipset Software Installation Utility

In the Device Manager, check if the chipset driver is installed. Install the Intel chipset updates from www.dell.com/support.

- System devices
 - ACPI Fixed Feature Button
 - ACPI Lid
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Sleep Button
 - ACPI Thermal Zone
 - Charge Arbitration Driver
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High precision event timer
 - Intel(R) 100 Series/C230 Series Chipset Family LPC Controller (QM175) - A153
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #1 - A110
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #9 - A118
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
 - Intel(R) 100 Series/C230 Series Chipset Family PMC - A121
 - Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
 - Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Manager
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Package Participant
 - Intel(R) Dynamic Platform and Thermal Framework Processor Participant
 - Intel(R) Integrated Sensor Solution
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
 - Intel(R) Serial IO I2C Host Controller - A160
 - Intel(R) Serial IO I2C Host Controller - A161
 - Intel(R) Smart Sound Technology (Intel(R) SST) Audio Controller
 - Intel(R) Smart Sound Technology (Intel(R) SST) OED
 - Intel(R) Software Guard Extensions Device
 - Intel(R) Virtual Buttons
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 5910
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - Legacy device
 - Microsoft ACPI-Compliant Embedded Controller
 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel HD Graphics driver

In the Device Manager, check if the video driver is installed. Install the video driver update from www.dell.com/support.



Intel Serial IO driver

In the Device Manager, check if the Intel Serial IO driver is installed. Install the driver updates from www.dell.com/support.



- System devices
 - ACPI Fixed Feature Button
 - ACPI Lid
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Sleep Button
 - ACPI Thermal Zone
 - Charge Arbitration Driver
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High precision event timer
 - Intel(R) 100 Series/C230 Series Chipset Family LPC Controller (QM175) - A153
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #1 - A110
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #9 - A118
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
 - Intel(R) 100 Series/C230 Series Chipset Family PMC - A121
 - Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
 - Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
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 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Manager
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Package Participant
 - Intel(R) Dynamic Platform and Thermal Framework Processor Participant
 - Intel(R) Integrated Sensor Solution
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
 - Intel(R) Serial IO I2C Host Controller - A160
 - Intel(R) Serial IO I2C Host Controller - A161
 - Intel(R) Smart Sound Technology (Intel(R) SST) Audio Controller
 - Intel(R) Smart Sound Technology (Intel(R) SST) OED
 - Intel(R) Software Guard Extensions Device
 - Intel(R) Virtual Buttons
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 5910
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - Legacy device
 - Microsoft ACPI-Compliant Embedded Controller
 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel Trusted Execution Engine Interface

In the Device Manager, check if the Intel Trusted Execution Engine Interface driver is installed. Install the driver update from www.dell.com/support.

- System devices
 - ACPI Fixed Feature Button
 - ACPI Lid
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Sleep Button
 - ACPI Thermal Zone
 - Charge Arbitration Driver
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High precision event timer
 - Intel(R) 100 Series/C230 Series Chipset Family LPC Controller (QM175) - A153
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #1 - A110
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #9 - A118
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
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 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
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 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
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 - Intel(R) Dynamic Platform and Thermal Framework Manager
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Package Participant
 - Intel(R) Dynamic Platform and Thermal Framework Processor Participant
 - Intel(R) Integrated Sensor Solution
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
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 - Intel(R) Serial IO I2C Host Controller - A161
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 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel Virtual Button driver

In the Device Manager, check if the Intel Virtual Button driver is installed. Install the driver updates from www.dell.com/support.

- System devices
 - ACPI Fixed Feature Button
 - ACPI Lid
 - ACPI Power Button
 - ACPI Processor Aggregator
 - ACPI Sleep Button
 - ACPI Thermal Zone
 - Charge Arbitration Driver
 - Composite Bus Enumerator
 - Dell Diag Control Device
 - Dell System Analyzer Control Device
 - High precision event timer
 - Intel(R) 100 Series/C230 Series Chipset Family LPC Controller (QM175) - A153
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #1 - A110
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #9 - A118
 - Intel(R) 100 Series/C230 Series Chipset Family PCI Express Root Port #5 - A114
 - Intel(R) 100 Series/C230 Series Chipset Family PMC - A121
 - Intel(R) 100 Series/C230 Series Chipset Family SMBus - A123
 - Intel(R) 100 Series/C230 Series Chipset Family Thermal subsystem - A131
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Generic Participant
 - Intel(R) Dynamic Platform and Thermal Framework Manager
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Discrete Graphics(DGFX) Participant
 - Intel(R) Dynamic Platform and Thermal Framework Multi-Chip Package Participant
 - Intel(R) Dynamic Platform and Thermal Framework Processor Participant
 - Intel(R) Integrated Sensor Solution
 - Intel(R) Management Engine Interface
 - Intel(R) Power Engine Plug-in
 - Intel(R) Serial IO I2C Host Controller - A160
 - Intel(R) Serial IO I2C Host Controller - A161
 - Intel(R) Smart Sound Technology (Intel(R) SST) Audio Controller
 - Intel(R) Smart Sound Technology (Intel(R) SST) OED
 - Intel(R) Software Guard Extensions Device
 - Intel(R) Virtual Buttons
 - Intel(R) Xeon(R) E3 - 1200 v6/7th Gen Intel(R) Core(TM) Host Bridge/DRAM Registers - 5910
 - Intel(R) Xeon(R) E3 - 1200/1500 v5/6th Gen Intel(R) Core(TM) PCIe Controller (x16) - 1901
 - Legacy device
 - Microsoft ACPI-Compliant Embedded Controller
 - Microsoft ACPI-Compliant System
 - Microsoft System Management BIOS Driver
 - Microsoft UEFI-Compliant System
 - Microsoft Virtual Drive Enumerator
 - Microsoft Windows Management Interface for ACPI
 - Microsoft Windows Management Interface for ACPI
 - NDIS Virtual Network Adapter Enumerator
 - Numeric data processor
 - PCI Express Root Complex
 - Plug and Play Software Device Enumerator
 - Programmable interrupt controller
 - Remote Desktop Device Redirector Bus
 - System CMOS/real time clock
 - System timer
 - UMBus Root Bus Enumerator

Intel Wi-Fi and Bluetooth drivers

In the Device Manager, check if the network card driver is installed. Install the driver updates from www.dell.com/support.

Table 33. Network adapter in device manager

Before installation	After installation
 Network adapters  Bluetooth Device (Personal Area Network)  Bluetooth Device (RFCOMM Protocol TDI)  Killer Wireless-n/a/ac 1435 Wireless Network Adapter  WAN Miniport (IKEv2)  WAN Miniport (IP)  WAN Miniport (IPv6)  WAN Miniport (L2TP)  WAN Miniport (Network Monitor)  WAN Miniport (PPPOE)  WAN Miniport (PPTP)	 Network adapters  Bluetooth Device (Personal Area Network)  Bluetooth Device (RFCOMM Protocol TDI)  Killer Wireless-n/a/ac 1435 Wireless Network Adapter  WAN Miniport (IKEv2)  WAN Miniport (IP)  WAN Miniport (IPv6)  WAN Miniport (L2TP)  WAN Miniport (Network Monitor)  WAN Miniport (PPPOE)  WAN Miniport (PPTP)  WAN Miniport (SSTP)

In the Device Manager, check if the Bluetooth driver is installed. Install the driver updates from www.dell.com/support.

Table 34. Bluetooth driver in device manager

Before installation	After installation
 Bluetooth  Microsoft Bluetooth Enumerator  Microsoft Bluetooth LE Enumerator  Microsoft Bluetooth Protocol Support Driver  Qualcomm QCA61x4A Bluetooth 4.1	 Bluetooth  Microsoft Bluetooth Enumerator  Microsoft Bluetooth LE Enumerator  Microsoft Bluetooth Protocol Support Driver  Qualcomm QCA61x4A Bluetooth 4.1

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.