

Vostro 3501

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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Contents

Chapter 1: Set up your computer.....	6
Chapter 2: Create a USB recovery drive for Windows.....	8
Chapter 3: Chassis overview.....	9
Display view.....	9
Left view.....	10
Right view.....	10
Palmrest view.....	11
Bottom view.....	12
Keyboard shortcuts.....	12
Chapter 4: Technical specifications.....	14
Processors.....	14
Chipset.....	14
Operating system.....	14
Memory.....	15
Storage.....	15
Ports and connectors.....	15
Audio.....	16
Video.....	17
Camera.....	17
Communications.....	17
Media-card reader.....	18
Power adapter.....	18
Battery.....	19
Dimensions and weight.....	19
Display.....	20
Fingerprint reader.....	21
Security.....	21
Security Software.....	21
Computer environment.....	22
Chapter 5: Software.....	23
Downloading Windows drivers.....	23
Chapter 6: System setup.....	24
Boot menu.....	24
Navigation keys.....	24
Boot Sequence.....	25
BIOS setup.....	25
Overview.....	25
Boot Options.....	26
System configuration.....	27

Video.....	28
Security.....	28
Passwords.....	29
Secure Boot.....	31
Expert Key Management.....	31
Performance.....	31
Power management.....	32
Wireless.....	33
POST behavior.....	33
Maintenance.....	34
System logs.....	34
Updating the BIOS in Windows	35
Updating BIOS on systems with BitLocker enabled.....	36
Updating the Dell BIOS in Linux and Ubuntu environments.....	36
System and setup password.....	36
Assigning a system setup password.....	36
Deleting or changing an existing system setup password.....	37
Chapter 7: Getting help.....	38
Contacting Dell.....	38

Set up your computer

Steps

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


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



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.

Table 1. Locate Dell apps

Dell apps	Details
	<p>SupportAssist</p> <p>Proactively checks the health of your computer's hardware and software.</p> <p> NOTE: Renew or upgrade your warranty by clicking the warranty expiry date in SupportAssist.</p>
	<p>Dell Update</p> <p>Updates your computer with critical fixes and important device drivers as they become available.</p>
	<p>Dell Digital Delivery</p> <p>Download software applications including software that is purchased but not preinstalled on your computer.</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.

Prerequisites

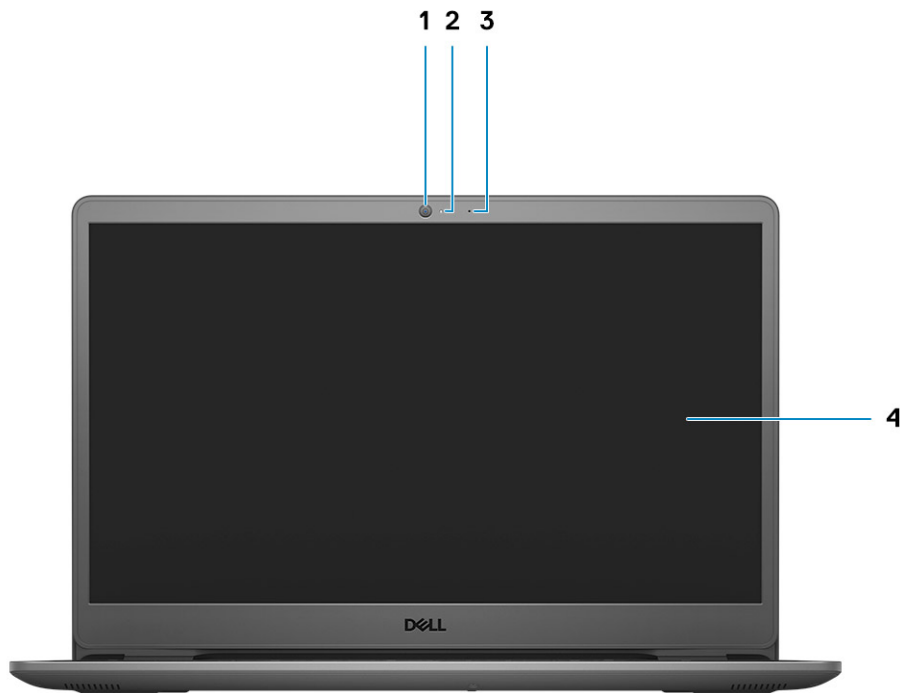
-  **NOTE:** This process may take up to an hour to complete.
-  **NOTE:** The following steps may vary depending on the version of Windows installed. Refer to the [Microsoft support site](#) for latest instructions.

Steps

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.

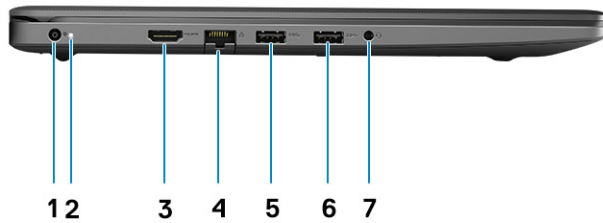
Chassis overview

Display view



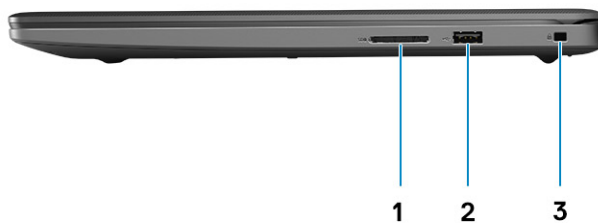
1. Camera
2. Camera Status Light
3. Microphones
4. LCD Panel

Left view



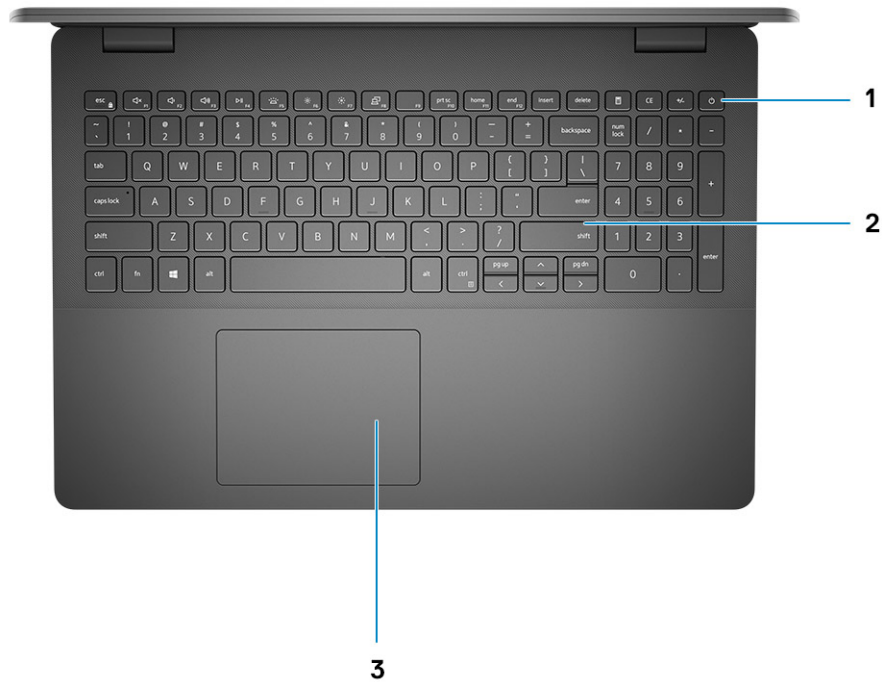
1. DC-in port
2. LED indicator
3. HDMI 1.4 port
4. Network Port
5. USB 3.2 Gen 1 port
6. USB 3.2 Gen 1 port
7. Universal audio jack (Realtek audio) / Audio jack (Cirrus audio logic)

Right view



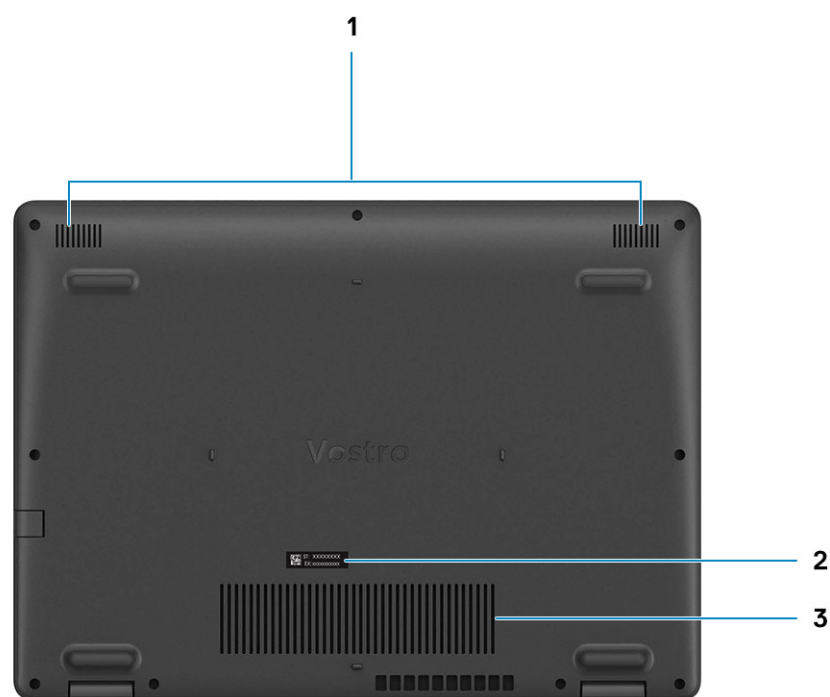
1. SD 3.0 card reader slot
2. USB 2.0 Type-A port
3. Wedge-shaped security slot

Palmrest view



1. Power button with optional finger print reader
2. Keyboard
3. Touchpad

Bottom view



- 1. Speakers
- 2. Service Tag
- 3. Air Vents

Keyboard shortcuts

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

Table 2. List of keyboard shortcuts

Keys	Primary behavior
Fn + Esc	Toggle Fn-key lock
Fn + F1	Mute audio
Fn + F2	Decrease volume
Fn + F3	Increase volume
Fn + F4	Play/Pause
Fn + F5	Turn on/off keyboard backlight

Table 2. List of keyboard shortcuts

Keys	Primary behavior
Fn + F6	Decrease brightness
Fn + F7	Increase brightness
Fn + F8	Switch to external display
Fn + F10	Print screen
Fn + F11	Home
Fn + 12	End
Fn + Ctrl	Open application menu

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.

Processors

Table 3. Processors

Description	Values
Processors	10th Generation Intel Core i3-1005G1
Wattage	15 W
Core count	2
Thread count	4
Speed	Up to 3.4 GHz
Cache	4 MB
Integrated graphics	Intel UHD Graphics

Chipset

Table 4. Chipset

Description	Values
Processor	Ice lake U (ICL U) PCH-LP
Chipset	Intel Core i3
DRAM bus width	64-bit
PCIe bus	Gen 3

Operating system

- Windows 10 Professional (64-bit)
- Windows 10s Home (64-bit)
- Ubuntu 20.04

Memory

Table 5. Memory specifications

Description	Values
Slots	Two SODIMM slots
Type	DDR4
Speed	2666 MHz
Maximum memory	16 GB
Minimum memory	4 GB
Configurations supported	<ul style="list-style-type: none">• 4 GB DDR4 at 2666 MHz (1x4 GB)• 8 GB DDR4 at 2666 MHz (2 x 4 GB)• 8 GB DDR4 at 2666 MHz (1 x 8 GB)• 12 GB DDR4 at 2666 MHz (1 x 8 GB + 1 x 4 GB)• 16 GB DDR4 at 2666 MHz (1 x 16 GB)• 16 GB DDR4 at 2666 MHz (2 x 8 GB)

Storage

Your computer supports one of the following configurations:

- 2.5 in. 5400 RPM, SATA hard drive
- M.2 2230/2280 for solid-state drive

The primary drive of your computer varies with the storage configuration. For computers:

- 2.5 in. 5400 RPM, SATA hard drive
- M.2 2230/2280 for solid-state drive

Table 6. Storage specifications

Form factor	Interface type	Capacity
2.5 in. 5400 rpm, hard drive	SATA	upto 2 TB
M.2 2230 solid-state drive	PCIe NVMe 3x4	upto 512 GB
M.2 2280 solid-state drive	PCIe NVMe 3x4	upto 1 TB

Ports and connectors

Table 7. External ports and connectors (continued)

Description	Values
External:	
Network	One Flip-down RJ 45 10/100/1000 Mbps
USB	<ul style="list-style-type: none">• Two USB 3.2 Gen 1 Type-A port• One USB 2.0 Type-A port
Audio	<ul style="list-style-type: none">• One Universal audio port (Computers with Realtek audio configuration)

Table 7. External ports and connectors

Description	Values
	<ul style="list-style-type: none"> One Audio jack (Computers with Cirrus logic audio configuration)
Video	One HDMI 1.4 port
Power adapter port	4.5 mm barrel-type
Security	One Wedge shaped lock slot
Card slot	One SD 3.0 card slot

Table 8. Internal ports and connectors

Description	Values
Internal:	
One M.2 Key-M (2280 or 2230) for solid-state drive One M.2 2230 Key-E for WLAN	<ul style="list-style-type: none"> One M.2 2230 slot for Wi-Fi One M.2 slot for 2230/2280 solid-state drive <p>NOTE: To learn more about the features of different types of M.2 cards, see the knowledge base article SLN301626.</p>
SIM card	Not Supported

Audio

Table 9. Audio specifications

Description	Values	
Controller	Realtek ALC3204	<ul style="list-style-type: none"> Cirrus CS8409 Cirrus CS42L42 Cirrus TI SN005825
Stereo conversion	Supported	Supported
Internal interface	High definition audio	HDA bridge + CS42L42 audio codec
External interface	Universal Audio Jack	Audio jack NOTE: 3.5mm Audio jack functionality varies by model configuration. For best results, use Dell recommended audio accessories
Speakers	Two	Two
Internal-speaker amplifier	Supported	Supported
External volume controls	Keyboard shortcut controls	Keyboard shortcut controls
Speaker Output Average	2 W	2 W

Table 9. Audio specifications

Description	Values	
Speaker Output Peak	2.5 W	2.5 W
Subwoofer output	Not supported	Not supported
Microphone	Single digital microphone	Single digital microphone

Video

Table 10. Integrated graphics specifications

Integrated graphics			
Controller	External display support	Memory size	Processor
Intel UHD Graphics	<ul style="list-style-type: none"> One HDMI 1.4 	Shared system memory	<ul style="list-style-type: none"> Intel 10th Generation Core i3 processors

Camera

Table 11. Camera specifications

Standard Webcam		
Description		Values
Number of cameras		One
Type		HD RGB camera
Location		Front Camera
Sensor type		CMOS sensor technology
Resolution:		
	Still image	0.92 megapixel
	Video	1280 x 720 (HD) at 30 fps
Diagonal viewing angle		78.6 degrees

Communications

Ethernet

Table 12. Ethernet specifications

Description	Values
Model number	Integrated Realtek RTL8111H
Transfer rate	e.g. 10/100/1000 Mbps

Wireless module

Table 13. Wireless module specifications

Description	Values		
Model number	Intel 9462	Qualcomm QCA9377 (DW1810)	Realtek RTL8723DE
Transfer rate	Up to 433 Mbps	Up to 433 Mbps	Up to 150 Mbps
Frequency bands supported	2.4 GHz/5 GHz	2.4 GHz/5 GHz	2.4 GHz
Wireless standards	<ul style="list-style-type: none">• WiFi 802.11a/b/g• Wi-Fi 4 (Wi-Fi 802.11n)• Wi-Fi 5 (Wi-Fi 802.11ac)• Wi-Fi 6 (Wi-Fi 802.11ax)	<ul style="list-style-type: none">• WiFi 802.11a/b/g• Wi-Fi 4 (Wi-Fi 802.11n)• Wi-Fi 5 (Wi-Fi 802.11ac)	<ul style="list-style-type: none">• Wi-Fi 802.11 a/b/g• Wi-Fi 4 (Wi-Fi 802.11n)
Encryption	<ul style="list-style-type: none">• 64-bit/128-bit WEP• AES-CCMP• TKIP	<ul style="list-style-type: none">• 64-bit/128-bit WEP• AES-CCMP• TKIP	<ul style="list-style-type: none">• 64-bit/128-bit WEP• AES-CCMP• TKIP
Bluetooth	Bluetooth 5.0	Bluetooth 5.0	Bluetooth 4.2

Media-card reader

Table 14. Media-card reader specifications

Description	Values
Type	One Micro SD 3.0 card
Cards supported	<ul style="list-style-type: none">• Micro Secure Digital (mSD)• Micro Secure Digital High Capacity(mSDHC)• Micro Secure Digital Extended Capacity(mSDXC)

Power adapter

Table 15. Power adapter specifications

Description	Values	Values
Type	45 W	65 W
Connector dimensions:	4.5 mm x 2.9 mm	4.5 mm x 2.9 mm
Input voltage	100 VAC x 240 VAC	100 VAC x 240 VAC
Input frequency	50 Hz x 60 Hz	50 Hz x 60 Hz
Input current (maximum)	1.30 A	1.60 A / 1.70 A
Output current (continuous)	2.31 A	3.34 A
Rated output voltage	19.50 VDC	19.50 VDC
Temperature range:		

Table 15. Power adapter specifications

Description		Values	Values
	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 16. Battery specifications


Description		Values
Type		42 WHr Polymer battery
Voltage		11.40 VDC
Weight (maximum)		0.2 kg (0.44 lb)
Dimensions:		
	Height	184.15 mm (7.25 in.)
	Width	97.15 mm (3.82 in.)
	Depth	5.90 mm (0.23 in.)
Temperature range:		
	Operating	0°C to 35°C (32°F to 95°F)
	Storage	-40°C to 65°C (-40°F to 149°F)
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Charging time (approximate)		4 hours (when the computer is off) NOTE: Dell recommends that you charge the battery regularly for optimal power consumption. If your battery charge is completely depleted, connect the power adapter, turn on your computer and then restart your computer to reduce the power consumption. 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 www.dell.com/
Coin-cell battery		CR2032
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.

Dimensions and weight

Table 17. Dimensions and weight

Description	Values
Height:	

Table 17. Dimensions and weight

Description		Values
	Front	18 mm (0.70 in.)
	Rear	19.90 mm (0.78 in.)
Width		363.96 mm (14.32 in.)
Depth		249 mm (9.80 in.)
Weight		<ul style="list-style-type: none"> • Touch: 1.91 kg (4.21 lb) • Non-touch: 1.90 kg (4.18 lb) <p> NOTE: The weight of your notebook depends on the configuration ordered and the manufacturing variability.</p>

Display

Table 18. Display specifications

Description		Values	
Type		High Definition (HD)	Full High Definition (FHD)
Panel technology		TN (Twisted Nematic)	WVA (wide view angle)
Luminance (typical)		220 nits	220 nits
Dimensions (active area):			
	Height	193.54 mm (7.62 in.)	193.54 mm (7.62 in.)
	Width	344.23 mm (13.55 in.)	344.23 mm (13.55 in.)
	Diagonal	394.90 mm (15.54 in.)	394.90 mm (15.54 in.)
Native resolution		1366 x 768	1920 x 1080
Megapixels		1.05	2.07
Color gamut		NTSC 45% Typ.	NTSC 45% Typ.
Pixels per inch (PPI)		100	141
Contrast ratio (min)		400:1	400:1
Response time (max)		25 ms	35 ms
Refresh rate		60 Hz	60 Hz
Horizontal view angle		40 degrees	80 degrees
Vertical view angle		Top/Bottom 10/30 degrees	80 degrees
Pixel pitch		0.252 mm	0.179 mm
Power consumption (maximum)		4.2 W	4.2 W
Anti-glare vs glossy finish		Anti-glare	Anti-glare

Table 18. Display specifications

Decsription	Values	
Touch options	No	No

Fingerprint reader

Table 19. Fingerprint reader specifications

Description	Values
Sensor technology	Capacitive
Sensor resolution	500 dpi
Sensor pixel size	80 x 64

Security

Table 20. Security specifications

Features	Specifications
Trusted Platform Module (TPM) 2.0	Integrated on system board
Fingerprint reader	Optional
Wedge-shaped lock slot	Standard

Security Software

Table 21. Security Software specifications

Specifications
Dell Client Command Suite
Optional Dell Data Security and Management Software
Dell Client Command Suite
Dell BIOS Verification
Optional Dell Endpoint Security and Management Software
VMware Carbon Black Endpoint Standard
VMware Carbon Black Endpoint Standard + Secureworks Threat Detection and Response
Dell Encryption Enterprise
Dell Encryption Personal
Carbonite
VMware Workspace ONE
Absolute® Endpoint Visibility and Control
Netskope
Dell Supply Chain Defense

Computer environment

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

Table 22. Computer environment

Description	Operating	Storage
Temperature range	0°C to 40°C (32°F to 104°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	140 G†	160 G†
Altitude (maximum)	0 m to 3048 m (0 ft to 10000 ft)	0 m to 10668 m (0 ft to 35000 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.

Software


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


Downloading Windows drivers

Steps

1. Turn on the .
2. Go to **Dell.com/support**.
3. Click **Product Support**, enter the Service Tag of your , and then click **Submit**.
 **NOTE:** If you do not have the Service Tag, use the auto detect feature or manually browse for your model.
4. Click **Drivers and Downloads**.
5. Select the operating system installed on your .
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your .
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.

System 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:** 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.


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 Devices:**
 - Windows Boot Manager
 - UEFI Hard Drive
 - Onboard NIC (IPV4)
 - Onboard NIC (IPV6)
- **Pre-Boot Tasks:**
 - BIOS Setup
 - Diagnostics
 - BIOS Update
 - SupportAssist OS Recovery
 - BIOS Flash Update - Remote
 - Device Configuration

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.

Boot Sequence

Boot sequence enables 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:** XXXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics
 -  **NOTE:** Choosing **Diagnostics**, displays the **SupportAssist diagnostics** screen.

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

BIOS setup

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

Overview

Table 23. Overview


Option	Description
System Information	<p>This section lists the primary hardware features of your computer.</p> <p>The options are:</p> <ul style="list-style-type: none">• System Information<ul style="list-style-type: none">◦ BIOS version◦ Service Tag◦ Asset Tag◦ Manufacture Date◦ Ownership Date◦ Express Service Code◦ Ownership Tag◦ Signed Firmware Update• Battery<ul style="list-style-type: none">◦ Primary◦ Battery Level◦ Battery State◦ Health◦ AC Adapter• Processor Information<ul style="list-style-type: none">◦ Processor Type◦ Maximum Clock Speed◦ Minimum Clock Speed◦ Current Clock Speed◦ Core Count

Table 23. Overview

Option	Description
	<ul style="list-style-type: none"> ○ Processor ID ○ Processor L2 Cache ○ Processor L3 Cache ○ Microcode Version ○ Intel Hyper-Threading Capable ○ 64-Bit Technology ● Memory Configuration <ul style="list-style-type: none"> ○ Memory Installed ○ Memory Available ○ Memory Speed ○ Memory Channel Mode ○ Memory Technology ○ DIMM_Slot 1 ○ DIMM_Slot 2 ● Device Information <ul style="list-style-type: none"> ○ Panel Type ○ Video Controller ○ Video Memory ○ Wi-Fi Device ○ Native Resolution ○ Video BIOS Version ○ Audio Controller ○ Bluetooth Device ○ LOM MAC Address ○ dGPU Video Controller


Boot Options

Table 24. Boot Options

Option	Description
Enable Boot Devices	<p>UEFI Hard Drive - Allows the user to select Enable boot devices detected by the system.</p> <ol style="list-style-type: none"> 1. Windows Boot Manager 2. UEFI Hard Drive <p> NOTE: Legacy Boot mode is not supported on this platform.</p>
Add / Remove / View Boot Devices	<p>Allows the user to add or remove boot devices listed above. The controls available are as follows:</p> <ul style="list-style-type: none"> ● Add Boot Options ● Remove Boot Options ● View
UEFI Boot Path Security	<p>Allows the user to control if the system should ask for admin password. The controls available are as follows:</p> <ul style="list-style-type: none"> ● Never ● Always ● Always Except Internal HDD

System configuration

Table 25. System configuration

Option	Description
Date/Time	<p>The options are:</p> <ul style="list-style-type: none">• Date• Time <p> NOTE: Legacy Boot mode is not supported on this platform.</p>
Network Controller Configurator	<p>Integrated NIC:</p> <ol style="list-style-type: none">1. Disabled2. Enabled3. Enabled with PXE <p>Enable UEFI Network Stack:</p> <ol style="list-style-type: none">1. On2. Off
Storage Interface	<p>Port Enablement - Allows the user to enable/disable onboard drives. The user can toggle on/off for the following drives:</p> <ul style="list-style-type: none">• SATA-0• M.2 PCIe SSD-0/SATA-2
SATA Operation	<p>Allows the user to set the SATA operation mode for the storage devices available. The options available are as follows:</p> <ul style="list-style-type: none">• Disabled• AHCI• RAID On
Drive Information	<p>This section displays the driver configuration and specification for all storage devices available.</p>
Enable Audio	<p>Allows the user to enable internal audio devices. The options available are as follows:</p> <ul style="list-style-type: none">• Enable Microphone• Enable Internal Speaker
USB Configuration	<p>Allows the user to enable USB Boot devices. The options available are as follows:</p> <ul style="list-style-type: none">• Enable USB Boot Support• Enable External USB Ports
Miscellaneous Devices	<p>Allows the user to enable internal Camera. The options available are as follows:</p> <ul style="list-style-type: none">• Enable Camera
Keyboard Illumination	<p>Allows the user to configure the keyboard brightness levels. The options available are as follows:</p> <ul style="list-style-type: none">• Disabled• Dim• Bright

Video

Table 26. Video

Option	Description
LCD Brightness	Set the screen brightness when running on battery power. <ul style="list-style-type: none">• 0 - 100
Brightness on AC power	Set the screen brightness when running on AC power. <ul style="list-style-type: none">• 0 - 100
EcoPower	Enable EcoPower - Enable to increase battery life and reduce the display brightness when appropriate. The options are: <ul style="list-style-type: none">• On• Off

Security

Table 27. Security

Option	Description
Enable Admin Setup Lockout	Allows the admin to allow/block users from accessing the BIOS menu <ul style="list-style-type: none">• On• Off <p>i NOTE: Deleting the admin password deletes the system password (if set). The admin password can also be used to delete hard drive password. For this reason, you cannot set an admin password if a system password or hard drive password is set. Hence, an admin password has to be set first if the admin password has to be used with system password and/or hard drive password.</p>
Password Bypass	Allows the user to control if the systems prompts for the system and hard drive passwords when powered on from off state: <ul style="list-style-type: none">• Disabled• Reboot Bypass
Enable Non-Admin Password Changes	When enabled, the user can change system and hard drive password without admin password. <ul style="list-style-type: none">• On• Off
Enable UEFI Capsule Firmware Updates	Allows the user to configure BIOS updates via UEFI capsule update packages <ul style="list-style-type: none">• On• Off
Absolute	Allows the user to enable, disable or permanently disable the BIOS module interface of the optional Absolute Persistence Module service. The controls are as follows: <ul style="list-style-type: none">• Enabled• Disabled• Permanently Disabled
TPM 2.0 Security On	Allows the user to enable or disable TPM security. The controls are as follows: <ul style="list-style-type: none">• On• Off

Table 27. Security

Option	Description
PPI Bypass for Enable Commands	Allows the user to enable or disable TPM Physical Presence Interface (PPI). The controls are as follows: <ul style="list-style-type: none"> • On • Off
PPI Bypass for Disabled Commands	Allows the user to enable or disable TPM Physical Presence Interface (PPI). The controls are as follows: <ul style="list-style-type: none"> • On • Off
PPI Bypass for Clear Commands	Allows the user to enable or disable TPM Physical Presence Interface (PPI). The controls are as follows: <ul style="list-style-type: none"> • On • Off
Attestation Enable	Allows the user to enable or disable TPM endorsement Hierarchy for the operating system. The controls are as follows: <ul style="list-style-type: none"> • On • Off
Key Storage Enable	Allows the user to enable or disable TPM endorsement Hierarchy for the operating system. The controls are as follows: <ul style="list-style-type: none"> • On • Off
SHA-256	Allows the user to enable SHA-256 hash algorithm to extend the measurements into the TPM PCRs during BIOS boot. The controls are as follows: <ul style="list-style-type: none"> • On • Off
Clear	Allows the user to clear TPM owner information and returns TPM to default state. The controls are as follows: <ul style="list-style-type: none"> • On • Off
TPM State	Allows the user to enable/disable TPM. The controls are as follows: <ul style="list-style-type: none"> • On • Off
SMM Security Mitigation	Allows the user to enable/disable UEFI SMM Security Mitigation. The controls are as follows: <ul style="list-style-type: none"> • On • Off

Passwords

Table 28. Passwords







Option	Description
Enable Strong Passwords	Allows the user to enable complex admin and system passwords: <ul style="list-style-type: none"> • On • Off <p> NOTE: Deleting the admin password deletes the system password (if set). The admin password can also be used to delete hard drive password. For this reason, you cannot set an admin password if a system password or hard drive password is set. Hence, an admin</p>

Table 28. Passwords (continued)

Option	Description
	password has to be set first if the admin password has to be used with system password and/or hard drive password.
Password Configuration	<p>Allows the user to set the maximum number of characters for Admin and System passwords:</p> <ul style="list-style-type: none"> • Admin Password Min (04) • Admin Password Max (32) • System Password Min (04) • System Password Max (32)
Admin Password	<p>Allows you to configure an admin password.</p> <p> NOTE: Deleting the admin password deletes the system password (if set). The admin password can also be used to delete hard drive password. For this reason, you cannot set an admin password if a system password or hard drive password is set. Hence, an admin password has to be set first if the admin password has to be used with system password and/or hard drive password.</p> <p>Upper Case Letter When enabled, this field reinforces password must contain at least one upper capital letter.</p> <p>Lower Case Letter When enabled, this field reinforces password must contain at least one lower capital letter.</p> <p>Digit When enabled, this field reinforces password must contain at least one-digit number.</p> <p>Special Character When enabled, this field reinforces password must contain at least one special character.</p> <p> NOTE: These options by default are disabled.</p> <p>Minimum Characters Defines the number of characters allowed for a password. Min = 4</p>
Password Bypass	<p>Allows you to bypass the System password and the Internal hard drive password, when it is set, during a system restart.</p> <p>The options are:</p> <ul style="list-style-type: none"> • Disabled—This option is enabled by default. • Reboot bypass
Password Changes	<p>Allows you to change the system password and hard drive password without the need of administrator password.</p> <p>Enable Non-Admin Password Changes - By default, this option is disabled.</p>
Admin Setup Lockout	<p>Allows the administrator to control how the user can access BIOS setup.</p> <p>Enable Admin Setup Lockout - By default, this option is disabled.</p> <p> NOTE:</p> <ul style="list-style-type: none"> • If the admin password is set and Enable Admin Setup Lockout is enabled, you cannot view the BIOS setup (using F2 or F12) without the admin password. • If the admin password is set and Enable Admin Setup Lockout is disabled, the BIOS setup can be entered and items that are viewed in Locked mode.
Master Password Lockout	<p>Allows you to disable master password support.</p> <p>Enable Master Password Lockout - By default, this option is disabled.</p> <p> NOTE: The Hard Disk password has to be cleared before the settings can be changed.</p>

Secure Boot

Table 29. Secure Boot

Option	Description
Secure Boot	<p>Secure Boot helps ensure the system boots using only validated boot software.</p> <p>Enable Secure Boot—By default, this option is disabled.</p> <p> NOTE: The system has to be in UEFI boot mode to enable Enable Secure Boot.</p>
Secure Boot Mode	<p>Changes to the Secure Boot operation mode modifies the behavior of Secure Boot to allow evaluation of UEFI driver signatures.</p> <p>The options are:</p> <ul style="list-style-type: none">• Deployed Mode—By default, this option is enabled.• Audit Mode

Expert Key Management

Table 30. Expert Key Management

Option	Description
Enable Custom Mode	<p>Allows the user to manipulate security key databases</p> <ul style="list-style-type: none">• On• Off — By default, this option is enabled.
Expert Key Management	<p>The Custom Mode Key Management options are:</p> <ul style="list-style-type: none">• PK—By default, this option is enabled.• KEK• db• dbx

Performance

Table 31. Performance

Option	Description
Multi Core Support	<p>This field specifies whether the process has one or all cores enabled. The default value is set to the maximum number of cores.</p> <ul style="list-style-type: none">• All Cores — This option is enabled by default.• 1• 2• 3
Intel SpeedStep	<p>This feature allows the system to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production.</p> <p>Enable Intel SpeedStep</p> <p>This option is enabled by default.</p>

Table 31. Performance

Option	Description
C-States Control	<p>This feature allows you to enable or disable the ability of the CPU to enter and exit low-power states.</p> <p>Enable C-state control</p> <p>This option is enabled by default.</p>
	<p>This feature allows the system to dynamically detect high usage of discrete graphics and adjust system parameters for higher performance during that time period.</p> <p>Enable Adaptive C-states for Discrete Graphics</p> <p>This option is enabled by default.</p>
Intel Turbo Boost Technology	<p>This option allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <p>Enable Intel Turbo Boost Technology</p> <p>This option is enabled by default.</p>
Intel Hyper-Threading Technology	<p>This option allows you to enable or disable the HyperThreading in the processor.</p> <p>Enable Intel Hyper-Threading Technology</p> <p>This option is enabled by default.</p>

Power management

Table 32. Power Management (continued)

Option	Description
Wake on AC	<p>Allows the system to wake up to perform basic checks when the adapter is connected.</p> <ul style="list-style-type: none"> • On • Off — enabled by default
Enable USB Wake Support	<p>Allows you to enable USB devices to wake the system from standby mode.</p> <ul style="list-style-type: none"> • On • Off — enabled by default <p>NOTE: These features are only functional when the AC power adapter is connected. If the AC power adapter is removed before Standby, the BIOS removes power from all USB ports to conserve battery power.</p>
Block Sleep	<p>This option enables you to block entering to sleep (S3) mode in operating system environment. By default, the Block Sleep option is disabled.</p> <p>NOTE: When Block Sleep is enabled, the system does not go to sleep. Intel Rapid Start gets disabled automatically, and the operating system power option remains blank if it was set to Sleep.</p>
Auto On Time	<p>Allows the user to set a defined day/time when they want the system to automatically power on</p> <p>The options are:</p> <ul style="list-style-type: none"> • Disable—enabled by default • Every Day • Weekdays • Select Days

Table 32. Power Management

Option	Description
	The user will see the days of the week listed with fields to select the time.
Battery Charge Configuration	<p>Allows the user to set the preferred battery charging plan for the system:</p> <p>The options are:</p> <ul style="list-style-type: none"> • Adaptive—enabled by default • Standard • Primarily AC Use • CUstom - Allows the user to set a Start/Stop percentage for battery
Enable Advanced Battery Charge Configuration	<p>Allows the user to enable advanced configuration to maximize battery health while supporting heavy usage. The controls are as follows:</p> <ul style="list-style-type: none"> • On • Off <p>The UI below allows the user to set the day and time to further configure battery charging behaviour.</p>
Peak Shift	<p>Allows the system to run on battery during peak power usage hours. The controls are as follows:</p> <ul style="list-style-type: none"> • On • Off <p>The UI below allows the user to set the peak day and time to further configure battery usage behavior.</p>

Wireless

Table 33. Wireless options

Option	Description
Wireless Device Enable	<p>The options are:</p> <ul style="list-style-type: none"> • WLAN - Enable / Disable the WLAN device • Bluetooth - Enable / Disable the Bluetooth device

POST behavior

Table 34. POST behavior

Option	Description
Numlock Enable	<p>Allows the user to enable/disable numlock</p> <p>Enable numlock</p> <ul style="list-style-type: none"> • ON - Enabled by default • OFF
FN Lock	<p>Allows the user to enable/disable Function keys</p> <ul style="list-style-type: none"> • ON - Enabled by default • OFF <p>Lock Mode:</p> <ul style="list-style-type: none"> • Lock Mode Standard - When selected, the F1 - F12 keys will hold their traditional functions. • Lock Mode Secondary - When selected, the F1 - F12 keys will switch to secondary functions with media and system controls.

Table 34. POST behavior

Option	Description
Warnings and Errors	<p>Allows the user to configure in what circumstances would the system stop the boot process upon encountering errors:</p> <ul style="list-style-type: none"> • Prompt on Warning Errors — System will wait for user input when errors or warnings are detected. • Continue on Warning — System will wait for user input only when errors are detected. • Continue on Warning and Errors — System will not ask for user input even when errors or warnings are detected.
Enable Adapter Warnings	<p>Allows the user to configure the system to give an error message when lower power adapter is detected. The controls are as follows:</p> <ul style="list-style-type: none"> • On • Off
Fastboot	<p>Allows the user to configure the speed of UEFI boot process:</p> <ul style="list-style-type: none"> • Minimal • Thorough • Auto
Extend BIOS POST Time	<p>Allows the user to configure the BIOS POST load time</p> <ul style="list-style-type: none"> • 0 seconds • 5 seconds • 10 seconds

Maintenance

Table 35. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows the admin to add an Asset Tag. It is a string of 64 characters that are used by IT administrator to uniquely identify a particular system. Once an asset tag is set, it cannot be changed.
BIOS Recovery from Hard Drive	<p>Allows you to enable or disable recovery from a corrupt BIOS from a copy stored on the hard drive.</p> <ul style="list-style-type: none"> • ON - Enabled by default. • OFF <p>The user also gets a check box that allows enabling automatic recovery of the BIOS without user input.</p>
Start Data Wipe	<p>Allows the user to setup an autowipe on the storage devices on the system upon a reboot.</p> <p>The options are:</p> <ul style="list-style-type: none"> • ON • OFF - Enabled by default.

System logs

Table 36. System Logs

Table 36. System Logs


Option	Description
BIOS Event Log	Allows you to either keep and clear the BIOS event log. Clear BIOS Event Log The options are: <ul style="list-style-type: none">• Keep - This option is enabled by default.• Clear
Thermal Event Log	Allows you to either keep and clear the Thermal event log. Clear Thermal Event Log The options are: <ul style="list-style-type: none">• Keep - This option is enabled by default.• Clear
Power Event Log	Allows you to either keep and clear the Power event log. Clear Power Event Log The options are: <ul style="list-style-type: none">• Keep - This option is enabled by default.• Clear

Updating the BIOS in Windows

Prerequisites


It is recommended to update your BIOS (System Setup) when you replace the system board or if an update is available.

About this task

 **NOTE:** If BitLocker is enabled, it must be suspended prior to updating the system BIOS, and then re enabled after the BIOS update is completed.

For more information about this subject, see Knowledge Article: [How to Enable or Disable BitLocker with TPM in Windows](#).

Steps

1. Restart the computer.
2. Go to **Dell.com/support**.
 - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
 - Click **Detect Product** and follow the instructions on screen.
3. If you are unable to detect or find the Service Tag, click **Choose from all products**.
4. Choose the **Products** category from the list.
 **NOTE:** Choose the appropriate category to reach the product page.
5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers** and click **Drivers and Downloads**.
The Drivers and Downloads section opens.
7. Click **Find it myself**.
8. Click **BIOS** to view the BIOS versions.
9. Identify the latest BIOS file and click **Download**.
10. Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.
11. Click **Save** to save the file on your computer.
12. Click **Run** to install the updated BIOS settings on your computer.

Follow the instructions on the screen.

Updating BIOS on systems with BitLocker enabled

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 reinstall. For more information about this subject, see Knowledge Article: [Updating the BIOS on Dell Systems With BitLocker Enabled](#)

Updating the Dell BIOS in Linux and Ubuntu environments

If you want to update the system BIOS in a Linux environment, such as Ubuntu, see [Update the Dell BIOS in a Linux or Ubuntu environment](#).

System and setup password

Table 37. 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

Prerequisites

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

About this task

To enter the system setup, press F2 immediately after a power-on or reboot.

Steps

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

Prerequisites


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

About this task

To enter the System Setup, press **F2** immediately after a power-on or reboot.

Steps

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 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.

Getting help

Contacting Dell

Prerequisites

 **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.

About this task

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:

Steps

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.