Latitude 9510

Setup and specifications guide

Regulatory Model: P94F/P95F
Regulatory Type: P94F001/P95F001
April 2021
Rev. A02

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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1

Set up your Latitude 9510

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



2. Finish the Windows system setup.
3. 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.
   - Sign in or create and account if the internet is connected, or create an offline account if its not.
   - On the **Support and Protection** screen, enter your contact details.
4. 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.

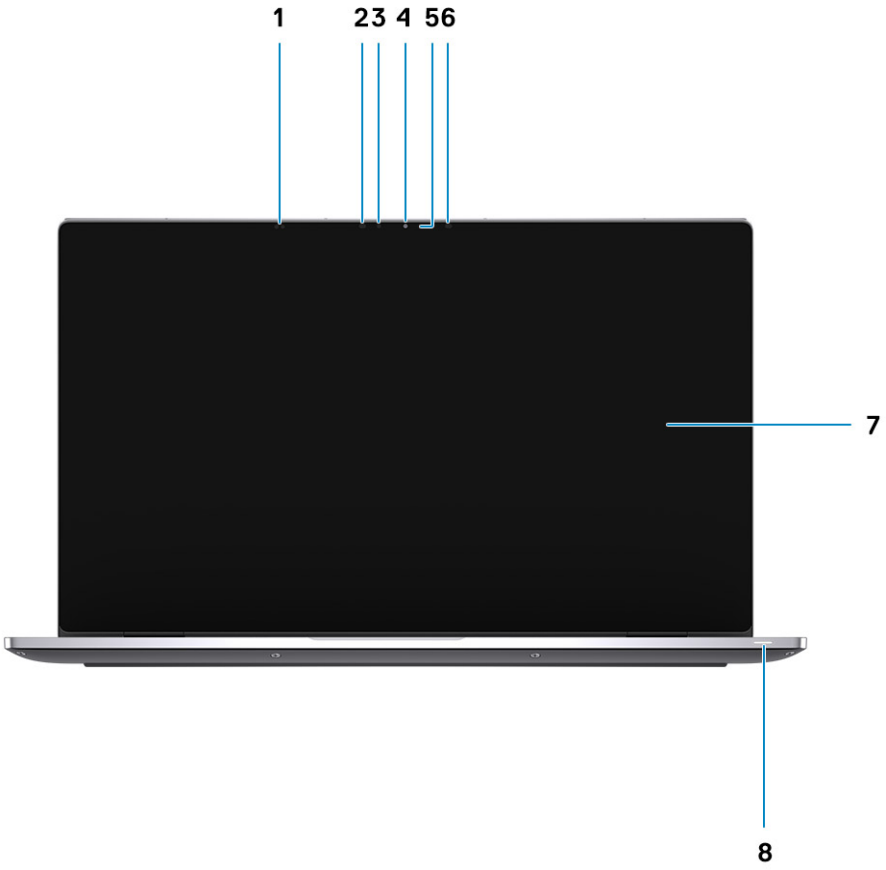
5. Create recovery drive for Windows.

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

2

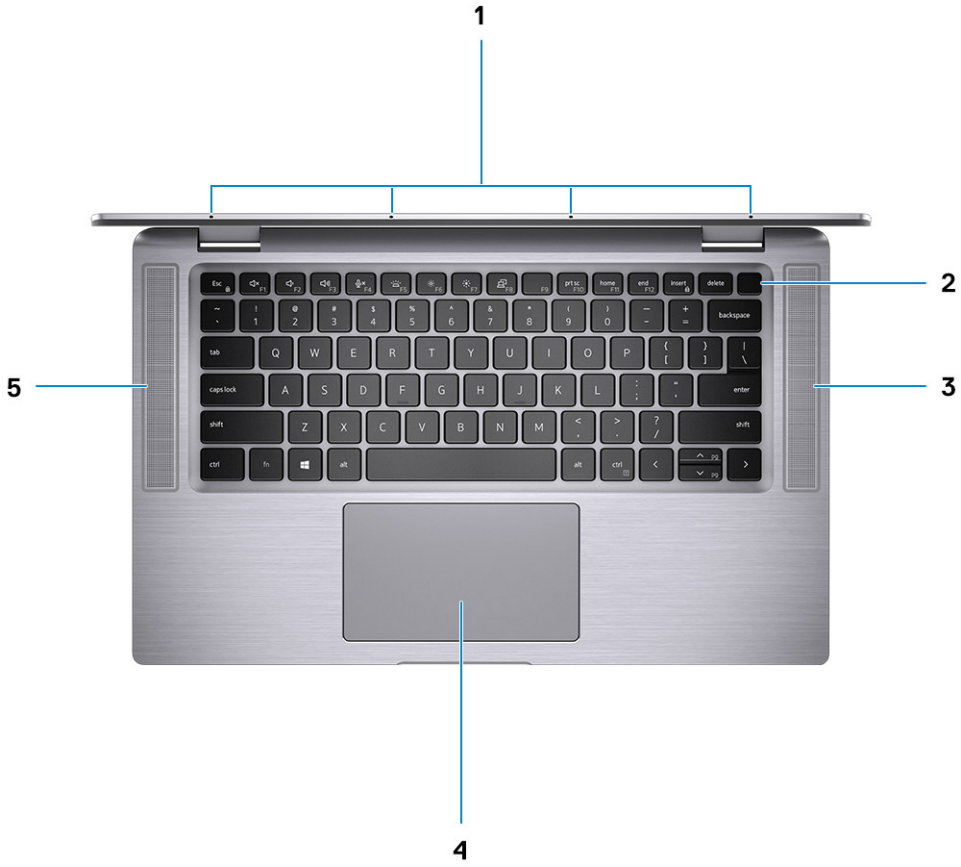
Latitude 9510 views

Display view



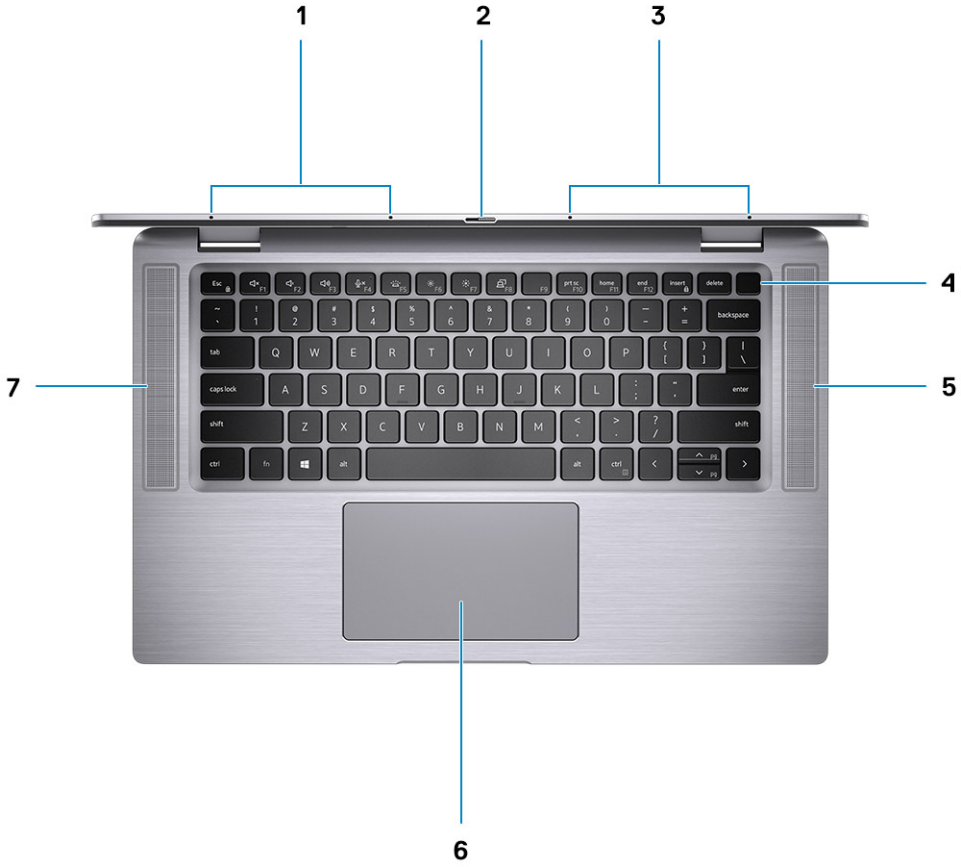
1. Proximity sensor
2. IR emitter
3. Ambient Light Sensor (ALS)
4. Camera (IR/RGB)
5. Camera status light
6. IR emitter
7. Display panel
8. Battery status light / Diagnostics status light

Top view (Convertible)



1. Microphones
2. Power button
3. Right speaker
4. Touchpad
5. Left speaker

Top view



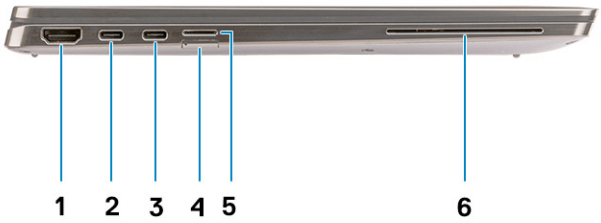
1. Left Microphone
2. Camera shutter
3. Right Microphone
4. Power button with fingerprint reader (optional)
5. Right speaker
6. Touchpad with NFC (optional)
7. Left speaker

Right view



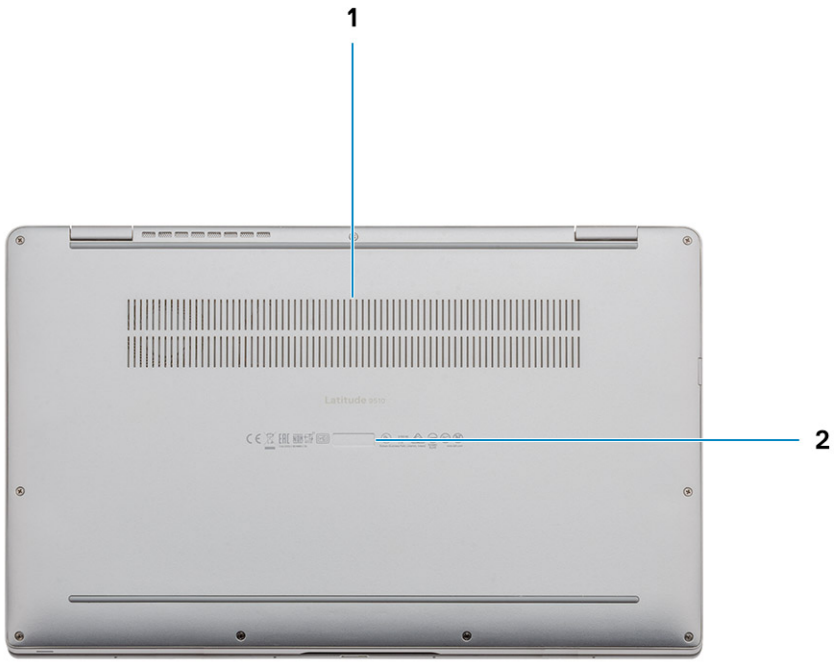
1. Security-cable slot (wedge-shaped)
2. 3.5 mm universal audio jack
3. USB 3.2 Gen 1 Type-A port with PowerShare

Left view



1. HDMI 2.0 Port
2. USB 3.2 Gen 2 Type-C port with Thunderbolt 3/Power Delivery/DisplayPort
3. USB 3.2 Gen 2 Type-C port with Thunderbolt 3/Power Delivery/DisplayPort
4. SIM card slot
5. microSD-card slot
6. Contacted smart card reader (optional)

Bottom view



1. Thermal vent
2. Service Tag label

3

Modes

NOTE: The modes are applicable only to Latitude 9510 (Convertible).

Tablet mode



Laptop mode



Tent mode



Stand mode



4

Specifications of Latitude 9510

Dimensions and weight

Table 2. Dimensions and weight

Description	Values
Height:	
Front	8.23 mm (0.32 in.)
Rear	13.99 mm (0.55 in.)
Width	340.20 mm (13.39 in.)
Depth	215.80 mm (8.49 in.)
Weight (maximum)	• Convertible weight: 1.50 kg (3.30 lb) • Laptop weight: 1.40 kg (3.10 lb)

Processors

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

Table 3. Processors

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Generation Intel® Core™ i5-10210U	15 W	4	8	1.6 GHz - 3.9 GHz	6 MB	Intel UHD Graphics
10th Generation Intel® Core™ i5-10310U	15 W	4	8	1.6 GHz to 4.0 GHz	6 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10610U	15 W	4	8	1.8 GHz - 4.3 GHz	8 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10710U	15 W	6	12	1.1 GHz - 3.9 GHz	12 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10810U	15 W	4	8	1.1 GHz - 4.0 GHz	12 MB	Intel UHD Graphics

Table 3. Processors (continued)

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Generation Intel® Core™ i7-10510U	15 W	4	8	1.8 GHz - 4.9 GHz	8 MB	TBD

Processors

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

Table 4. Processors

Processors	Wattage	Core count	Thread count	Speed	Cache	Integrated graphics
10th Generation Intel® Core™ i5-10210U	15 W	4	8	1.6 GHz - 3.9 GHz	6 MB	Intel UHD Graphics
10th Generation Intel® Core™ i5-10310U	15 W	4	8	1.6 GHz to 4.0 GHz	6 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10610U	15 W	4	8	1.8 GHz - 4.3 GHz	8 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10710U	15 W	6	12	1.1 GHz - 3.9 GHz	12 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10810U	15 W	4	8	1.1 GHz - 4.0 GHz	12 MB	Intel UHD Graphics
10th Generation Intel® Core™ i7-10510U	15 W	4	8	1.8 GHz - 4.9 GHz	8 MB	TBD

Chipset

Table 5. Chipset

Description	Values
Chipset	Intel Q470
Processor	10th Generation Intel® Core™ i5 / i7
DRAM bus width	64-bits
Flash EPROM	32 MB
PCIe bus	Up to Gen 3.0

Operating system

- Windows 10 Professional (64-bit)
- Windows 10 Home (64-bit)

Memory

Table 6. Memory specifications

Description	Values
Slots	On-board memory
Type	LPDDR3
Speed	2133 MHz
Maximum memory	16 GB
Minimum memory	8 GB
Memory size (onboard)	8 GB, 16 GB

Ports and connectors

Table 7. Ports and connectors

Ports and connectors	
USB	• Two USB 3.2 Gen 2 Type-C ports with Thunderbolt 3/ Power Delivery/DisplayPort • One USB 3.2 Gen 1 Type-A port with Power Delivery
Audio	One Combo Mic/Headphone Jack
Video	One HDMI 2.0 port
Docking port	Supports docking through the Type-C ports
Power adapter port	Two Power adapter USB Type-C ports
Security	One Security-cable slot (wedge-shaped)

Table 8. External ports

External	
Media-card reader	1 microSD-card 4.0 slot
SIM	1 uSIM slot (WWAN only)

Table 9. Internal ports and connectors

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

Storage

Your computer supports the following configuration:

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

Table 10. Storage specifications

Storage type	Interface type	Capacity
M.2 2230, Class 35 SSD	Gen 3 PCIe x4 NVMe	Up to 1 TB
M.2 2230, Opal Self-Encrypting Class 35 SSD	Gen 3 PCIe x4 NVMe	Up to 256 GB

Audio

Table 11. Audio specifications

Description		Values
Controller		Realtek ALC711-CG
Stereo conversion		Supported
Internal interface		SoundWire
External interface		Universal Audio Jack
Speakers		Stereo
Internal speaker amplifier		Realtek ALC1309D
External volume controls		Supports external volume controls
Speaker output:		
	Average	4 W
	Peak	5 W
Subwoofer output		Not supported
Microphone		Quad-array microphone

Media-card reader

Table 12. Media-card reader specifications

Description	Values
Type	microSD-card 4.0 slot
Cards supported	• Secure Digital (SD) • Secure Digital High Capacity (SDHC) • Secure Digital Extended Capacity (SDXC)

Keyboard

Table 13. Keyboard specifications

Description	Values
Type	• Standard white backlit keyboard
Layout	QWERTY
Number of keys	• United States and Canada: 79 keys • United Kingdom: 80 keys • Japan: 83 keys
Size	X=19.05 mm key pitch Y=18.05 mm key pitch
Shortcut keys	Some keys on your keyboard have two symbols on them. These keys can be used to type alternate characters or to perform secondary functions. To type the alternate character, press Shift and the desired key. To perform secondary functions, press Fn and the desired key. You can define the primary behavior of the function keys (F1–F12) changing **Function Key Behavior** in BIOS setup program.

Camera

Table 14. Camera specifications

Description			Values
Number of cameras			One
Type			RGB/IR camera
Location			Front camera
Sensor type			CMOS RGB-Ir Hybrid technology
Resolution			
	Camera		
		Still image	0.90 megapixel
		Video	1280 x 720 (VGA/HD) at 30 fps
	Infrared camera		
		Still image	0.20 megapixel
		Video	640 x 360 (VGA/HD) at 15 fps
Diagonal viewing angle			
	Camera		78 degrees
	Infrared camera		78 degrees

Fingerprint reader (optional)

Table 15. Fingerprint reader specifications

Description	Values
Sensor technology	Capacitive - Windows Hello Certificated Fingerprint solution
Sensor resolution	363 dpi
Sensor area	5.25 mm x 6.9 mm
Sensor pixel size	76 x 100

Touchpad

Table 16. Touchpad specifications

Description		Values
Resolution:		
	Horizontal	3562
	Vertical	2026
Dimensions:		
	Horizontal	115 mm (4.53 in.)
	Vertical	67 mm (2.64 in.)

Touchpad gestures

For more information about touchpad gestures for Windows 10, see the Microsoft knowledge base article 4027871 at support.microsoft.com.

Power adapter

Table 17. Power adapter specifications

Description	Values	
Type	65 W USB Type-C	90 W USB Type-C
Diameter (connector)	22 x 66 x 99 mm (0.87 x 2.6 x 3.9 in.)	22 x 66 x 130 mm (0.87 x 2.6 x 5.12 in.)
Input voltage	100 to 240 VAC	100 to 240 VAC
Input frequency	50 Hz to 60 Hz	50 Hz to 60 Hz
Input current (maximum)	1.70 A	1.50 A
Output current (continuous)	3.25 A 3 A 3 A 3 A	4.5 A 3 A3 A3 A
Rated output voltage	20 VDC / 15 VDC / 9 VDC / 5 VDC	20 VDC / 15 VDC / 9 VDC / 5 VDC

Table 17. Power adapter specifications (continued)

Description		Values	
Temperature range:			
	Operating	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)
	Storage	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Battery

Table 18. Battery specifications

Description		Values		
Type		4-cell, 52 WHr, ExpressCharge and ExpressCharge Boost	6-cell, 88 WHr, ExpressCharge	4-cell, 52 WHr, LCL
Voltage		7.60 VDC	11.40 VDC	7.60 VDC
Weight (maximum)		0.255 kg (0.57 lb)	0.355 kg (0.80 lb)	0.255 kg (0.57 lb)
Dimensions:				
	Height	260.00 mm (10.24 in.)	260.00 mm (10.24 in.)	260.00 mm (10.24 in.)
	Width	85.80 mm (3.38 in.)	85.80 mm (3.38 in.)	260.00 mm (10.24 in.)
	Depth	5.07 mm (0.20 in.)	5.07 mm (0.20 in.)	5.07 mm (0.20 in.)
Temperature range:				
	Operating	0°C to 60°C (0°F to 140°F)	0°C to 60°C (0°F to 140°F)	0°C to 60°C (0°F to 140°F)
	Storage	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Charging time (approximate)		4 hours (when the computer is off)	4 hours (when the computer is off)	4 hours (when the computer is off)
Life span (approximate)		300 discharge/charge cycles	300 discharge/charge cycles	1000 discharge/charge cycles
Coin-cell battery		Not supported	Not supported	Not supported
Operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Express Charge		0°C to 15°C: 4 hrs 16°C to 45°C: 2 hrs 46°C to 50°C: 3 hrs	0°C to 15°C: 4 hrs 16°C to 45°C: 2 hrs 46°C to 50°C: 3 hrs	Not supported

Display

Table 19. Display specifications

Description		Values	
Type		15-inch Full High Definition (FHD)	15-inch Full High Definition (FHD)-Touch
Panel technology		Wide Viewing Angle (WVA)	Wide Viewing Angle (WVA)
Luminance (typical)		400 nits	400 nits
Dimensions (Active area):			
	Height	186.30 mm (7.33 in.)	186.30 mm (7.33 in.)
	Width	331.20 mm (13.04 in.)	331.20 mm (13.04 in.)
	Diagonal	380.00 mm (14.96 in.)	380.00 mm (14.96 in.)
Native resolution		1920 x 1080	1920 x 1080
Megapixels		2.07	2.07
Color gamut		100% (sRGB)	100% (sRGB)
Pixels per inch (PPI)		147	147
Contrast ratio (min)		1200:1	1200:1
Response time (max)		35 ms	35 ms
Refresh rate		60 Hz	60 Hz
Horizontal view angle		80 +/-degrees	80 +/-degrees
Vertical view angle		80 +/-degrees	80 +/-degrees
Pixel pitch		0.17 mm	0.17 mm
Power consumption (maximum)		2.19 W	2.29 W
Anti-reflective vs Anti-smudge		Anti-glare	Anti-reflective/anti-smudge
Touch options		No	Yes
Stylus support		No	Yes

Wireless module

Table 20. Wireless module specifications

Model number	Intel® Wi-Fi 6 AX201	Qualcomm Snapdragon X20 Global Gigabit LTE, eSIM capable
Transfer rate (max)	2400 Gbps	1 Gbps
Frequency Bands supported	2.4 GHz	3.4 GHz

Table 20. Wireless module specifications (continued)

Model number	Intel® Wi-Fi 6 AX201	Qualcomm Snapdragon X20 Global Gigabit LTE, eSIM capable
Wireless Standards	Wi-Fi 802.11a/b/g, Wi-Fi 4 (WiFi 802.11n), Wi-Fi 5 (WiFi 802.11ac), Wi-Fi 6 (WiFi 802.11ax)	LTE, WCDMA
Bluetooth	Bluetooth 5.1	Not applicable
Encryption	64-bit/128-bit WEP, AES-CCMP, TKIP	Not applicable

Computer environment

Table 21. Computer environment

Description	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	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	110 G†	160 G†
Altitude (maximum)	-15.2 m to 3048 m (4.64 ft to 5518.4 ft)	-15.2 m to 10668 m (4.64 ft to 19234.4 ft)

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

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

5

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:
  - 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.

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** screen.

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

System setup options

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

General options

Table 22. General

Option	Description
System Information	This section lists the primary hardware features of your computer. The options are: • **System Information** • **Memory information** • **Processor Information**
Battery Information	Displays the battery status and the type of AC adapter connected to the computer.
Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system to boot. The Boot Sequence **UEFI** is enabled by default. The options are: • **Add Boot Option** • **Delete Boot Option** • **View**
Advanced Boot Options	Allows you to enable or disable UEFI Network Stack option. The **Enable UEFI Network Stack** option is enabled by default.
UEFI Boot Path Security	Allows you to control whether the system prompts the user to enter the Admin password when booting to a UEFI boot path. The options are:

Table 22. General (continued)

Option	Description
	• **Always, Except Internal HDD** (enabled by default) • **Always, Except Internal HDD&PXE** (disabled by default) • **Always** (disabled by default) • **Never** (disabled by default) If the Admin password is not set, these options have no effect.
Date/Time	Allows you to set the date and time. The change to the system date and time takes effect immediately.

System configuration

Table 23. System Configuration

Option	Description
SATA Operation	Allows you to configure the operating mode of the integrated SATA hard drive controller. The options are: • **Disabled** (disabled by default) • **AHCI** (disabled by default) • **Raid on** (enabled by default)
Drives	These fields let you enable or disable various drives on board. The **M.2 PCIe SSD-0** option is enabled by default.
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during startup. The option **Enable SMART Reporting** is disabled by default.
USB Configuration	Allows you to configure the integrated USB controller. The options are: • **Enable USB Boot Support** (enabled by default) **NOTE:** If the Fastboot option is set to "Minimal", the "Enable USB Boot Support" setting is ignored, and the system will not boot from any Preboot USB devices. • **Enable External USB Port** (enabled by default) **NOTE:** A USB keyboard or mouse or both connected to the platform's USB ports will continue to function within BIOS Setup if this option is disabled.
Thunderbolt™ Adapter Configuration	Allows you to enable or disable Thunderbolt options: • **Thunderbolt** (enabled by default) • **Enable Thunderbolt Boot Support** (disabled by default) • **Enable Thunderbolt (and PCIe behind TBT) Pre-boot** (disabled by default) The following are the security levels: • **No Security**(disabled by default) • **User Authentication** (enabled by default) • **Secure Connect** (disabled by default) • **Display Port and USB Only** (disabled by default)

Table 23. System Configuration (continued)

Option	Description
USB PowerShare	This option enables/disables the USB PowerShare feature behavior. The **Enable USB PowerShare** option is disabled by default.
Audio	Allows you to enable or disable the integrated audio controller. The **Enable Audio** option is enabled by default. The options are: • **Enable Microphone** (enabled by default) • **Enable Internal Speaker** (enabled by default)
Keyboard Illumination	This field lets you choose the operating mode of the keyboard illumination feature. • **Disabled** (disabled by default): The Keyboard illumination will always be off or 0%. • **Dim** (disabled by default): Enable the keyboard illumination feature at 50% brightness. • **Bright** (enabled by default): Enable the keyboard illumination feature at 100% brightness level.
Keyboard Backlight Timeout on AC	This feature defines the timeout value for the keyboard backlight when an AC adapter is plugged into the system. Options are: • **5 seconds** • **10 seconds** (enabled by default) • **15 seconds** • **30 seconds** • **1 minute** • **5 minutes** • **15 minutes** • **Never**
Keyboard Backlight Timeout on Battery	This feature defines the timeout value for the keyboard backlight when the system is running only on battery power. Options are: • **5 seconds** • **10 seconds** (enabled by default) • **15 seconds** • **30 seconds** • **1 minute** • **5 minutes** • **15 minutes** • **Never**
Unobtrusive Mode	When enabled, pressing Fn+F7 will turn off all light and sound emissions in the system. Press Fn+Shift+B to resume normal operation. The **Enable Obtrusive Mode** option is disabled by default.
Fingerprint Reader	Enable or disable the Fingerprint Reader Device. The **Enable Fingerprint Reader Device** is enabled by default.
Miscellaneous devices	Allows you to enable or disable various on board devices.

Table 23. System Configuration (continued)

Option	Description
	• **Enable Camera** (enabled by default) • **Enable Secure Digital (SD) Card**(enabled by default) • **Secure Digital (SD) Card Boot** (disabled by default) • **Secure Digital Card (SD) Read-Only Mode** (disabled by default)
MAC Address Pass-Through	This feature allows you to replace the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the system. The default option is to use the Passthrough MAC Address. Options: • **System Unique MAC Address** (enabled by default) • **Disabled**(disabled by default)

Video screen options

Table 24. Video

Option	Description
LCD Brightness	Allows you to set the display brightness depending upon the power source: on Battery (50% is set as default) and on AC (100% is set as default).

Security

Table 25. Security

Option	Description
Admin Password	Allows you to set, change, or delete the administrator (admin) password (sometimes called setup password). The entries to set the password are: • **Enter the old password:** **NOTE:** For the first time login, "Enter the old password:" Field is marked to "Not set". Set the password for the first time and later you can change or delete the password. • **Enter the new password:** • **Confirm new password:** Click **OK** once you set the password. Successful changes to the password take effect immediately. **NOTE:** If you delete the admin password, the system password, if set, is also deleted. The admin password can also be used to delete the HDD password. For this reason, you cannot set an admin password if a system password or HDD password is already set. The admin password must be set first if an admin password is used with a system password or HDD password or both.
System Password	Allows you to set, change, or delete the System password (previously called the "Primary" password). The entries to set the password are: • **Enter the old password:** **NOTE:** For the first time login, "Enter the old password:" field is marked to "Not set". Set the password for the first time and later you can change or delete the password.

Table 25. Security (continued)

Option	Description
	• **Enter the new password:** • **Confirm new password:** Click **OK** once you set the password. Successful changes to the password take effect immediately. The system requires the password to be entered when it is powered on.
Password Configuration	Allows you to control the rules when setting a password. The value of characters cannot be less than 4. • **Lower Caste Letter** • **Upper Case Letter** • **Digit** • **Special Character** All options are disabled by default. • **Minimum Characters** (Set at 4 by default)
Password Bypass	Allows you to bypass the System (Boot) Password and the Internal HDD password prompts during a system restart. Click one of the options: • **Disabled** (enabled by default) • **Reboot bypass** (disabled by default) **NOTE:** The system always prompts for the System and internal HDD passwords when powered on from the off state (a cold boot). The system always prompts for passwords on any module bay HDDs that may be present.
Password Change	Allows you to change the System and Hard Disk password when the administrator password is set. The **Allow Non-Admin Password Changes** option is enabled by default.
UEFI Capsule Firmware Updates	Allows you to update the system BIOS via UEFI capsule update packages. The **Enable UEFI Capsule Firmware Updates** option is enabled by default. **NOTE:** Disabling this option blocks BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Services (LVFS).
TPM 2.0 Security	Allows you to enable or disable the Trusted Platform Module (TPM) during POST. • **Disabled** (disabled by default) • **Enabled** (enabled by default) The options are: • **TPM On** (enabled by default) **NOTE:** Disabling this option does not change any settings you have made to the TPM, nor does it delete or change any information or keys you may have stored in the TPM. Changes to this setting take effect immediately. • **Clear**(disabled by default) • **PPI Bypass for Enable Commands** (disabled by default) • **PPI Bypass for Disbale Commands** (disabled by default) • **PPI Bypass for Clear Command** (disabled by default) • **Attestation Enable** (enabled by default) • **Key Storage Enable** (enabled by default) • **SHA-256** (enabled by default)
Absolute	This field lets you Enable, Disable, or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software.

Table 25. Security (continued)

Option	Description
	The options are: • **Enabled** (enabled by default) • **Disabled** (disabled by default) • **Permanently disabled** (disabled by default) **WARNING: The Permanently Disabled option can only be selected once. When Permanently Disabled is selected, Absolute Persistence cannot be reenabled. No further changes to the Enable or Disable state are allowed.**
OROM Keyboard Access	This option determines whether users are able to enter Option ROM Configuration screens via hotkeys during boot. Specifically this setting is capable of preventing access to Intel RAID (Ctrl+I) or Intel Management Engine BIOS Extension (Ctrl+P/F12). The options are: • **Enabled** (enabled by default) • **Disabled** (disabled by default) • **One Time Enable** (disabled by default)
Admin Setup Lockout	Allows you to prevent users from entering Setup when an admin password is set. The **Enable Admin Setup Lockout** option disabled by default.
Master Password Lockout	Allows you to disable master password support. The **Enable Master Password Lockout** option is disabled by default. **NOTE:** Hard Disk password should be cleared before the settings can be changed.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protection. The **SMM Security Mitigation** option is disabled by default.
HDD Security	This section defines special security features that shall be available for Self-Encrypting Drives (SED) that supports either Opal or Pyrite specification requirements. It is not available for regular storage devices. The **SED Block SID Authentication** option is enabled by default. The **PPI Bypass for SED Block SID Command** option is disabled by default.

Secure Boot

Table 26. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable the Secure Boot Feature. The **Secure Boot Enable** option is disabled by default.
Secure Boot Mode	Changes to the Secure Boot operation mode modifies the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. Choose one of the options: • **Deployed Mode** (enabled by default) • **Audit Mode** (disabled by default)
Expert Key Management	Allows you to enable or disable **Expert Key Management**. The **Enable Custom Mode** option is disabled by default.

Table 26. Secure Boot (continued)

Option	Description
	The Custom Mode Key Management options are: • **PK** (enabled by default) • **KEK** • **db** • **dbx**

Intel Software Guard Extensions options

Table 27. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	This field allows you to provide a secured environment for running code/storing sensitive information in the context of the main operating systems. Click one of the following options: • **Disabled** • **Enabled** • **Software controlled** (enabled by default)
Enclave Memory Size	This option shows the **SGX Enclave Reserve Memory Size**. The **Enclave Memory Size** is **128 MB**.

Performance

Table 28. Performance

Option	Description
Multi Core Support	This field specifies whether the processor has one or all cores enabled. The performance of some applications improves with the additional cores. • **All** (enabled by default) • **1** • **2** • **3** **NOTE:** In order to enable 'Trusted Execution' mode, all cores must be enabled.
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of the processor. The **Enable Intel SpeedStep** option is enabled by default.
C-States Control	Allows you to enable or disable additional processor sleep states. The **C states** option is enabled by default.
Intel TurboBoost	This option enables or disables the Intel TurboBoost mode of the processor The **Enable Intel TurboBoost** option is enabled by default.

Table 28. Performance (continued)

Option	Description
Hyper-Thread Control	Allows you to enable or disable HyperThreading in the processor. • **Disabled** • **Enabled** (enabled by default)

Power management

Table 29. Power Management

Option	Description
Lid Switch	Allows you to enable or disable the lid switch so the screen does not shut off when lid is closed. The **Enable Lid Switch** option is enabled by default. The **Power On Lid Open** option is enabled by default. This option allows the system to power up from the off state whenever the lid is opened. This system powers on when powered either by the AC adapter or by the system battery.
AC Behavior	Allows the system (if Off or in Hibernate) to power on automatically when an AC adapter is connected. The **Wake on AC** option is disabled by default.
Enable Intel Speed Shift technology	This option is used to enable or disable Intel Speed Shift Technology support. The **Enable Intel Speed Shift Technology** option is enabled by default.
Auto On Time	Allows you to set the time at which the system must turn on automatically. The options are: • **Disabled** (enabled by default) • **Every Day** • **Weekdays** • **Select Days**
Thermal management	Allows you to manage cooling fan and processor speed. The options are: • **Optimized** (enabled by default) • **Cool** • **Quiet** • **Ultra Performance**
USB Wake Support	Allows you to enable USB devices to wake the system from standby. The **Wake on Dell USB-C Dock** option is enabled by default. **NOTE:** This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed before Standby, the BIOS removes power from all the USB ports to conserve battery power .
Wireless Radio Control	This option if enabled, it senses the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN or WWAN or both). Upon disconnection from the wired network the selected wireless radio will be reenabled. • **Control WLAN radio** (disabled by default) • **Control WWAN radio** (disabled by default)
Wake on LAN	Allows the system to power up from the off state when triggered by a special LAN signal or special DELL USB-C Dock LAN signal. Wakeup from the Standby state is unaffected by this

Table 29. Power Management (continued)

Option	Description
	setting and must be enabled in the operating system. This feature only works when the system is connected to an AC power adapter. The options are: • **Disabled** (enabled by default) • **LAN Only** • **LAN with PXE Boot**
Block Sleep	This option lets you block entering to sleep in operating system environment. The **Block Sleep** option is disabled by default.
Peak Shift	Allows you enable or disable the Peak shift feature. This feature when enabled, minimizes the AC power usage at times of peak demand. Battery does not charge between the Peak Shift start and end time. **Peak Shift Start**, **Peak Shift End**, and **Peak Shift Charge Start** time can be configured for all weekdays. All days and shifts are set at **09:30 AM** by default. This option sets the battery threshold value (15% to 100%). The battery threshold value is set at **15%** by default. The **Enable Peak Shift** option is disabled by default.
Advanced Battery Charge Configuration	This option enables you to maximize the battery health, while still supporting heavy use during the work day. By enabling this option, your system uses the standard charging algorithm and other techniques during the non-work hours to improve the battery health. The Advanced Battery Charge Mode can be configured for all weekdays The **Beginning of the Day** time is set at **08:00 AM** by default for all days. The **Work Period** is set at **10:00** by default for all days. The **Enable Advanced Battery Charge Mode** option is disabled by default.
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 period of time using Dell's fast charging technology. • **Primarily AC use** —Extends battery lifespan for users who primarily operate their system while plugged in to an external power source. • **Custom** —Custom select when the battery starts and stops charging. If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop. **NOTE:** All charging modes may not be available for all the battery types. In order to enable this option, 'Advanced Battery Charge Mode' must be disabled.

Post behavior

Table 30. POST Behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system warning messages when you use certain power adapters. The system displays these messages if you attempt to use a power adapter that has less capacity for your configuration. The **Enable Adapter Warnings** option is enabled by default.

Table 30. POST Behavior (continued)

Option	Description
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 dynamically toggle the primary behavior of these keys. The **Fn Lock** option is enabled by default. Click one of the following options: • **Lock Mode Disable/Standard** (disabled by default) • **Lock Mode Enable/Secondary** (enabled by default)
Fastboot	Allows you to speed up the boot process by bypassing some compatibility steps. Click one of the following options: • **Minimal** • **Thorough** (enabled by default) • **Auto**
Extended BIOS POST Time	Allows you to create an additional preboot delay and see POST status messages. Click one of the following options: • **0 seconds** (enabled by default) • **5 seconds** • **10 seconds**
Warnings and Errors	Allows you to select different options to either stop, prompt and wait for user input, continue when warnings are detected but pause on errors, or continue when either warnings or errors are detected during the POST process. Click one of the following options: • **Prompt on Warnings and Errors** (enabled by default) • **Continue on Warnings** • **Continue on Warnings and Errors** **NOTE:** Errors deemed critical to the operation of the system hardware will always halt the system.
Sign of Life Indication	This option allows the system to indicate during POST that the power button has been acknowledged in a manner the user can either hear or feel. • **Enable Sign of Life Audio Indication** (disabled by default) • **Enable Sign of Life Display Indication** (enabled by default) • **Enable Sign of Life Keyboard Backlight Indication** (enabled by default)

Manageability

Table 31. Manageability

Option	Description
Intel AMT Capability	Allows you to enable, disable, or restrict Intel AMT Capability. The options are: • **Disabled** • **Enabled** • **Restrict MEBx Access** (enabled by default)
USB Provision	When enabled, Intel AMT can be provisioned using the local provisioning file through a USB storage device.

Table 31. Manageability (continued)

Option	Description
	The **Enable USB Provision** option is disabled by default.
MEBx Hotkey	This option specifies whether the MEBx Hotkey function should be enabled when the system boots. The **Enable MEBx Hotkey** option is disabled by default.

Virtualization support

Table 32. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities that are provided by the Intel Virtualization technology. The **Enable Intel Virtualization Technology** option is enabled by default. **NOTE:** Trusted Execution requires Virtualization Technology to be enabled.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities that are provided by the Intel Virtualization Technology for direct I/O. **NOTE:** Trusted Execution requires VT for Direct I/O to be enabled. The **Enable VT for Direct I/O** option is enabled by default.
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities that are provided by Intel Trusted Execution Technology. **NOTE:** The TPM has to be enabled and activated, and Virtualization Technology and VT for Direct I/O must be enabled to use this feature. The **Trusted Execution** option is disabled by default.

Wireless options

Table 33. Wireless

Option	Description
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. The options are: • **WWAN/GPS** • **WLAN** • **Bluetooth** • **Contactless Smartcard/NFC** All the options are enabled by default.
Dynamic Wireless Transmit Power	When enabled, this option allows the system to increase transmit power or WLAN devices to improve performance

Table 33. Wireless (continued)

Option	Description
	in certain system configurations within regulatory validated guidelines. The **Dynamic Wireless Transmit Power** option is enabled by default.

Maintenance

Table 34. Maintenance

Option	Description
Service Tag	Displays the service tag of your system. If the service tag was not already set, this field can be used to set it.
Asset Tag	If an asset tag was not already set, this option allows you to create it. The character limit for the password is 64 characters.
BIOS Downgrade	Allows you to flash previous revisions of the system firmware. The **Allow BIOS Downgrade** option is enabled by default.
Data Wipe	Allows you to securely erase data from all internal storage devices. The **Wipe on Next Boot** option is disabled by default. **WARNING: This operation permanently deletes all data from the device(s).**
BIOS Recovery	Allows you to recover the corrupted BIOS from a recovery file on the hard drive or an external USB drive. The **BIOS Recovery from Hard Drive** option is enabled by default. BIOS Recovery from hard drive is not available for self-encrypting drives (SED).
First Power On Date	Allows you to set Ownership date. The **Set Ownership Date** option is disabled by default.

System logs

Table 35. System Logs

Option	Description
BIOS events	Allows you to view and clear the System Setup (BIOS) events.
Thermal and Self-Test Events	Allows you to view and clear the System Setup (Thermal and Self-Test) events.
Power Events	Allows you to view and clear the System Setup (Power) events.

SupportAssist System Resolution

Table 36. SupportAssist System Resolution

Option	Description
Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool. The options are: • **Off** • **1** • **2** (enabled by default) • **3**
SupportAssist OS Recovery	Allows you to enable or disable the boot flow for SupportAssist OS Recovery tool in the event of certain system errors. The **SupportAssist OS Recovery** option is enabled by default.
BIOSConnect	Allows you to enable or disable cloud Service OS upon absence of Local OS Recovery. The **BIOSConnect** option is enabled by default.

Updating the BIOS in Windows

It is recommended to update your BIOS (System Setup) when you replace the system board or if an update is available. For laptops, ensure that your computer battery is fully charged and connected to a power before initiating a BIOS update.

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.

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 your system BIOS using a USB flash drive

If the system cannot load into Windows, but there is still a need to update the BIOS, download the BIOS file using another system and save it to a bootable USB Flash Drive.

NOTE: You will need to use a bootable USB flash drive. Please refer to the following article for further details How to Create a Bootable USB Flash Drive using Dell Diagnostic Deployment Package (DDDP)

1. Download the BIOS update .EXE file to another system.
2. Copy the file e.g. O9010A12.EXE onto the bootable USB flash drive.
3. Insert the USB flash drive into the system that requires the BIOS update.
4. Restart the system and press F12 when the Dell splash logo appears to display the One Time Boot Menu.
5. Using arrow keys, select **USB Storage Device** and click **Enter**.
6. The system will boot to a Diag C:\> prompt.
7. Run the file by typing the full filename, for example, O9010A12.exe and press **Enter**.
8. The BIOS Update Utility will load. Follow the instructions on screen.

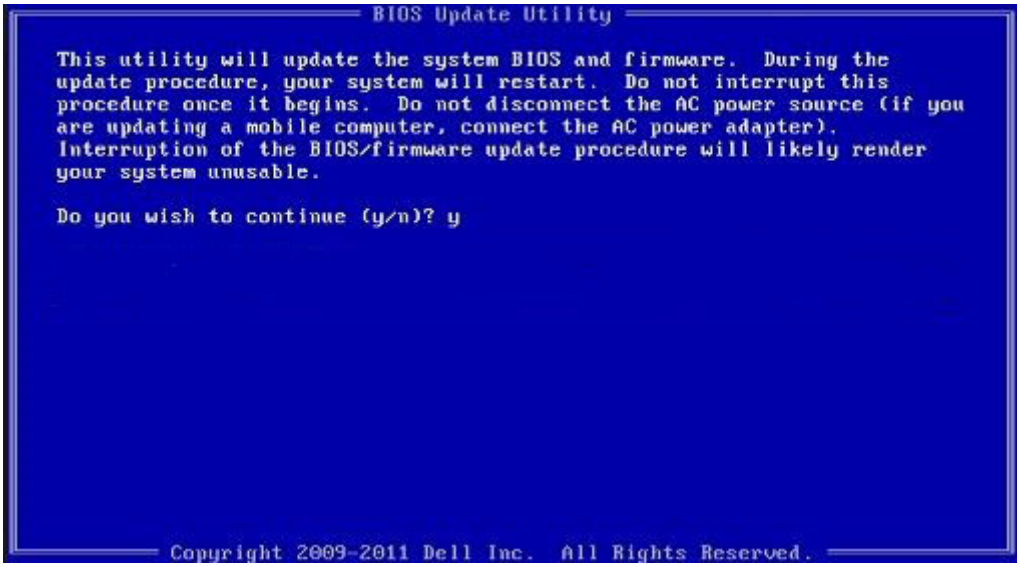


Figure 1. DOS BIOS Update Screen

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

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 reboot.

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - 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 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 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.

6

Troubleshooting

Dell SupportAssist Pre-boot System Performance Check diagnostics

The SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results
- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if tests are completed successfully
- View error messages that inform you of problems encountered during testing

NOTE: Some tests for specific devices require user interaction. Always ensure that you are present at the computer terminal when the diagnostic tests are performed.

For more information, see Resolve Hardware Issues With Built-in and Online Diagnostics (SupportAssist ePSA, ePSA or PSA Error Codes) .

Running the SupportAssist Pre-Boot System Performance Check

1. Turn on your computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
4. Click the arrow at the bottom left corner.
   Diagnostics front page is displayed.
5. Click the arrow in the lower-right corner to go to the page listing.
   The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

Diagnostics

Instead of beep codes, errors are indicated by the bicolor Battery Charge/Status LED. A specific blink pattern is followed by flashing a pattern of flashes in amber, followed by white.

The diagnostic pattern consists of a two-digit number being represented by a first group of LED blinks (1 through 9) in amber, followed by a 1.5 second pause with the LED off, and then a second group of LED blinks (1 through 9) in white. This is then followed by a three second pause, with the LED off, before repeating over again. Each LED blink takes 1.5 seconds.

The system will not shut down when displaying the Diagnostic Error Codes. Diagnostic Error Codes will always supersede any other use of the LED. For instance, on Notebooks, battery codes for Low Battery or Battery Failure situations will not be displayed when Diagnostic Error Codes are being displayed.

Table 38. Disgnostic LED states

Amber LED state	White LED state	System state	Notes
2	1	CPU failure	Run the Intel CPU diagnostics tools If problem persists, replace the system board
2	2	System board failure (included BIOS corruption or ROM error)	Flash latest BIOS version If problem persists, replace the system board
2	3	No memory/ RAM detected	Confirm that the memory module is installed properly If problem persists, replace the system board
2	4	Memory/ RAM failure	Reset the memory module If problem persists, replace the system board
2	5	Invalid memory installed	Reset the memory module If problem persists, replace the system board
2	6	System board/ Chipset error	Flash latest BIOS version If problem persists, replace the system board
2	7	LCD failure	Flash latest BIOS version If problem persists, replace the system board
2	8	LCD Power rail failure	Replace the system board
3	1	CMOS battery failure	Reset the CMOS battery connection If problem persists, replace the system board
3	2	PCI or Video card/ chip failure	Replace the system board
3	3	BIOS Recovery Image not found	Flash latest BIOS version If problem persists, replace the system board
3	4	BIOS Recovery Image found but invalid	Flash latest BIOS version If problem persists, replace the system board
3	5	Power rail failure	EC ran into power sequencing failure If problem persists, replace the system board
3	6	SBIOS Flash Corruption	Flash corruption detected by SBIOS

Table 38. Disgnostic LED states (continued)

Amber LED state	White LED state	System state	Notes
			If problem persists, replace the system board
3	7	ME error	Timeout waiting on ME to reply to HECI message If problem persists, replace the system board

NOTE: For diagnostics pattern 2-amber, 8-white connect an external monitor to isolate between system board or graphics controller failure.

Diagnostic error messages

Table 39. Diagnostic error messages

Error messages	Description
AUXILIARY DEVICE FAILURE	The touchpad or external mouse may be faulty. For an external mouse, check the cable connection. Enable the **Pointing Device** option in the System Setup program.
BAD COMMAND OR FILE NAME	Ensure that you have spelled the command correctly, put spaces in the proper place, and used the correct path name.
CACHE DISABLED DUE TO FAILURE	The primary cache internal to the microprocessor has failed. **Contact Dell**
CD DRIVE CONTROLLER FAILURE	The optical drive does not respond to commands from the computer.
DATA ERROR	The hard drive cannot read the data.
DECREASING AVAILABLE MEMORY	One or more memory modules may be faulty or improperly seated. Reinstall the memory modules or, if necessary, replace them.
DISK C: FAILED INITIALIZATION	The hard drive failed initialization. Run the hard drive tests in **Dell Diagnostics**.
DRIVE NOT READY	The operation requires a hard drive in the bay before it can continue. Install a hard drive in the hard drive bay.
ERROR READING PCMCIA CARD	The computer cannot identify the ExpressCard. Reinsert the card or try another card.
EXTENDED MEMORY SIZE HAS CHANGED	The amount of memory recorded in non-volatile memory (NVRAM) does not match the memory module installed in the computer. Restart the computer. If the error appears again, **Contact Dell**
THE FILE BEING COPIED IS TOO LARGE FOR THE DESTINATION DRIVE	The file that you are trying to copy is too large to fit on the disk, or the disk is full. Try copying the file to a different disk or use a larger capacity disk.
A FILENAME CANNOT CONTAIN ANY OF THE FOLLOWING CHARACTERS: \ / : * ? " < > | -	Do not use these characters in filenames.
GATE A20 FAILURE	A memory module may be loose. Reinstall the memory module or, if necessary, replace it.
GENERAL FAILURE	The operating system is unable to carry out the command. The message is usually followed by specific information.

Table 39. Diagnostic error messages (continued)

Error messages	Description
	For example, `Printer out of paper. Take the appropriate action.`
`HARD-DISK DRIVE CONFIGURATION ERROR`	The computer cannot identify the drive type. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. Run the **Hard Disk Drive** tests in **Dell Diagnostics**.
`HARD-DISK DRIVE CONTROLLER FAILURE 0`	The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the **Hard Disk Drive** tests in **Dell Diagnostics**.
`HARD-DISK DRIVE FAILURE`	The hard drive does not respond to commands from the computer. Shut down the computer, remove the hard drive, and boot the computer from an optical drive. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the **Hard Disk Drive** tests in **Dell Diagnostics**.
`HARD-DISK DRIVE READ FAILURE`	The hard drive may be defective. Shut down the computer, remove the hard drive, and boot the computer from an optical. Then, shut down the computer, reinstall the hard drive, and restart the computer. If the problem persists, try another drive. Run the **Hard Disk Drive** tests in **Dell Diagnostics**.
`INSERT BOOTABLE MEDIA`	The operating system is trying to boot to non-bootable media, such as an optical drive. Insert bootable media.
`INVALID CONFIGURATION INFORMATION-PLEASE RUN SYSTEM SETUP PROGRAM`	The system configuration information does not match the hardware configuration. The message is most likely to occur after a memory module is installed. Correct the appropriate options in the system setup program.
`KEYBOARD CLOCK LINE FAILURE`	For external keyboards, check the cable connection. Run the **Keyboard Controller** test in **Dell Diagnostics**.
`KEYBOARD CONTROLLER FAILURE`	For external keyboards, check the cable connection. Restart the computer, and avoid touching the keyboard or the mouse during the boot routine. Run the **Keyboard Controller** test in **Dell Diagnostics**.
`KEYBOARD DATA LINE FAILURE`	For external keyboards, check the cable connection. Run the **Keyboard Controller** test in **Dell Diagnostics**.
`KEYBOARD STUCK KEY FAILURE`	For external keyboards or keypads, check the cable connection. Restart the computer, and avoid touching the keyboard or keys during the boot routine. Run the **Stuck Key** test in **Dell Diagnostics**.
`LICENSED CONTENT IS NOT ACCESSIBLE IN MEDIADIRECT`	Dell MediaDirect cannot verify the Digital Rights Management (DRM) restrictions on the file, so the file cannot be played.
`MEMORY ADDRESS LINE FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE`	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
`MEMORY ALLOCATION ERROR`	The software you are attempting to run is conflicting with the operating system, another program, or a utility. Shut down the computer, wait for 30 seconds, and then restart it. Run the program again. If the error message still appears, see the software documentation.

Table 39. Diagnostic error messages (continued)

Error messages	Description
MEMORY DOUBLE WORD LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
MEMORY ODD/EVEN LOGIC FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
MEMORY WRITE/READ FAILURE AT ADDRESS, READ VALUE EXPECTING VALUE	A memory module may be faulty or improperly seated. Reinstall the memory module or, if necessary, replace it.
NO BOOT DEVICE AVAILABLE	The computer cannot find the hard drive. If the hard drive is your boot device, ensure that the drive is installed, properly seated, and partitioned as a boot device.
NO BOOT SECTOR ON HARD DRIVE	The operating system may be corrupted, **Contact Dell**.
NO TIMER TICK INTERRUPT	A chip on the system board may be malfunctioning. Run the **System Set** tests in **Dell Diagnostics**.
NOT ENOUGH MEMORY OR RESOURCES. EXIT SOME PROGRAMS AND TRY AGAIN	You have too many programs open. Close all windows and open the program that you want to use.
OPERATING SYSTEM NOT FOUND	Reinstall the operating system. If the problem persists, **Contact Dell**.
OPTIONAL ROM BAD CHECKSUM	The optional ROM has failed. **Contact Dell**.
SECTOR NOT FOUND	The operating system cannot locate a sector on the hard drive. You may have a defective sector or corrupted File Allocation Table (FAT) on the hard drive. Run the Windows error-checking utility to check the file structure on the hard drive. See **Windows Help and Support** for instructions (click **Start** > **Help and Support**). If a large number of sectors are defective, back up the data (if possible), and then format the hard drive.
SEEK ERROR	The operating system cannot find a specific track on the hard drive.
SHUTDOWN FAILURE	A chip on the system board may be malfunctioning. Run the **System Set** tests in **Dell Diagnostics**. If the message reappears, **Contact Dell**.
TIME-OF-DAY CLOCK LOST POWER	System configuration settings are corrupted. Connect your computer to an electrical outlet to charge the battery. If the problem persists, try to restore the data by entering the System Setup program, then immediately exit the program. If the message reappears, **Contact Dell**.
TIME-OF-DAY CLOCK STOPPED	The reserve battery that supports the system configuration settings may require recharging. Connect your computer to an electrical outlet to charge the battery. If the problem persists, **Contact Dell**.
TIME-OF-DAY NOT SET-PLEASE RUN THE SYSTEM SETUP PROGRAM	The time or date stored in the system setup program does not match the system clock. Correct the settings for the **Date and Time** options.
TIMER CHIP COUNTER 2 FAILED	A chip on the system board may be malfunctioning. Run the **System Set** tests in **Dell Diagnostics**.
UNEXPECTED INTERRUPT IN PROTECTED MODE	The keyboard controller may be malfunctioning, or a memory module may be loose. Run the **System Memory** tests and the **Keyboard Controller** test in **Dell Diagnostics** or **Contact Dell**.
X:\ IS NOT ACCESSIBLE. THE DEVICE IS NOT READY	Insert a disk into the drive and try again.

System error messages

Table 40. System error messages

System message	Description
`Alert! Previous attempts at booting this system have failed at checkpoint [nnnn]. For help in resolving this problem, please note this checkpoint and contact Dell Technical Support`	The computer failed to complete the boot routine three consecutive times for the same error.
`CMOS checksum error`	RTC is reset, **BIOS Setup** default has been loaded.
`CPU fan failure`	CPU fan has failed.
`System fan failure`	System fan has failed.
`Hard-disk drive failure`	Possible hard disk drive failure during POST.
`Keyboard failure`	Keyboard failure or loose cable. If reseating the cable does not solve the problem, replace the keyboard.
`No boot device available`	No bootable partition on hard disk drive, the hard disk drive cable is loose, or no bootable device exists. • If the hard drive is your boot device, ensure that the cables are connected and that the drive is installed properly and partitioned as a boot device. • Enter system setup and ensure that the boot sequence information is correct.
`No timer tick interrupt`	A chip on the system board might be malfunctioning or motherboard failure.
`NOTICE - Hard Drive SELF MONITORING SYSTEM has reported that a parameter has exceeded its normal operating range. Dell recommends that you back up your data regularly. A parameter out of range may or may not indicate a potential hard drive problem`	S.M.A.R.T error, possible hard disk drive failure.

WiFi power cycle

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

NOTE: Some ISPs (Internet Service Providers) provide a modem/router combo device.

1. Turn off your computer.
2. Turn off the modem.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on your computer.

7

Getting help

Contacting Dell

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

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

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