Latitude 3450

Owner's Manual

Regulatory Model: P169G
Regulatory Type: P169G002/P169G003
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DELL Technologies

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

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1

Set up your Latitude 3450

About this task

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

Steps

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



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

NOTE: The battery may go into power-saving mode during shipment to conserve charge on the battery. Ensure that the power adapter is connected to your computer when it is turned on for the first time.

2. Finish the operating system setup.

   For Ubuntu:

   Follow the on-screen instructions to complete the setup. For more information about installing and configuring Ubuntu, search in the Knowledge Base Resource at Dell Support Site.

   For Windows:

   Follow the on-screen instructions to complete the setup. When setting up, it is recommended that you:

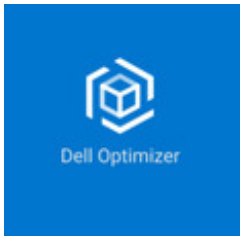
   - Connect to a network for Windows updates.

     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 an existing Microsoft account or create an account.

3. Locate and use Dell apps from the Windows Start menu. This step is optional but recommended.

Table 1. Locate Dell apps

Resources	Description
	Dell Optimizer is an application designed to enhance computer performance and productivity by optimizing settings for power, battery, display, collaboration touchpad, and presence detection. It also provides access to applications purchased with your new computer. For more information, see Dell Optimizer User's Guide at Dell Support Site.
	**Dell Product Registration** Register your computer with Dell.
	**Dell Help & Support** Access help and support for your computer.
	**SupportAssist** SupportAssist is a proactive and predictive technology that offers automated technical support for Dell computers. It proactively monitors both hardware and software, addressing performance issues, preventing security threats, and automating engagement with Dell Technical Support. For more information, see the SupportAssist documentation at Dell Support Site. **NOTE:** In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.
	**Dell Update** Updates your computer with critical fixes and latest device drivers as they become available. For more information about using Dell Update, see the product guides and third-party license documents at Dell Support Site.
	**Dell Digital Delivery** Download software applications, which are purchased but not preinstalled on your computer. For more information about using Dell Digital Delivery, search in the Knowledge Base Resource at Dell Support Site.

2

Views of Latitude 3450

Right



Figure 2. Right view

1. **USB 3.2 Gen 1 port**

   Connect peripherals such as keyboard, mice, and printers and external storage devices. Supports data transfer speeds up to 5 Gbps.

2. **RJ45 Ethernet port**

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

3. **Ethernet status LED**

   Connect an Ethernet (RJ45) cable from a router or a broadband modem for network or Internet access.

   One light next to the connector indicate the connectivity status and network activity.

4. **Security-cable slot**

   Connect a security cable to prevent unauthorized movement of your computer.

Left

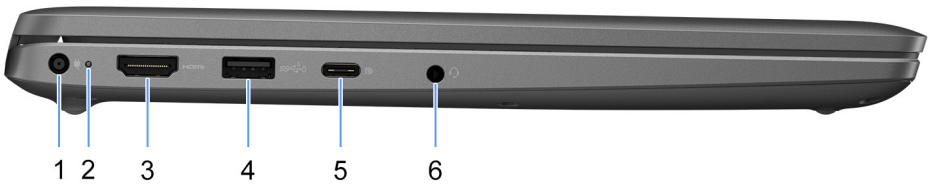


Figure 3. Left view

1. **Power-adapter port**

   Connect a power adapter to provide power to your computer.

2. **Battery-status light**

   Indicates the battery-charge status.

Solid white—Power adapter is connected and the battery has more than 5% charge.

Amber—Computer is running on battery and the battery has less than 5% charge.

Off—Power adapter is disconnected or the battery is fully charged.

3. **HDMI port**

   Connect to a TV, external display, or another HDMI-in enabled device. Provides key video and audio output.

4. **USB 3.2 Gen 1 port with PowerShare**

   Connect devices such as external storage devices and printers.

   Provides data transfer speeds up to 5 Gbps. PowerShare enables you to charge your USB devices even when your computer is turned off.

   NOTE: If your computer is turned off or in a hibernate state, you must connect the power adapter to charge your devices using the PowerShare port. You must enable this feature in the BIOS setup program.

   NOTE: Certain USB devices may not charge when the computer is turned off or in a sleep state. In such cases, turn on the computer to charge the device.

5. **USB4 20 Gbps port with DisplayPort and Power Delivery**

   Connect devices, such as external storage devices and printers. Supports USB and DisplayPort which enables you to connect to an external display using a display adapter. Supports data transfer rates of up to 20 Gbps.

   NOTE: A USB Type-C to DisplayPort adapter (sold separately) is required to connect a DisplayPort device.

   NOTE: USB4 is backward compatible with USB 3.2 and USB 2.0.

   NOTE: The Type-C port can be used to charge your computer, but while it is charging, it only supports that specific function.

6. **Universal audio port**

   Connect audio-output devices such as speakers, amplifiers, and so on.

Top



Figure 4. Image: Top view

1. **Power button with optional fingerprint reader**

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

   When the computer is turned on, press the power button to put the computer into sleep state; press and hold the power button for 10 seconds to force shut-down the computer.

   If the power button has a fingerprint reader, place your finger on the power button steadily to log in.

   NOTE: The power-status light on the power button is available only on computers without the fingerprint reader. Computers that are shipped with the fingerprint reader that is integrated on the power button will not have the power-status light on the power button.

   NOTE: You can customize the power-button behavior in Windows.

2. **Touchpad**

   Move your finger on the touchpad to move the mouse pointer. Tap to left-click and two fingers tap to right-click.

Front

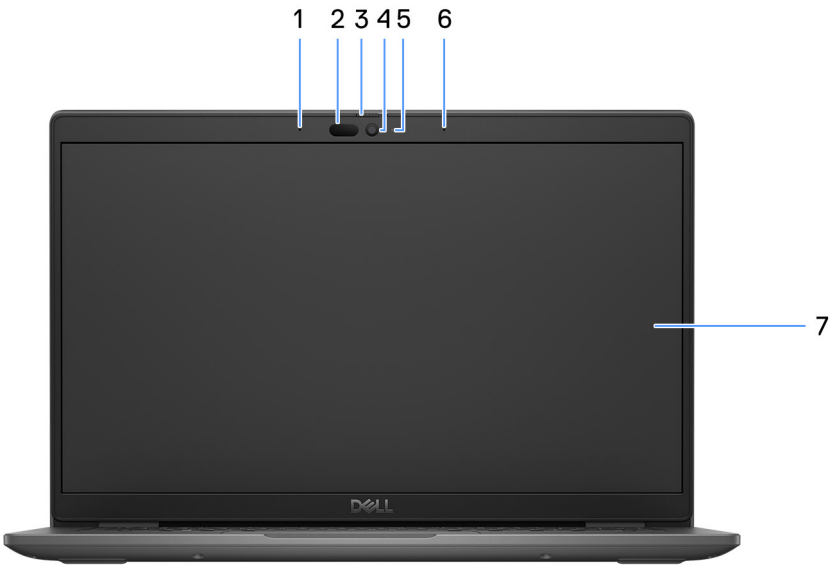


Figure 5. Image: Front view

1. **Left microphone**

   Provides digital sound input for audio recording and voice calls.

2. **Infrared camera (optional)**

   Enhances security when paired with Windows Hello face authentication.

3. **Camera shutter**

   Slide the privacy shutter to the left to access the camera lens.

4. **Camera**

   Enables you to video chat, capture photos, and record videos.

5. **Camera-status light**

   Turns on when the camera is in use.

6. **Right microphone**

   Provides digital sound input for audio recording and voice calls.

7. **LCD panel**

   Provides visual output to the user.

Bottom

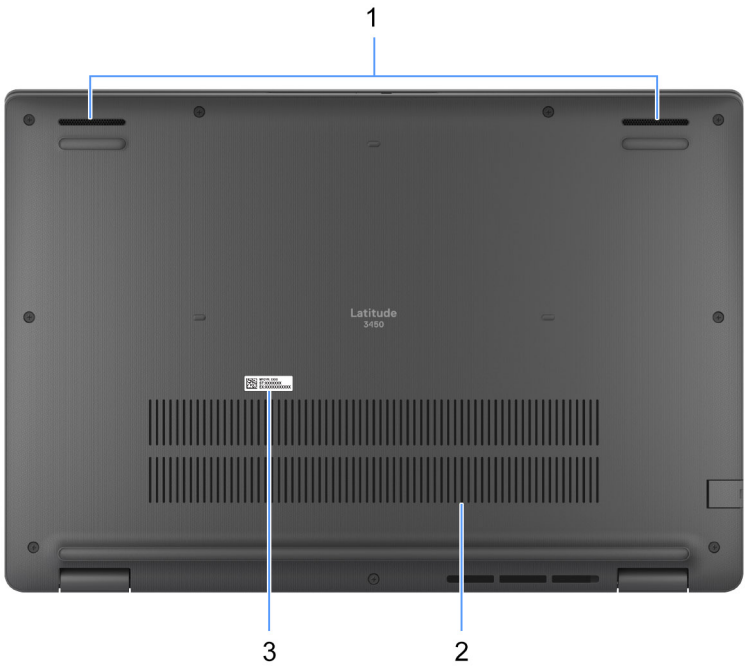


Figure 6. Image: Bottom view

1. **Speakers**

   Provide audio output.

2. **Air vents**

   Air vents provide ventilation for your computer. Clogged air vents can cause overheating and can affect your computer's performance and potentially cause hardware issues. Keep the air vents clear of obstructions and clean them regularly to prevent build-up of dust and dirt. For more information about cleaning air vents, search for articles in Knowledge Base Resource at dell support.

3. **Service Tag label**

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

Locate the Service Tag or Express Service Code label of your computer

The service tag is a unique alphanumeric identifier that allows Dell service technicians to identify the hardware components in your computer and access warranty information. The Express Service Code is a numeric version of the Service Tag.

For more information about how to find the Service Tag of your computer, search in the Knowledge Base Resource at the Dell Support Site.



Figure 7. Service Tag/Express Service Code location

Battery charge and status light

The following table lists the battery charge and status light behavior of your Latitude 3450.

Table 2. Battery charge and status light behavior

Power source	LED behavior	System power state	Battery charge level
AC Adapter	Off	S0 - S5	Fully Charged
AC Adapter	Solid White	S0 - S5	< Fully Charged
Battery	Off	S0 - S5	11-100%
Battery	Solid Amber (590+/-3 nm)	S0 - S5	< 10%

- S0 (ON) - Computer is turned on.
- S4 (Hibernate) - The computer consumes the least power compared to all other sleep states. The computer is almost at an OFF state, expect for a trickle power. The context data is written to hard drive.
- S5 (OFF) - The computer is in a shutdown state.

Table 3. RJ45 Ethernet status LED

LED Behavior	Connection status
Solid Amber	The RJ45 cable is connected properly from the router or switch to the computer. The connection is active.
Blinking Amber	Data transfer is in progress.

3

Specifications of Latitude 3450

Dimensions and weight

The following table lists the height, width, depth, and weight of your Latitude 3450.

Table 4. Dimensions and weight

Description	Values
Height:	
Front height	17.68 mm (0.70 in.)
Rear height	19.34 mm (0.76 in.)
Width	322.17 mm (12.68 in.)
Depth	219.43 mm (8.63 in.)
Weight **NOTE:** The weight of your computer depends on the configuration that you ordered.	• Minimum—1.50 kg (3.30 lbs)

Processor

The following table lists the details of the processors that are supported on your Latitude 3450 .

Table 5. Processor

Description	Option one	Option two	Option three	Option four	Option five	Option six	Option seven
Type	13th Generation Intel Core i3-1315U	13th Generation Intel Core i5-1335U	13th Generation Intel Core i5-1345U	13th Generation Intel Core i7-1355U	Intel Core Ultra 5 125U	Intel Core Ultra 5 135U	Intel Core Ultra 7 155U
Wattage	15 W	15 W	15 W	15 W	15 W	15 W	15 W
Core count	6	10	10	10	12	12	12
Thread count **NOTE:** Intel Hyper-Threading Technology is available only on Performa	8	12	12	12	14	14	14

Table 5. Processor (continued)

Description	Option one	Option two	Option three	Option four	Option five	Option six	Option seven
nce-cores.							
Speed	Up to 4.50 GHz	Up to 4.60 GHz	Up to 4.70 GHz	Up to 5.00 GHz	Up to 4.30 GHz	Up to 4.40 GHz	Up to 4.80 GHz
Cache	10 MB	12 MB	12 MB	12 MB	12 MB	12 MB	12 MB
Integrated graphics	Intel UHD Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Iris Xe Graphics	Intel Integrated Graphics	Intel Integrated Graphics	Intel Integrated Graphics

Chipset

The following table lists the details of the chipset that is supported by your Latitude 3450.

Table 6. Chipset

Description	Option one	Option two
Processors	13th Generation Intel Core i3/i5/i7	Intel Core Ultra 5/Ultra 7
Chipset	Intel RPL-U (integrated with the processor)	Intel MTL-U (integrated with the processor)
DRAM bus width	64-bit	64-bit
Flash EPROM	32 MB	32 MB + 16 MB
PCIe bus	Up to Gen4	Up to Gen4

Operating system

Your Latitude 3450 supports the following operating systems:

- Windows 11 Pro
- Windows 11 Home
- Ubuntu 22.04 LTS, 64-bit

Memory

The following table lists the memory specifications that are supported by your Latitude 3450.

Table 7. Memory specifications

Description	Values
Memory slots	Two
Memory type	DDR5, single-channel, dual-channel
Memory speed	• For computers shipped with13th Gen Intel Core i3/i5/i7 processors: 5200 MT/s

Table 7. Memory specifications (continued)

Description	Values
	• For computers shipped with Intel Core Ultra i5/i7 processors: 5600 MT/s
Maximum memory configuration	64 GB
Minimum memory configuration	8 GB
Memory size per slot	8 GB, 16 GB, 32 GB
Memory configurations supported	For computers shipped with 13th Gen Intel Core i3/i5/i7 processor: • 8 GB: 1 x 8 GB, DDR5, 5200 MT/s, single-channel • 16 GB: 2 x 8 GB, DDR5, 5200 MT/s, dual-channel • 16 GB: 1 x 16 GB, DDR5, 5200 MT/s, single-channel • 32 GB: 2 x 16 GB, DDR5, 5200 MT/s, dual-channel • 64 GB: 2 x 32 GB, DDR5, 5200 MT/s, dual-channel For computers shipped with Intel Core Ultra i5/i7 processor: • 8 GB: 1 x 8 GB, DDR5, 5600 MT/s, single-channel • 16 GB: 2 x 8 GB, DDR5, 5600 MT/s, dual-channel • 16 GB: 1 x 16 GB, DDR5, 5600 MT/s, single-channel • 32 GB: 2 x 16 GB, DDR5, 5600 MT/s, dual-channel • 64 GB: 2 x 32 GB, DDR5, 5600 MT/s, dual-channel

External ports

The following table lists the external ports of your Latitude 3450.

Table 8. External ports

Description	Values
Network port	One Flip-down RJ 45 10/100/1000 Mbps
USB ports	• One USB4 20 Gbps port with DisplayPort and Power Delivery • One USB 3.2 Gen 1 port with PowerShare • Two USB 3.2 Gen 1 port
Audio port	One universal audio port
Video port	• One HDMI 1.4 port (for computers shipped with 13th Gen Intel Core i3/i5/i7 processor) • One HDMI 2.0 port (for computers shipped with Intel Core Ultra i5/i7 processor)
SIM card slot	N/A
Power-adapter port	One DC-in port (4.5 mm standard plug/USB-C port)
Security-cable slot	One wedge-shaped lock slot

Internal slots

The following table lists the internal slots of your Latitude 3450.

Table 9. Internal slots

Description	Values
M.2	• One M.2 2230 for solid-state drive • One M.2 2230 slot for WLAN card, Wi-Fi/Bluetooth **NOTE:** To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at Dell Support Site.

Ethernet

The following table lists the wired ethernet Local Area Network (LAN) specifications of your Latitude 3450.

Table 10. Ethernet specifications

Description	Values
Model	RTL8111H-CG
Transfer rate	10/100/1000 Mbps

Wireless module

The following table lists the Wireless Local Area Network (WLAN) modules that are supported on your Latitude 3450.

Table 11. Wireless module specifications

Description	Option one	Option two
Model number	Intel AX211	Realtek RTL8852BE
Transfer rate	Up to 2400 Mbps	Up to 1200 Mbps
Frequency bands supported	2.4 GHz/5 GHz/6 GHz	2.4 GHz/5 GHz
Wireless standards	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6E (WiFi 802.11ax) • Wi-Fi 6 (WiFi 802.11ax)	• WiFi 802.11a/b/g • Wi-Fi 4 (WiFi 802.11n) • Wi-Fi 5 (WiFi 802.11ac) • Wi-Fi 6 (WiFi 802.11ax)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP	• 64-bit/128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card **NOTE:** The functionality of the Bluetooth wireless card may vary based on the operating system.	Bluetooth 5.3	Bluetooth 5.3

Audio

The following table lists the audio specifications of your Latitude 3450.

Table 12. Audio specifications

Description		Values
Audio controller		Realtek ALC3204
Stereo conversion		Supported with Waves MaxxAudio Pro
Internal audio interface		High definition audio interface
External audio interface		One universal audio port
Number of speakers		Two
Internal-speaker amplifier		Supported (audio codec integrated)
External volume controls		Supported
Speaker output:		
	Average	2 W x 2 = 4 W
	Peak	2.5 W x 2 = 5 W
Microphone		Digital-array microphone

Storage

This section lists the storage options on your Latitude 3450.

One M.2 2230 solid-state drive

Table 13. Storage specifications

Storage type	Interface type	Capacity
M.2 2230 Class 25 QLC SSD	PCIe NVMe Gen4	Up to 1 TB
M.2 2230 Class 35 TLC SSD	PCIe NVMe Gen4	Up to 1 TB

Keyboard

The following table lists the keyboard specifications of your Latitude 3450.

Table 14. Keyboard specifications

Description	Values
Keyboard type	• Standard AI hotkey backlit keyboard without fingerprint reader • Standard AI hotkey backlit keyboard with fingerprint reader • Standard AI hotkey non-backlit keyboard without fingerprint reader

Table 14. Keyboard specifications (continued)

Description	Values
	• Standard AI hotkey non-backlit keyboard with fingerprint reader **NOTE:** • All keyboards are spill-resistant • Copilot in Windows is available only in approved markets
Keyboard layout	QWERTY
Number of keys	• United States and Canada: 79 keys • United Kingdom: 80 keys • Latin America (Spanish): 80 keys • Japan: 83 keys • Brazil and Quebec: 81 keys
Key pitch	X=19.05 mm key pitch Y=18.05 mm key pitch
Keyboard shortcuts	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. **NOTE:** You can define the primary behavior of the function keys (F1–F12) by changing **Function Key Behavior** in the BIOS Setup program. **NOTE:** If Copilot in Windows is not available on your computer, pressing the Copilot key launches Windows search. For more information about Copilot in Windows, see the Knowledge Base Resource at the Dell Support site.

Keyboard shortcuts of Latitude 3450

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

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

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

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

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

Table 15. List of keyboard shortcuts

Function key	Primary behavior
F1	Mute audio
F2	Decrease volume
F3	Increase volume
F4	Mute mic
F5	Click keyboard backlight (optional). **NOTE:** Non-backlight keyboards have F5 function key without the backlight icon and do not support toggle keyboard backlight function. **NOTE:** Toggle to cycle the keyboard backlight status through off, low-backlight, and high-backlight
F6	Decrease brightness
F7	Increase brightness
F8	Switch to external display
F10	Print screen
F11	Home
F12	End

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

Table 16. Secondary behavior

Function key	Secondary behavior
Fn + F1	Operating system and application specific F1 behavior
Fn + F2	Operating system and application specific F2 behavior
Fn + F3	Operating system and application specific F3 behavior
Fn + F4	Operating system and application specific F4 behavior
Fn + F5	Operating system and application specific F5 behavior
Fn + F6	Operating system and application specific F6 behavior
Fn + F7	Operating system and application specific F7 behavior
Fn + F8	Operating system and application specific F8 behavior
Fn + F10	Operating system and application specific F10 behavior
Fn + F11	Operating system and application specific F11 behavior
Fn + F12	Operating system and application specific F12 behavior
Fn + PrtScr	Turn off/on wireless
Fn + B	Pause
Fn + Ctrl + B	Break
Fn + Insert	Sleep
Fn + S	Toggle scroll lock
Fn + H	Toggle between power and battery-status light/hard-drive activity light
Fn + R	System request
Fn + Ctrl	Open application menu

Table 16. Secondary behavior (continued)

Function key	Secondary behavior
Fn + Esc	Toggle Fn-key lock
Fn + PgUp	Page up
Fn + PgDn	Page down
Fn + Home	Home
Fn + End	End
Fn + Right Ctrl	Shortcut/Secondary menu assigned to right Ctrl key
Fn + Shift + B	Calls unobtrusive mode **NOTE:** The key sequence will call unobtrusive mode. The hotkey sequence will be disabled by default to prevent accidental actuation. You may enable through BIOS setup option.

Camera

The following table lists the camera specifications of your Latitude 3450.

Table 17. Camera specifications

Description		Values
Number of cameras		Two **NOTE:** The second camera is optional and may not be included in all configurations.
Camera type		• HD RGB • FHD RGB • FHD RGB + IR
Camera location		Front camera
Camera sensor type		CMOS sensor technology
Camera resolution:		
	Still image	• 0.92 megapixels (HD) • 2.07 megapixels (FHD)
	Video	• 1280 x 720 (HD) at 30 fps • 1920 x 1080 (FHD) at 30 fps
Infrared camera resolution:		
	Video	640 x 360 at 15 fps
Diagonal viewing angle:		
	Camera	• 78.60 degrees (HD) • 80.20 degrees (FHD)
	Infrared camera	86.60 degrees

Touchpad

The following table lists the touchpad specifications of your Latitude 3450.

Table 18. Touchpad specifications

Description		Values
Touchpad resolution:		>300 dpi
Touchpad dimensions:		
	Horizontal	115 mm (4.52 in.)
	Vertical	67 mm (2.63 in.)
Touchpad gestures		For more information about the touchpad gestures available on Windows, see the Microsoft Knowledge Base article at Microsoft Support Site.

Power adapter

The following table lists the power adapter specifications of your Latitude 3450.

Table 19. Power adapter specifications

Description		Option one	Option two	Option three	Option four
Type		60W AC adapter, small form factor, USB Type-C, 2-pin (Japan)	65W AC adapter, 4.5 mm barrel, E4	65W AC adapter, USB Type-C, EcoDesign	100W AC adapter, USB Type-C, E5
Connector dimensions:					
	External diameter	N/A	4.50 mm	N/A	N/A
	Internal diameter	N/A	2.90 mm	N/A	N/A
Input voltage		100 VAC to 240 VAC	100 VAC - 240 VAC	100 VAC - 240 VAC	100 VAC - 240 VAC
Input frequency		50 Hz to 60 Hz	50 Hz - 60 Hz	50 Hz - 60 Hz	50 Hz - 60 Hz
Input current (maximum)		1.70 A	1.60 A/1.70 A	1.70 A	1.70 A
Output current (continuous)		• 20 V/3 A • 15 V/3 A • 9 V/3 A • 5 V/3 A	3.34 A	• 20 V/3.25 A (continuous) • 15 V/3 A (continuous) • 9.0 V/3 A (continuous) • 5.0 V/3 A (continuous)	• 20 V/5 A (continuous) • 15 V/3 A (continuous) • 9.0 V/3 A (continuous) • 5.0 V/3 A (continuous)
Rated output voltage		• 20 VDC • 15 VDC • 9 VDC • 5 VDC	19.50 VDC	• 20 VDC • 15 VDC • 9 VDC • 5 VDC	• 20 VDC • 15 VDC • 9 VDC • 5 VDC
Temperature range:					

Table 19. Power adapter specifications (continued)

Description		Option one	Option two	Option three	Option four
	Operating	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)	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)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)

Power adapter requirements (for computers that are shipped with 3-cell, 42 Wh battery)

The following table lists the power adapter for yourLatitude 3450

NOTE: If you did not purchase the Dell-branded power adapter that is recommended for your computer, ensure that the power adapter you use meets the following requirements:

Table 20. Power adapter requirements for yourLatitude 3450

Description	Value
Power that is required from a power adapter to achieve optimal performance.	60 W
Power that charges the computer at a slower speed. **NOTE:** A warning message may appear informing you about the use of a lower-powered adapter and slower charging speed.	Less than 60 W
Minimum power that is required from a power adapter to operate the computer and charge the battery. **NOTE:** A warning message appears informing you about the use of a lower-powered adapter and slower charging speed.	27 W
USB Power Delivery (PD) fast charging	Supported
ExpressCharge mode	Supported **NOTE:** Ensure that the computer with a 42 Wh battery is connected to a 65 W power adapter for this feature to be supported. **NOTE:** ExpressCharge mode must also be enabled in the BIOS Setup screen by selecting **Power**>**Battery Configuration**>**ExpressCharge**, then press Enter.

Power adapter requirements (for computers that are shipped with 3-cell, 54 Wh battery and integrated graphics)

The following table lists theLatitude 3450

NOTE: If you did not purchase the Dell-branded power adapter that is recommended for your computer, ensure that the power adapter you use meets the following requirements:

Table 21. Power adapter requirements for yourLatitude 3450

Description	Value
Power that is required from a power adapter to achieve optimal performance.	100 W

Table 21. Power adapter requirements for yourLatitude 3450 (continued)

Description	Value
Power that charges the computer at a slower speed. **NOTE:** A warning message may appear informing you about the use of a lower-powered adapter and slower charging speed.	Less than 60 W
Minimum power that is required from a power adapter to operate the computer and charge the battery. **NOTE:** A warning message appears informing you about the use of a lower-powered adapter and slower charging speed.	27 W
USB Power Delivery (PD) fast charging	Supported
ExpressCharge mode	Supported **NOTE:** Ensure that the computer with a 54 Wh battery is connected to a 100 W power adapter for this feature to be supported. **NOTE:** ExpressCharge mode must also be enabled in the BIOS Setup screen by selecting **Power**>**Battery Configuration**>**ExpressCharge**, then press Enter.

Power adapter requirements (for computers that are shipped with 3-cell, 54 Wh battery and discrete graphics)

The following table lists the power adapter for your Latitude 3450

NOTE: If you did not purchase the Dell-branded power adapter that is recommended for your computer, ensure that the power adapter you use meets the following requirements:

Table 22. Power adapter requirements for your Latitude 3450

Description	Value
Power that is required from a power adapter to achieve optimal performance.	100 W
Power that charges the computer at a slower speed. **NOTE:** A warning message may appear informing you about the use of a lower-powered adapter and slower charging speed.	Less than 100 W
Minimum power that is required from a power adapter to operate the computer and charge the battery. **NOTE:** A warning message appears informing you about the use of a lower-powered adapter and slower charging speed.	45 W
USB Power Delivery (PD) fast charging	Supported
ExpressCharge mode	Supported **NOTE:** Ensure that the computer with a 54 Wh battery is connected to a 100 W power adapter for this feature to be supported. **NOTE:** ExpressCharge mode must also be enabled in the BIOS Setup screen by selecting **Power**>**Battery Configuration**>**ExpressCharge**, then press Enter.

Battery

The following table lists the battery specifications of your Latitude 3450.

Table 23. Battery specifications

Description		Option one	Option two	Option three	Option four
Battery type		3-cell, 42 Wh, ExpressCharge, ExpressCharge Boost Capable	3-cell, 54 Wh, ExpressCharge, ExpressCharge Boost Capable	3-cell, 42 Wh, ExpressCharge, Long Life Cycle, 3-year limited hardware warranty	3-cell, 54 Wh, ExpressCharge, Long Life Cycle, 3-year limited hardware warranty
Battery voltage		11.4 VDC	11.4 VDC	11.4 VDC	11.4 VDC
Battery weight (maximum)		0.19 kg	0.22 kg	0.19 kg	0.22 kg
Battery dimensions:					
	Height	5.73 mm (0.22 in.)	5.73 mm (0.22 in.)	5.73 mm (0.22 in.)	5.73 mm (0.22 in.)
	Width	263 mm (10.35 in.)	263 mm (10.35 in.)	263 mm (10.35 in.)	263 mm (10.35 in.)
	Depth	79.42 mm (3.12 in.)	79.42 mm (3.12 in.)	79.42 mm (3.12 in.)	79.42 mm (3.12 in.)
Temperature range:					
	Operating	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)	0°C to 45°C (32°F to 113°F)
	Storage	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)	-20°C to 60°C (-4°F to 140°F)
Battery operating time		Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions.
Battery charging time (approximate) **NOTE:** Control the charging time, duration, start and end time, and so on using the Dell Power Manager application. For more information on the Dell Power Manager see, *Me and My Dell* on dell support.		• 0~15°C—4 hours (when the computer is off) • 16~45°C—2 hours (when the computer is off) • 46~50°C—3 hours(when the computer is off)	• 0~15°C—4 hours (when the computer is off) • 16~45°C—2 hours (when the computer is off) • 46~50°C—3 hours(when the computer is off)	• 0~15°C—4 hours (when the computer is off) • 16~45°C—2 hours (when the computer is off) • 46~50°C—3 hours(when the computer is off)	• 0~15°C—4 hours (when the computer is off) • 16~45°C—2 hours (when the computer is off) • 46~50°C—3 hours(when the computer is off)
Coin-cell battery		CR2032	CR2032	CR2032	CR2032
CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.					

Table 23. Battery specifications (continued)

Description	Option one	Option two	Option three	Option four
CAUTION: 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.				

Display

The following table lists the display specifications of your Latitude 3450.

Table 24. Display specifications

Description		Option one	Option two	Option three	Option four
Display type		14-inch, High Definition (HD)	14-inch, Full High Definition (FHD)	14-inch, Full High Definition (FHD)	14-inch, Full High Definition (FHD)
Display-panel technology		Twisted nematic	In Plane Switching (IPS)	In Plane Switching (IPS)	In Plane Switching (IPS)
Display-panel dimensions (active area):					
	Height	309.37 mm (12.18 in.)	309.37 mm (12.18 in.)	309.37 mm (12.18 in.)	309.37 mm (12.18 in.)
	Width	174.02 mm(6.85 in.)	174.02 mm(6.85 in.)	174.02 mm(6.85 in.)	174.02 mm(6.85 in.)
	Diagonal	354.95 mm (13.97 in.)	354.95 mm (13.97 in.)	354.95 mm (13.97 in.)	354.95 mm (13.97 in.)
Display-panel native resolution		1366 x 768	1920 x 1080	1920 x 1080	1920 x 1080
Luminance (typical)		220 nits	250 nits	300 nits	400 nits
Megapixels		1.05	2.07	2.07	2.07
Color gamut		45% (NTSC)	45% (NTSC)	72% (NTSC)	100% sRGB
Color depth		6-bit	6-bit	6-bit + FRC	True 8-bit
Color		262 K	262 K	16.2 M	16.7 M
Pixels Per Inch (PPI)		112	157	157	157
Contrast ratio (typical)		400:1	700:1	700:1	1500:1
Response time (maximum)		25 ms	35 ms	35 ms	35 ms
Refresh rate		60 Hz	60 Hz	60 Hz	60 Hz
Horizontal view angle		45 +/- degrees	85 +/- degrees	85 +/- degrees	85 +/- degrees
Vertical view angle		35 +/- degrees	85 +/- degrees	85 +/- degrees	85 +/- degrees
Pixel pitch		0.2265 (H)*0.2265 (V)	0.161 (H)*0.161 (V)	0.161 (H)*0.161 (V)	0.161 (H)*0.161 (V)

Table 24. Display specifications (continued)

Description	Option one	Option two	Option three	Option four
Power consumption (maximum)	2.4 W	3.1 W	4.3 W	2.5 W
Anti-glare vs glossy finish	Anti-glare	Anti-glare	Anti-glare	Anti-glare
Touch options	No	No	Yes	No

Fingerprint reader

The following table lists the fingerprint-reader specifications of your Latitude 3450.

NOTE: The fingerprint reader is on the power button.

Table 25. Fingerprint reader specifications

Description	Values
Sensor technology	Capacitive
Sensor resolution	500 ppi
Sensor pixel size	108 x 88

Sensors

The following table lists the sensors of your Latitude 3450.

Table 26. Sensor

Sensor support
Adaptive Thermal Performance-Applicable only for discrete graphics

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Latitude 3450.

Table 27. GPU—Integrated

Controller	External display support	Memory size	Processor
Intel UHD Graphics	• One USB4 (20 Gbps) with Power Delivery and DisplayPort • One HDMI 1.4 port • TBT backward compatible	Shared system memory	13th Generation Intel Core i3-1315U
Intel Iris Xe Graphics	• One USB4 (20 Gbps) with Power Delivery and DisplayPort • One HDMI 1.4 port • TBT backward compatible	Shared system memory	• 13th Generation Intel Core i5-1335U • 13th Generation Intel Core i5-1345U • 13th Generation Intel Core i7-1355U

Table 27. GPU—Integrated (continued)

Controller	External display support	Memory size	Processor
Intel Integrated Graphics	• One USB4 (20 Gbps) with Power Delivery and DisplayPort • One HDMI 2.0 port • TBT backward compatible	Shared system memory	• Intel Core Ultra 5 125U • Intel Core Ultra 5 135U • Intel Core Ultra 7 155U

GPU—Discrete

The following table lists the specifications of the discrete Graphics Processing Unit (GPU) supported by your Latitude 3450.

Table 28. GPU—Discrete

Controller	Memory size	Memory type
Nvidia GeForce MX570A	2 GB	GDDR6

Multiple display support matrix

The following table lists the multiple display support matrix for your Latitude 3450.

Table 29. Multiple display support matrix

Graphics Card	Direct Graphics Controller Direct Output Mode	Supported external displays with computer internal display on	Supported external displays with computer internal display off
Intel UHD Graphics	Integrated	3	4
Intel Iris X^e Graphics	Integrated	3	4
Intel Integrated Graphics	Integrated	3	4

Hardware security

The following table lists the hardware security of your Latitude 3450.

Table 30. Hardware security

Hardware security
One wedge-shaped lock slot
FIPS 140-2 certification for TPM
TCG Certification for TPM (Trusted Computing Group)
Chassis Intrusion Detection
BIOS - TPM clear and/or system boot lock after chassis intrusion detection
RPMC (specify via SPI Flash or eRPMC)
SPI Flash Tamper Detection / Prevention Shunt Circuit

Operating and storage environment

This table lists the operating and storage specifications of your Latitude 3450.

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

Table 31. 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)	90% (non-condensing)	95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	NA
Shock (maximum)	140 G†	NA
Altitude range	-15.2 m to 3048 m (-49.8 ft to 10000 ft)	-15.2 m to 10668 m (-49.8 ft to 35000 ft)
CAUTION: Operating and storage temperature ranges may differ among components, so operating or storing the device outside these ranges may impact the performance of specific components.		

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

† Measured using a 2 ms half-sine pulse.

4

Working inside your computer

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure in this document assumes that you have read the safety information that shipped with your computer.

WARNING: Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see Dell Regulatory Compliance Home Page.

WARNING: Disconnect your computer from all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting your computer to an electrical outlet.

CAUTION: To avoid damaging the computer, ensure that the work surface is flat, dry, and clean.

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

CAUTION: Before working inside your computer, ground yourself by touching an unpainted metal surface. While working, periodically touch an unpainted metal surface to dissipate static electricity, which can damage internal components.

CAUTION: To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the contacts.

CAUTION: When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the connector on the cable is correctly oriented and aligned with the port.

CAUTION: Press and eject any installed card from the media-card reader.

CAUTION: Exercise caution when handling rechargeable Li-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.

Before working inside your computer

About this task

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

Steps

1. Save and close all open files and exit all open applications.
2. Shut down your computer. For Windows operating system, click **Start** > **Power** > **Shut down**.

   NOTE: If you are using a different operating system, see the documentation of your operating system for instructions.
3. Turn off all the attached peripherals.
4. Disconnect your computer from the electrical outlet.
5. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

6. Remove any media card and optical drive from your computer, if applicable.
7. To clean the air vents, use a soft brush and move vertically.

   NOTE: Do not remove the base cover or use any blower to clean the vents.

8. Enter the Service Mode.

   Service Mode

   Service Mode is used to cut off power without disconnecting the battery cable from the system board before conducting repairs in the computer.

   CAUTION: If you are unable to turn on the computer to put it into Service Mode, disconnect the battery cable. To disconnect the battery cable, follow the steps in Removing the battery.

   NOTE: Ensure that your computer is shut down and the power adapter is disconnected.

   a. Press and hold the B key and the power button for 3 seconds or until the Dell logo appears on the screen.
   b. Press any key to continue.
   c. If the power adapter is not disconnected, a message prompting you to disconnect the power adapter appears on the screen. Disconnect the power adapter and then press any key to enter into the Service Mode. The Service Mode setup automatically skips the following step if the `Owner Tag` of the computer is not set up in advance by the user.
   d. When the **ready-to-proceed** message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
      The computer shuts down and enters the Service Mode.

Safety precautions

This section details the primary steps to be followed before disassembling any device or component.

Observe the following safety precautions before any installation or break-fix procedures involving disassembly or reassembly:

- Turn off the computer and all attached peripherals.
- Disconnect the computer from AC power.
- Disconnect all network cables and peripherals from the computer.
- Use an ESD field service kit when working inside your computer to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Press and hold the power button for 15 seconds to discharge the residual power in the system board.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done by using a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or nonmetal surface. Ensure that the wrist strap is secure and in full contact with your skin. Remove all jewelry, watches, bracelets, or rings before grounding yourself and the equipment.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory modules, and system boards. A slight charge can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory module that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The memory module receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms

that are related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, and so on.

Intermittent failures that are also called latent or "walking wounded" are difficult to detect and troubleshoot.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, use the anti-static wrist strap to discharge the static electricity from your body.

  NOTE: You can protect against ESD and discharge static electricity from your body by touching a metal-grounded object before you interact with anything electronic, for example, an unpainted metal surface on your computer's I/O panel. When connecting a peripheral (including handheld digital assistants) to your computer, you should always ground both yourself and the peripheral before connecting it to the computer. In addition, as you work inside the computer, periodically touch a metal-grounded object to remove any static charge that your body may have accumulated.

  For more information about the wrist strap and ESD wrist strap tester, see Components of an ESD Field Service Kit.
- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD Field Service kit

The unmonitored field service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

CAUTION: It is critical to keep ESD-sensitive devices away from internal parts that are insulated and often highly charged, such as plastic heat sink casings.

Working environment

Before the ESD Field Service kit is deployed, conduct an evaluation of the site to ensure proper setup and readiness. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of computer that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components.

ESD packaging

All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged component using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

Components of an ESD Field Service kit

The components of an ESD Field Service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the anti-static mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the anti-static mat. ESD-sensitive items are safe in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

- **Wrist Strap and Bonding Wire** – If an anti-static mat is not being used, the wrist strap and bonding wire should be connected directly between your wrist and an exposed metal part of the hardware. If you are using an anti-static mat, connect the wrist strap and bonding wire to the anti-static mat to ensure protection for any hardware placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the anti-static mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, anti-static mat, and bonding wire. Never use wireless wrist straps. Always be cautious that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored ESD kit, it is recommended to test the wrist strap regularly—ideally before each service session, and at a minimum, once per week. The most reliable method for testing is with a wrist strap tester. To perform the test, connect the bonding wire of the wrist strap to the tester while wearing the strap. Press the test button to initiate the check. A green LED indicates a successful test, while a red LED and audible alarm signal a failure.

NOTE: It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while servicing the computer.

Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

After working inside your computer

About this task

CAUTION: Leaving stray or loose screws inside your computer may severely damage your computer.

Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, disks, or any other parts that you removed before working on your computer.
4. Connect your computer to their electrical outlets.

   NOTE: To exit service mode, ensure to connect the AC adapter to the power-adapter port on your computer.

5. Press the power button to turn on the computer.

BitLocker

When updating the BIOS on a computer with BitLocker enabled, consider the following precautions.

CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key will not be recognized the next time that you reboot the computer. You are prompted to enter the recovery key to progress, and the computer displays a prompt for the recovery key on each reboot. If the recovery key is not known, this can result in data loss or an operating system reinstall. For more information, see Knowledge Article: updating the BIOS on Dell computers with BitLocker enabled.

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- Plastic scribe

Screw list

NOTE: When removing screws from a component, it is recommended to note the screw type and the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.

NOTE: Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.

NOTE: Screw color may vary depending on the configuration ordered.

Table 32. Screw list

Component	Screw type	Quantity	Screw image
Battery	Captive	5	
Heat sink - discrete graphics	Captive	7	
Heat sink - integrated graphics	Captive	4	
Display assembly	M2.5x5	4	
Display panel	M2.5x2.5	6	
Fan	M2x3	2	
I/O board	M2.5x5 M2x5 M2x3	2 2 1	
M.2230 solid-state drive	M2x2	2	
Power button board	M2x2.5	2	
Power-adapter port	M2.5x5	2	
System board	M2x3 M2x5 M2.5x5	4 2 2	

Table 32. Screw list (continued)

Component	Screw type	Quantity	Screw image
			
Touchpad	M2x2	6	
Wireless-card	M2x3	1	

Major components of Latitude 3450

The following image shows the major components of Latitude 3450.

NOTE: Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

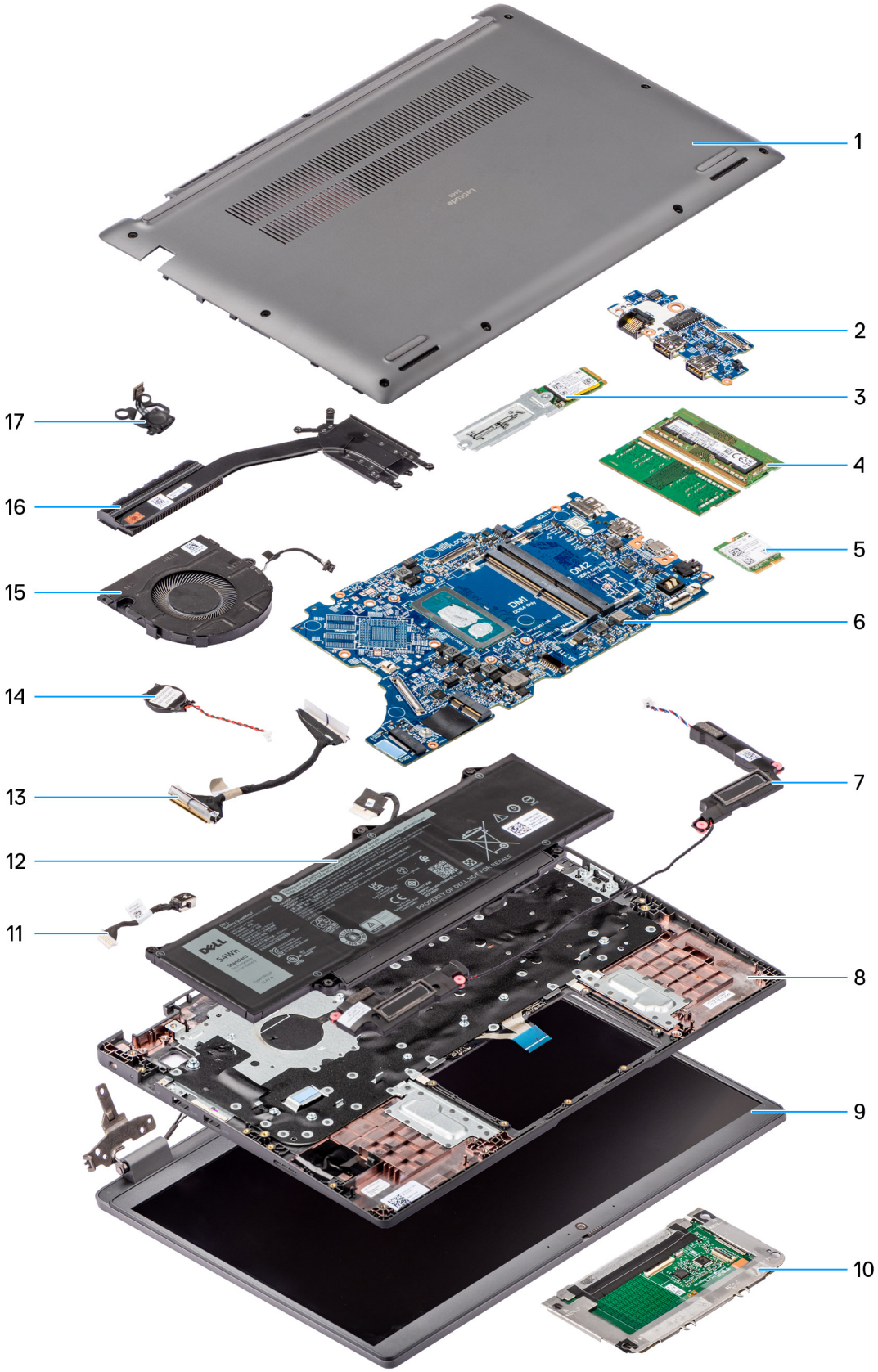


Figure 8. Exploded view of latitude 3450

1. Base cover
2. I/O board

3. M.2 2230 solid state drive
4. Memory modules
5. Wireless card
6. System board
7. Speakers
8. Palm-rest and keyboard assembly
9. Display assembly
10. Touchpad
11. DC-in port cable
12. Battery
13. I/O board cable
14. Coin cell battery
15. Fan
16. Heat sink
17. Power button

Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list

Table 33. CRU/FRU list

Customer Replaceable Unit(CRU)	Field Replaceable Unit(FRU)
Base cover	Display Bezel
Solid state drive (M.2.2230)	Display Panel
Wireless card	EDP cable
Fan	Display back cover
Memory module	Battery
Coin-cell battery	Battery cable
Speakers	I/O board
	Power button board
	Power button with fingerprint reader
	Touchpad
	Power adapter port
	Heat sink
	System board
	Palm-rest and keyboard assembly
	Camera
	Display assembly

5

Removing and installing Customer Replaceable Units (CRUs)

The replaceable components in this chapter are Customer Replaceable Units (CRUs).

CAUTION: Customers can replace only the Customer Replaceable Units (CRUs) following the safety precautions and replacement procedures.

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

Base cover

Removing the base cover

Prerequisites

1. Follow the procedure in Before working inside your computer.

About this task

The following images indicate the location of the base cover and provide a visual representation of the removal procedure.



Figure 9. Removing the base cover

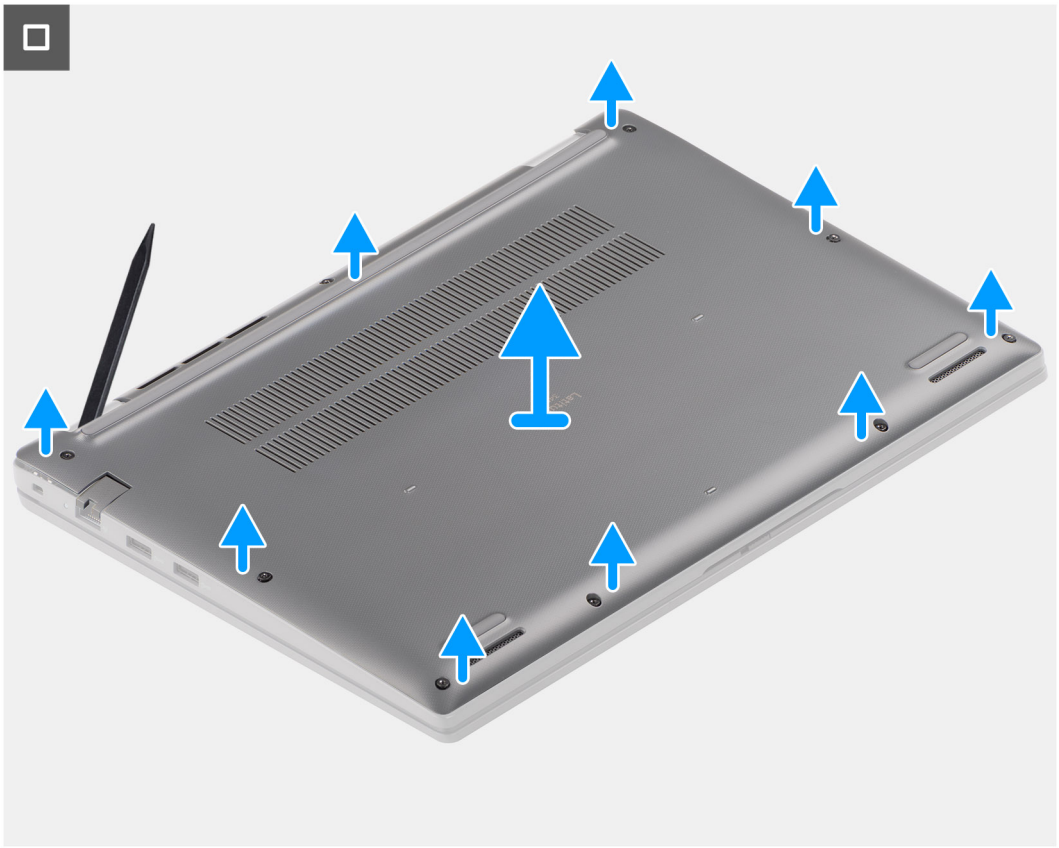


Figure 10. Removing the base cover

Steps

1. Loosen the nine captive screws that secure the base cover to the chassis.
2. Using a plastic scribe, pry open the base cover starting from the recesses, which are located in the U-shaped indents at the bottom edge of the base cover, near the hinges.
3. Pry open the top side of the base cover and continue working on the left, right and, bottom sides to open the base cover.
4. Carefully lift and remove the base cover from the chassis.

   NOTE: Ensure that your computer is in Service Mode. If your computer is unable to enter Service Mode, disconnect the battery cable from the system board. To disconnect the battery cable, follow step 5 to step 7.
5. Disconnect the battery cable from the system board.
6. Peel the tape that secures the battery cable to the battery.
7. Press and hold the power button for five seconds to ground the computer and drain the flea power.

Installing the base cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the base cover and provide a visual representation of the installation procedure.

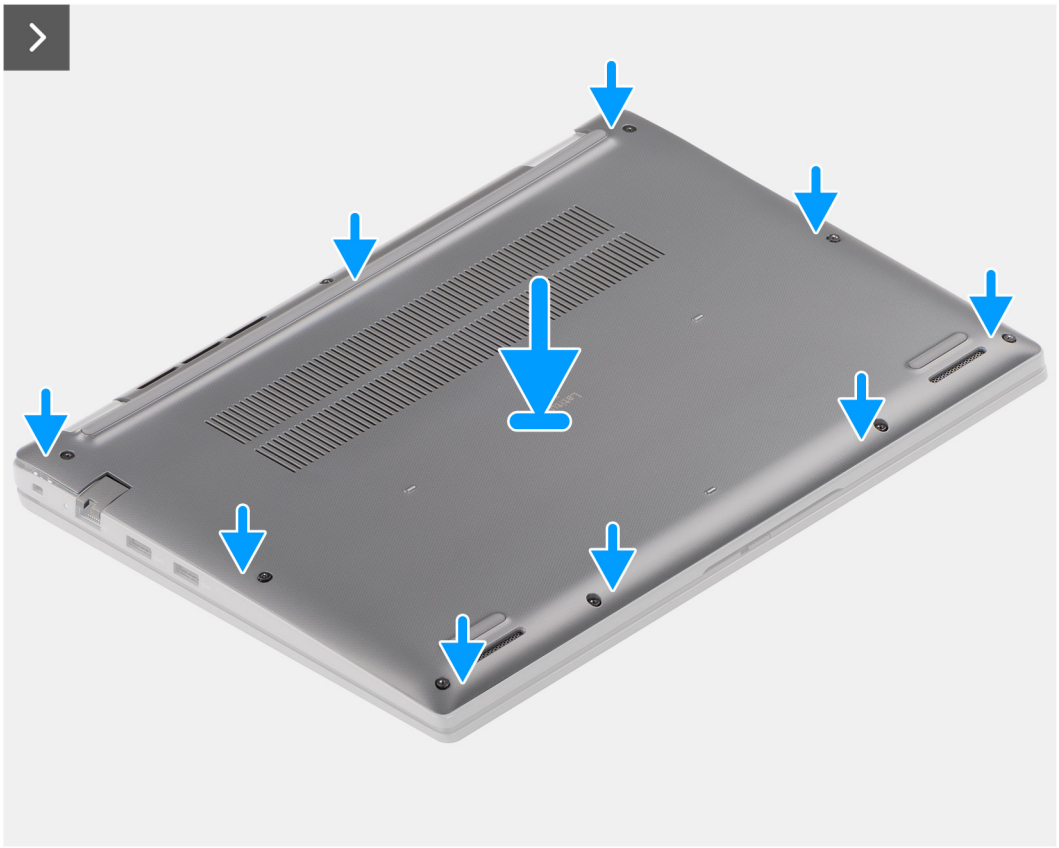


Figure 11. Installing the base cover



Figure 12. Installing the base cover

Steps

CAUTION: Do not turn on the computer until the base cover is secured.

1. Place the base cover on top of the chassis.
2. Align the screw holes on the base cover with the screw holes on the palm-rest and keyboard assembly, and snap the base cover latches into place.
3. Tighten the nine captive screws to secure the base cover to the chassis.

Next steps

1. Follow the procedure in After working inside your computer.

Memory module

Removing the memory module

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the memory module and provide a visual representation of the removal procedure.

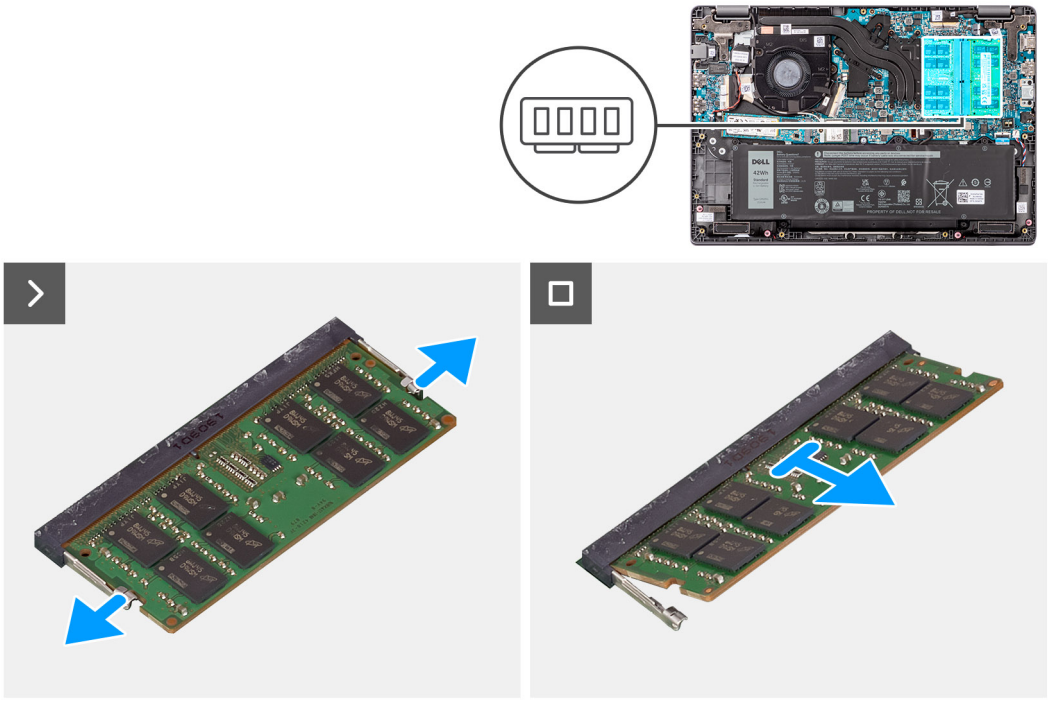


Figure 13. Removing the memory module

Steps

1. Pry the clips that secure the memory module until it pops up.
2. Remove the memory module from the memory slot.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges and gently remove the module from the memory slot. Do not touch the components or metallic contacts on the memory module as electrostatic discharge (ESD) can inflict severe damage on the components. To read more about ESD protection, see ESD protection.

Installing the memory module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the memory module and provides a visual representation of the installation procedure.

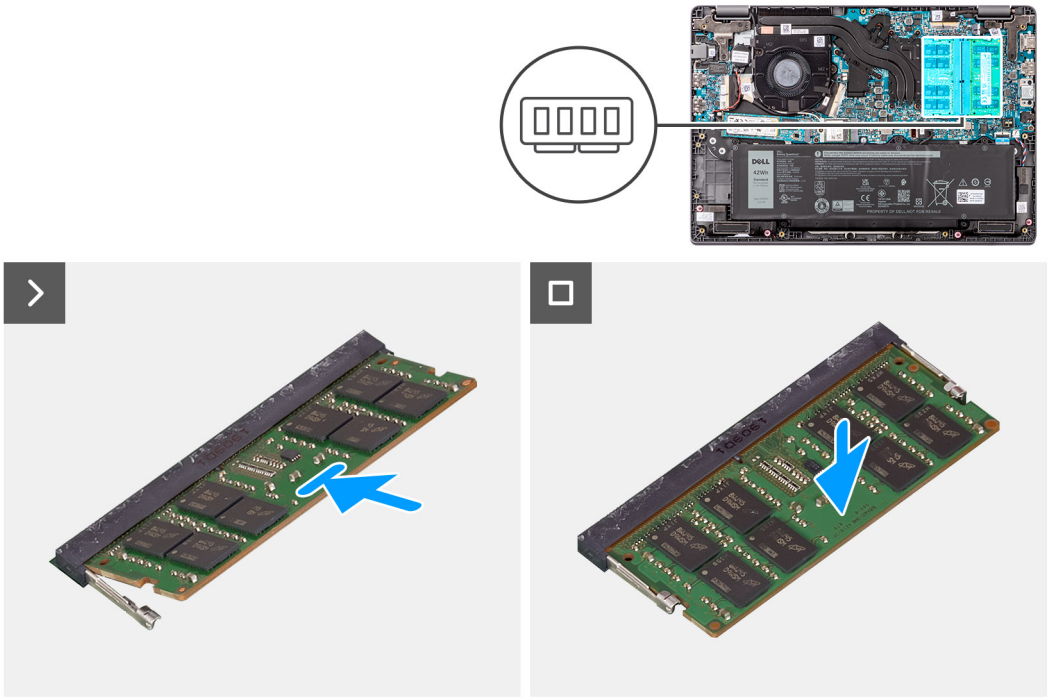


Figure 14. Installing the memory module

Steps

1. Align the notch on the memory module with the tab on the memory-module slot.
2. Slide the memory module firmly into the slot at an angle.
3. Press the memory module down until it clicks into place.

NOTE: If you do not hear the click, remove the memory module and reinstall it.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges and gently insert the module into the memory slot. Do not touch the components or metallic contacts on the memory module as electrostatic discharge (ESD) can inflict severe damage on the components. To read more about ESD protection, see ESD protection.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Wireless card

Removing the wireless card

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the wireless card and provide a visual representation of the removal procedure.

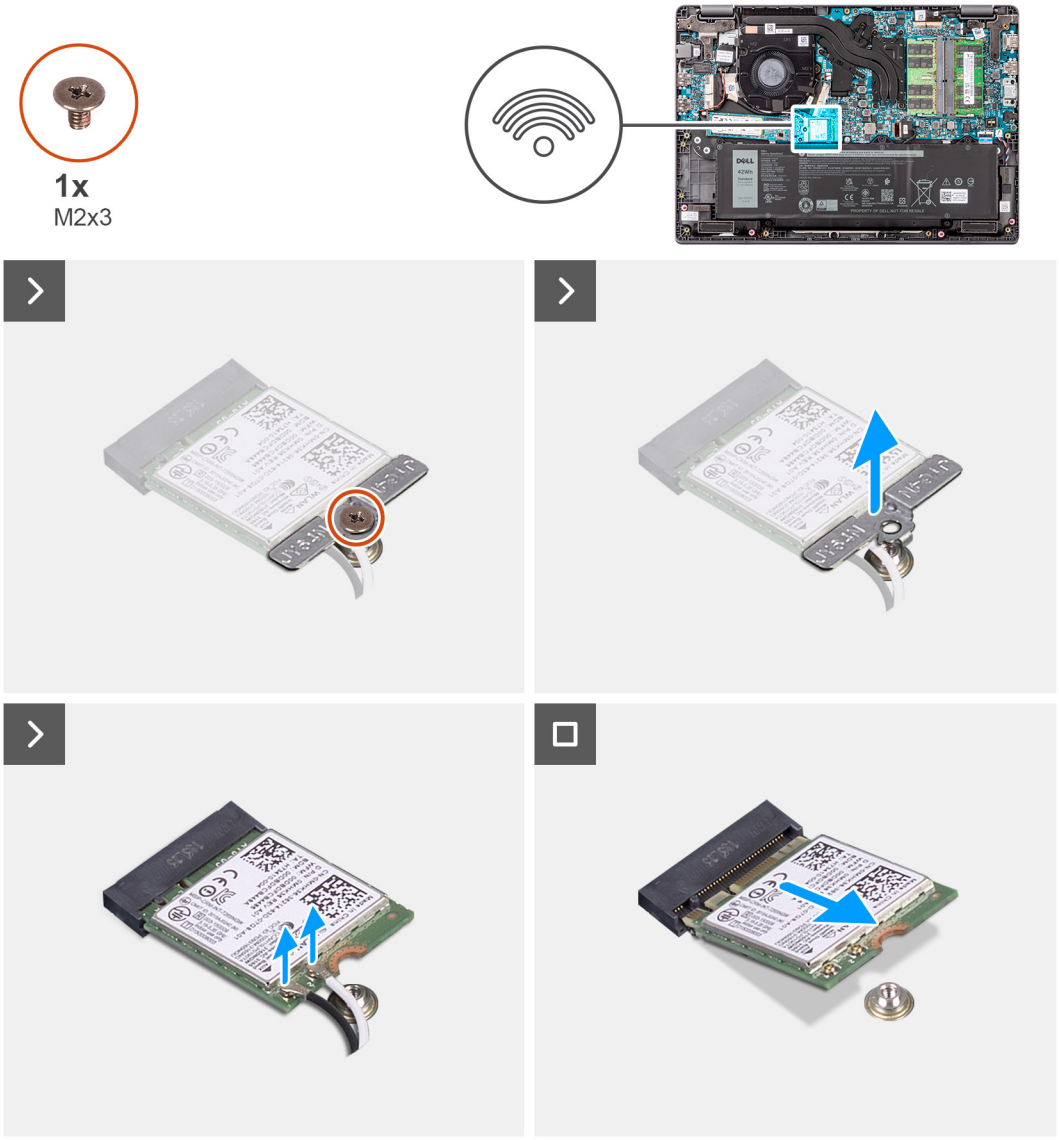


Figure 15. Removing the wireless card

Steps

1. Remove the screw (M2x3) that secures wireless-card bracket to the system board.
2. Slide and remove the wireless-card bracket from the system.
3. Disconnect the WLAN-antenna cables from the respective connectors on the wireless card.
4. Lift and remove the wireless card from the wireless card slot on the system board.

Installing the wireless card

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

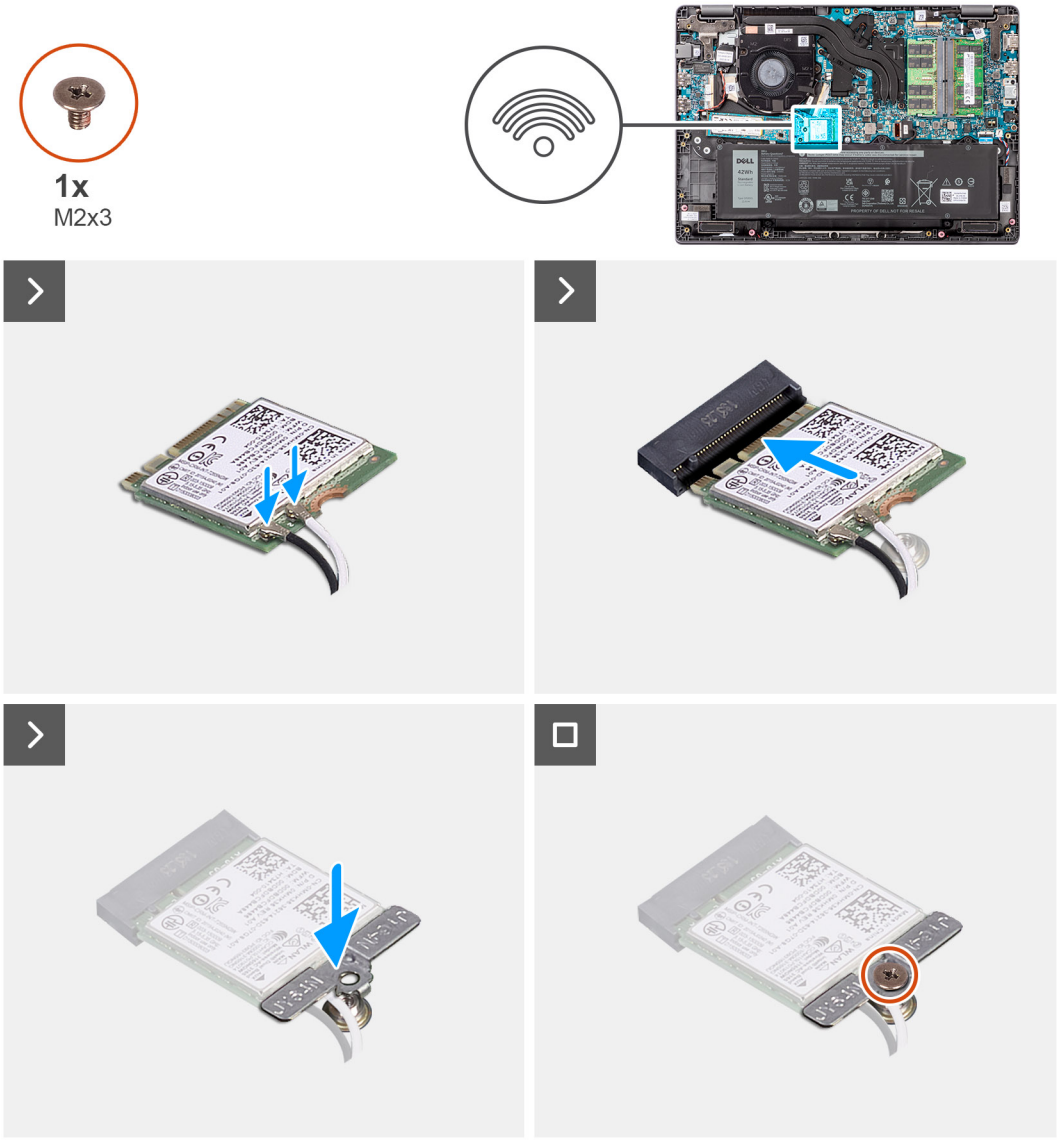


Figure 16. Installing the wireless card

Steps

1. Connect the WLAN-antenna cables to the respective connectors on the wireless card.

   NOTE: The WLAN-antenna cable connectors are fragile, and utmost care should be taken while replacing them.

Table 34. WLAN-antenna cable color scheme

Connectors on the wireless card	Antenna-cable color
Main - White triangle (△) on the wireless module of the system board	White cable
Auxiliary - Solid triangle (▲) on the wireless module of the system board	Black cable

2. Align the notch on the wireless card with the tab on the wireless card slot.
3. Slide the wireless card at an angle into the wireless card slot.
4. Place the wireless-card bracket on the wireless card.
5. Align the screw hole on the wireless-card bracket with the screw hole on the system board.

6. Replace the screw (M2x3) to secure the wireless-card bracket and the wireless card to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Fan

Removing the fan

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the wireless card.

About this task

NOTE: The fan may become hot during normal operation. Allow sufficient time for the thermal fan to cool before you touch it.

NOTE: For maximum cooling of the processor, do not touch the heat-transfer areas on the thermal fan. The oils in your skin can reduce the heat-transfer capability of the thermal grease.

The following image indicates the location of the thermal fan and provides a visual representation of the removal procedure.

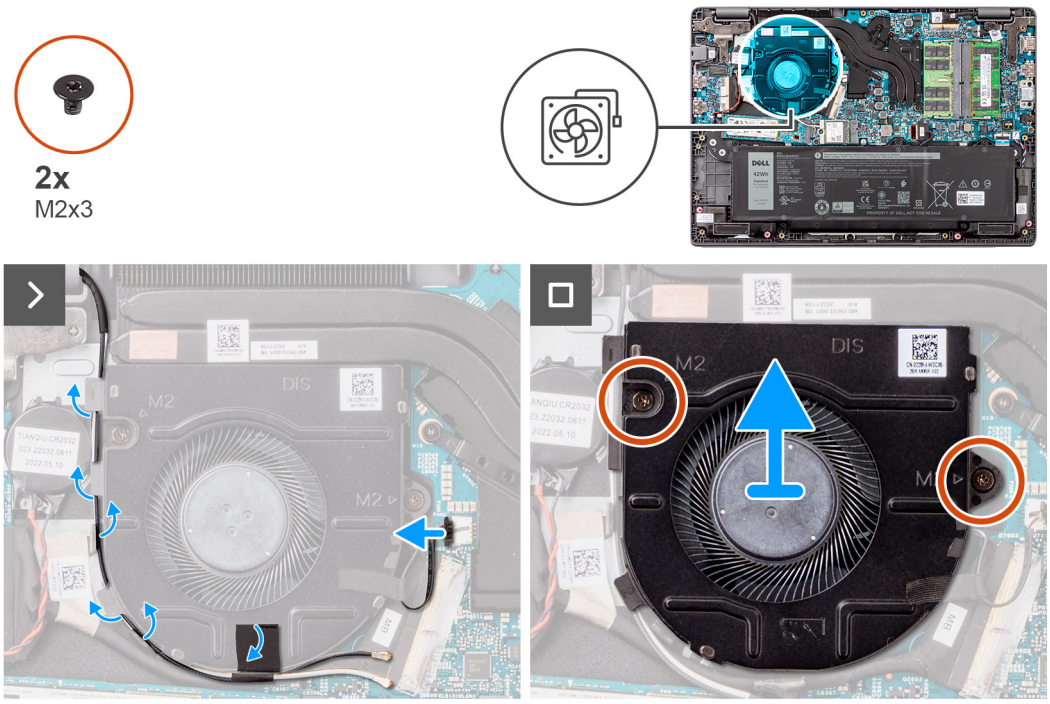


Figure 17. Removing the fan

Steps

1. Disconnect the thermal-fan cable from the connector on the system board.
2. Un route the WLAN antenna cables from the routing guides
3. Remove the two screws (M2x3) that secure the thermal fan to the system board.
4. Lift and remove the thermal fan from the system board.

Installing the fan

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the thermal fan and provides a visual representation of the installation procedure.

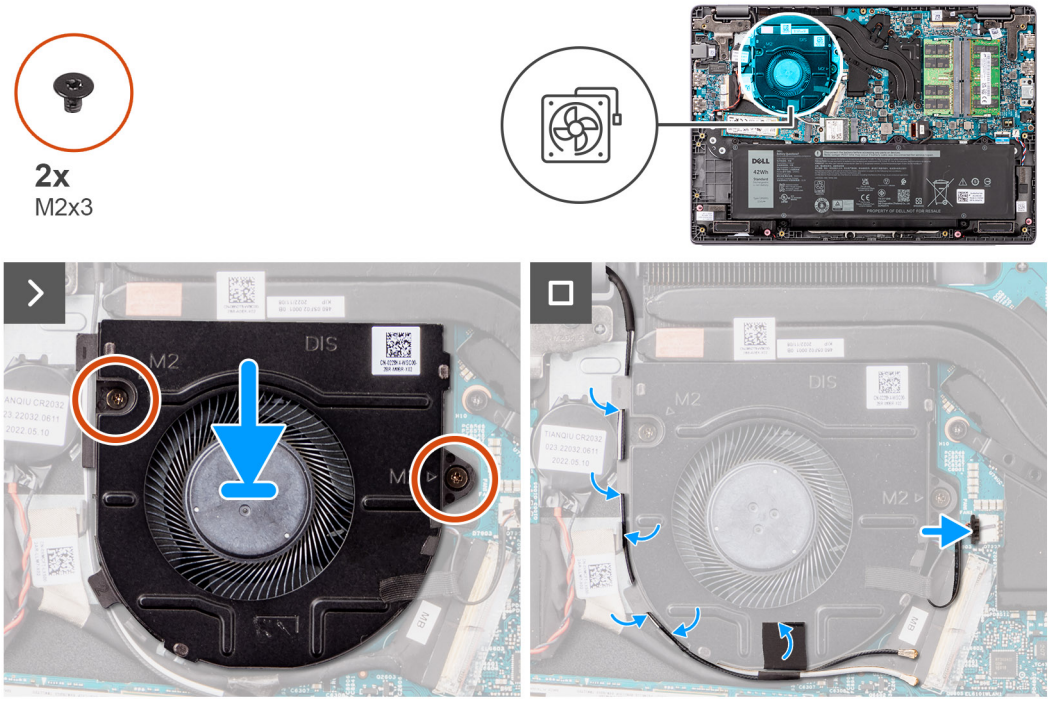


Figure 18. Installing the fan

Steps

1. Place and align the screw holes on the fan with the screw holes on to the system board.
2. Replace the two screws (M2x3) to secure the thermal fan to the system board.
3. Connect the thermal-fan cable to the connector on the system board.
4. Route the wireless card antenna cables into their routing guides.

Next steps

1. Install the base cover.
2. Install the wireless card.
3. Follow the procedure in After working inside your computer.

Coin-cell battery

Removing the coin-cell battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

NOTE: When the coin-cell battery is removed, it clears the CMOS settings.

The following image indicates the location of the coin-cell battery and provides a visual representation of the removal procedure.

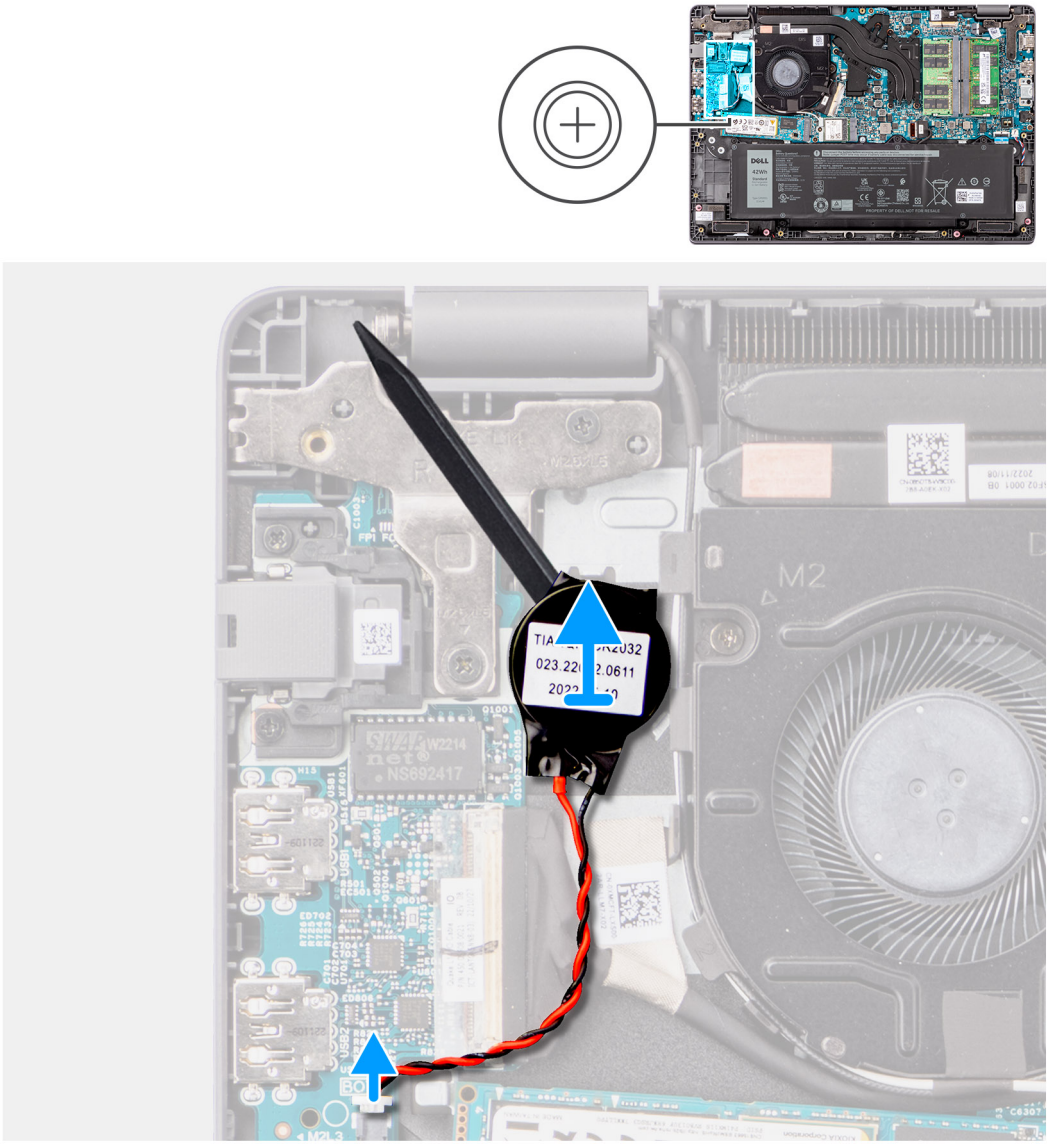


Figure 19. Removing the coin-cell battery

Steps

1. Disconnect the coin-cell battery cable from the connector on the system board.
2. Using a plastic scribe, pry the coin-cell battery off its slot on the palm-rest and keyboard assembly.

Installing the coin-cell battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the installation procedure.

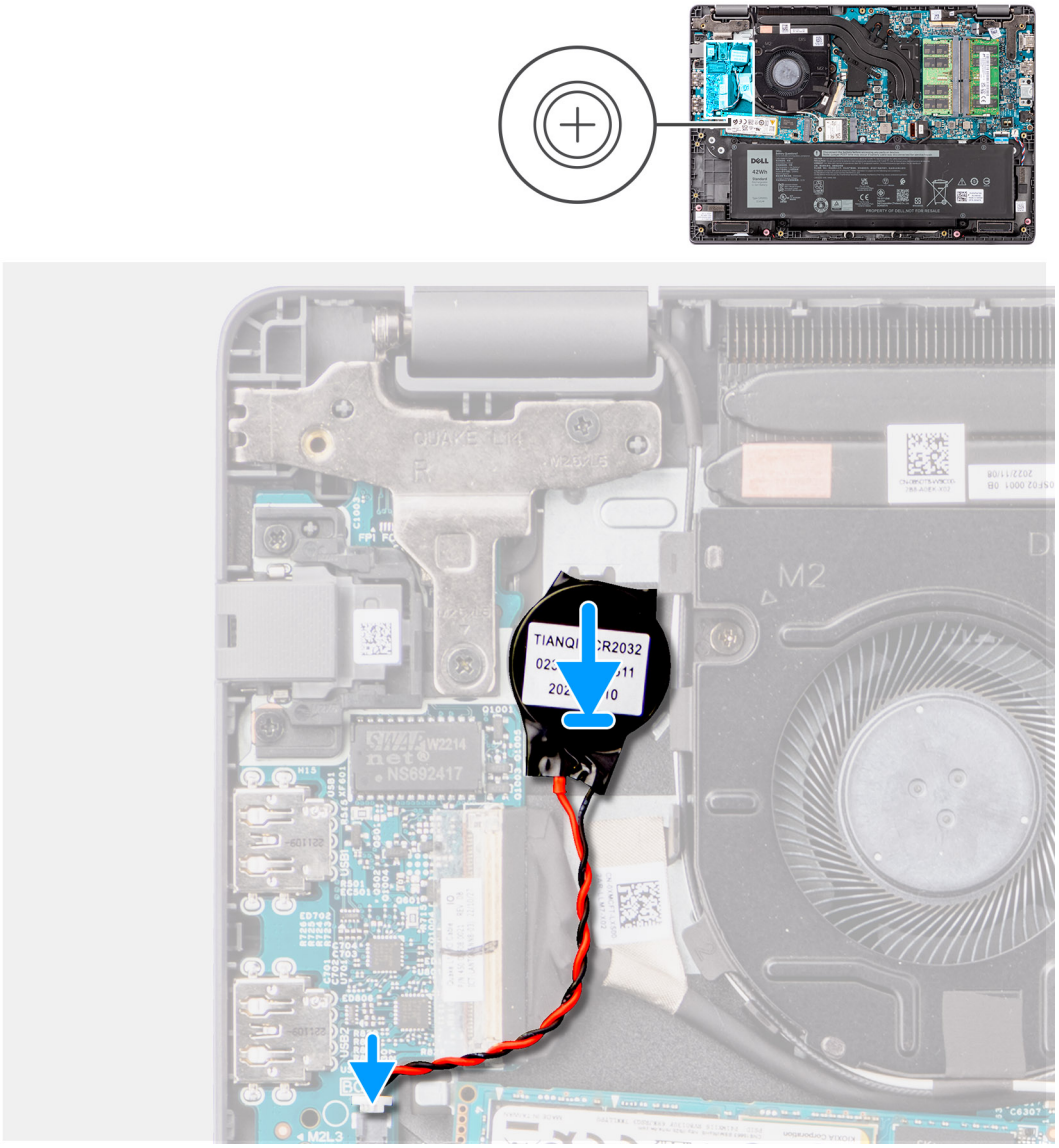


Figure 20. Installing the coin-cell battery

Steps

1. Align and place the coin-cell battery into its slot on the palm-rest and keyboard assembly.
2. Connect the coin-cell battery cable to the connector on the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

M.2 solid state drive

Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the removal procedure.

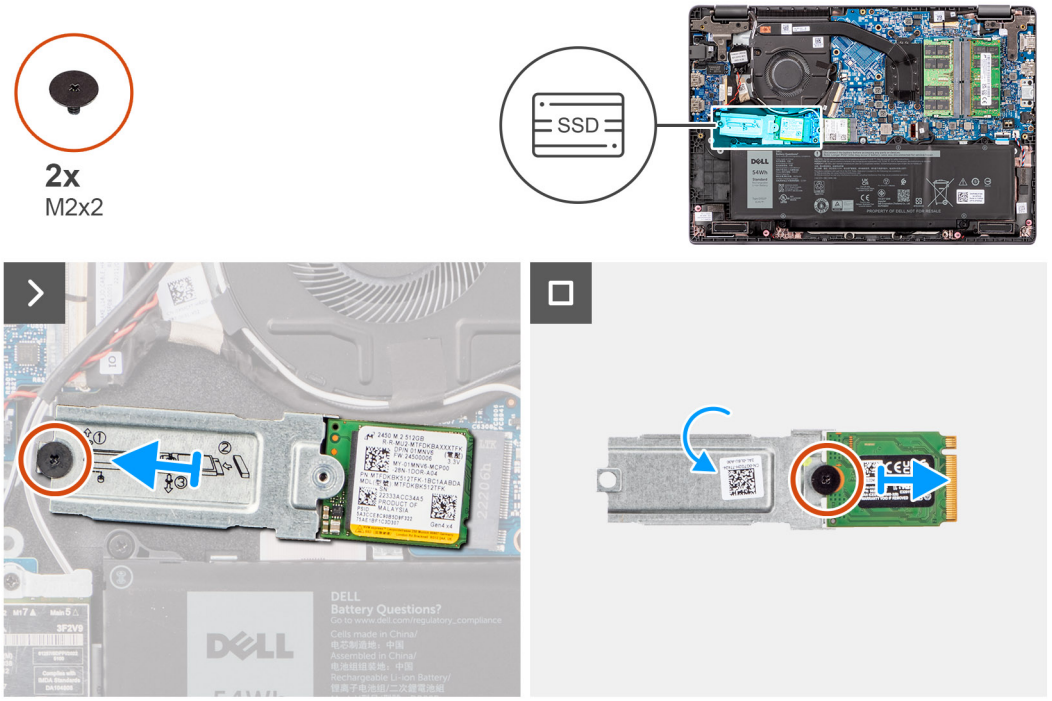


Figure 21. Removing the M.2 2230 solid-state drive

Steps

1. Remove the screw (M2x2) that secures the M.2 2230 solid-state drive holder to the system board.
2. Hold the sides of the M.2 2230 solid-state drive holder and carefully slide it out of the M.2 card connector on the system board.
3. Flip the M.2 2230 solid-state drive holder and remove the single screw (M2x2) that secure the M.2 2230 solid-state drive to the M.2 2230 solid-state drive holder.
4. Remove the M.2 2230 solid-state drive.

Installing the M.2 2230 solid-state drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the M.2 2230 solid-state drive and provide a visual representation of the installation procedure.

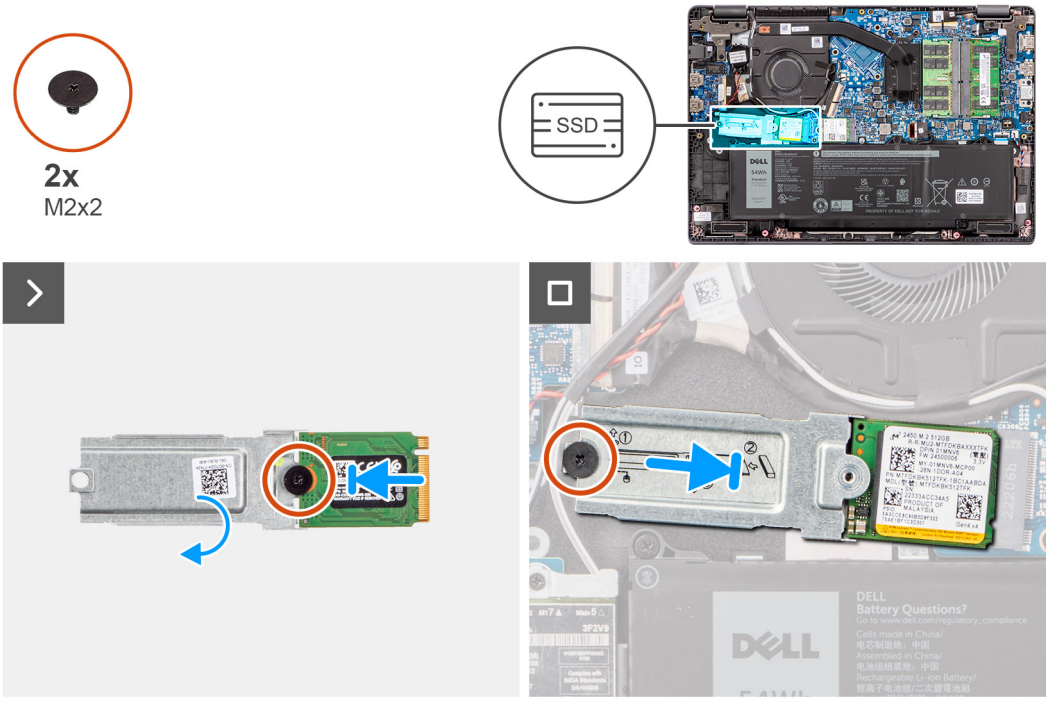


Figure 22. Installing the M.2 2230 solid-state drive

Steps

1. Align the notch on the M.2 2230 solid-state drive with the tab on the M.2 2230 solid-state drive holder.
2. Replace the single screw (M2x2) that secure the M.2 2230 solid-state drive to the M.2 2230 solid-state drive holder.
3. Position the I/O cables and WLAN cables towards the side of the fan to avoid obstructing the installation of the M.2 2230 solid-state drive holder with the solid state drive.
4. Hold the sides of the M.2 2230 solid-state drive holder and slide the M.2 2230 solid-state drive into the M.2 card connector on the system board.
5. Align the screw hole on the M.2 2230 solid-state drive holder with the screw hole on the palm-rest and keyboard assembly.
6. Replace the screw (M2x2) to secure the M.2 2230 solid-state drive holder to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Speakers

Removing the speakers

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the speakers and provide a visual representation of the removal procedure.

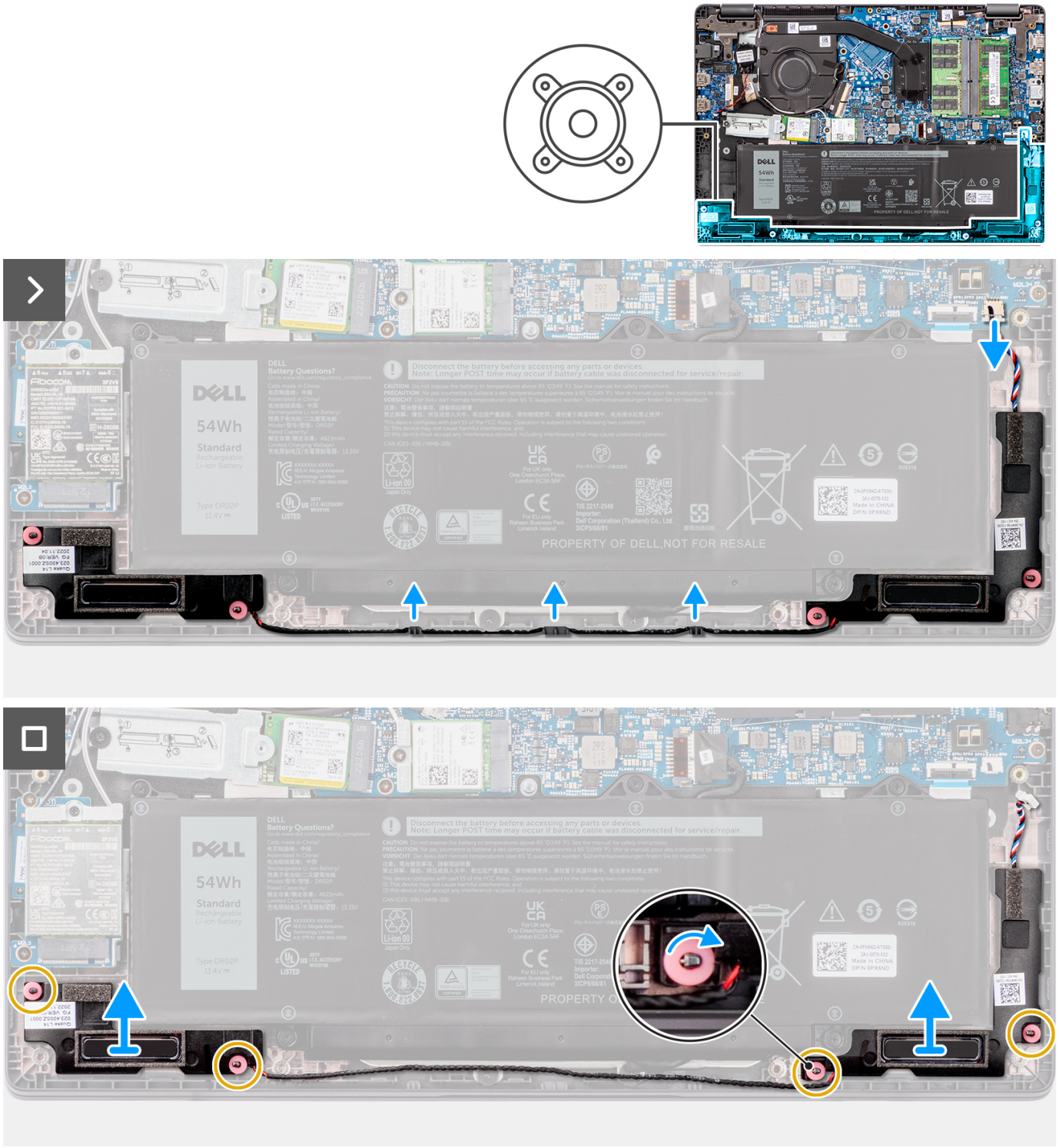


Figure 23. Removing the speakers

Steps

1. Disconnect the speaker cable from the connector on the system board.
2. Unroute the speaker cable from the routing guides on the palm-rest and keyboard assembly.
3. Remove the speakers from the palm-rest keyboard and assembly.

Installing the speakers

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: If the rubber grommets are pushed out when removing the speakers, push them back in place before replacing the speakers.

The following images indicate the location of the speakers and provide a visual representation of the installation procedure

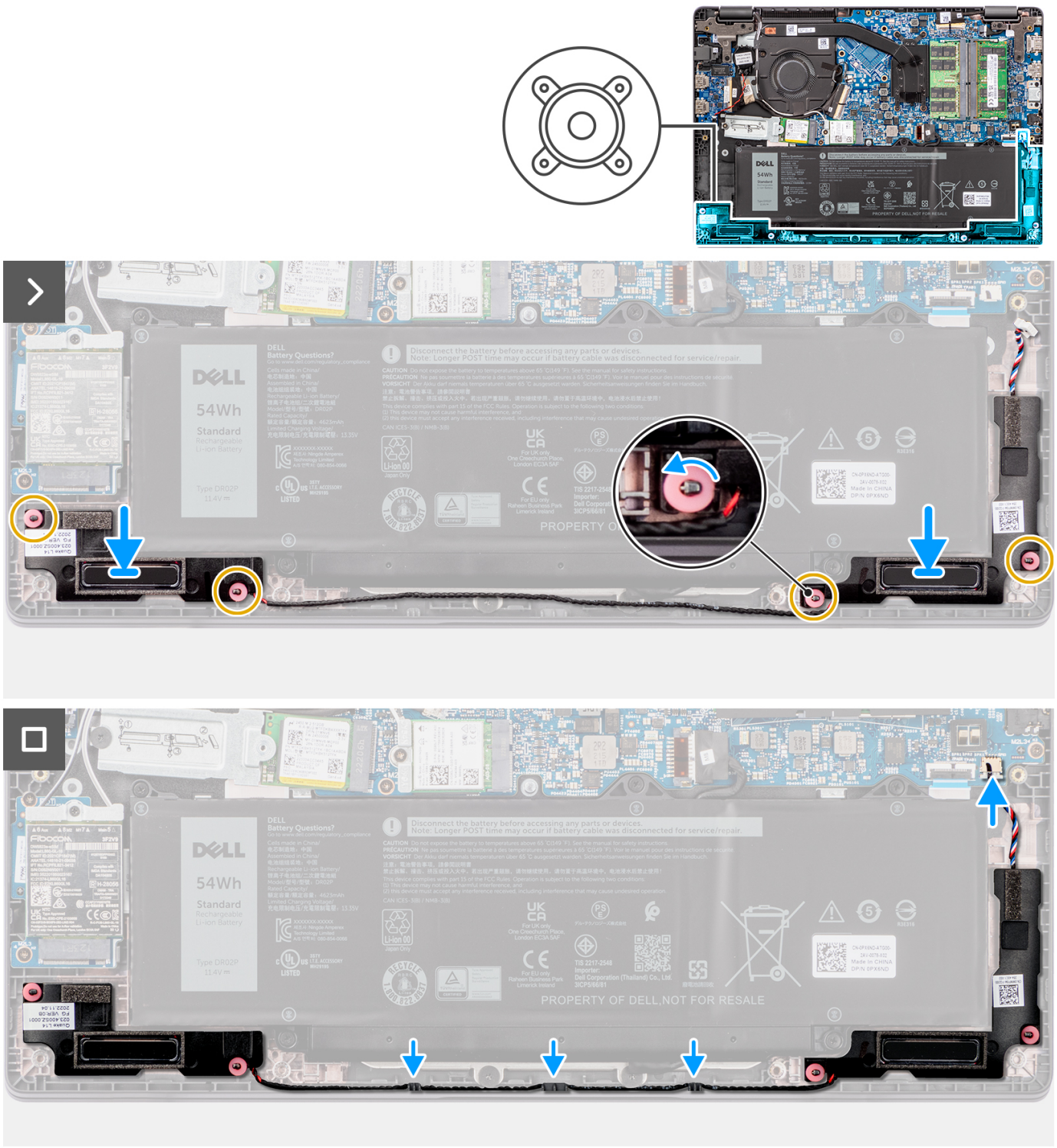


Figure 24. Installing the speakers

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Steps

1. Using the alignment posts and rubber grommets, place the speakers in their slots on the palm-rest and keyboard assembly.
2. Route the speaker cables through the routing guides on the palm-rest and keyboard assembly.
3. Connect the speaker cable to the connector on the system board.
4. Ensure that the alignment posts are threaded through the rubber grommets on the speakers.

5. After placing the speakers on the palm-rest and keyboard assembly, ensure that rubber grommets are seated into the slot and installed on the speakers correctly.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

6

Removing and installing Field Replaceable Units (FRUs)

The replaceable components in this chapter are Field Replaceable Units (FRUs).

CAUTION: The information in this section is intended for authorized service technicians only.

CAUTION: To avoid any potential damage to the component or loss of data, ensure that an authorized service technician replaces the Field Replaceable Units (FRUs).

CAUTION: Dell Technologies recommends that these procedures be performed by trained technical repair specialists.

CAUTION: Your warranty does not cover damages that may occur during FRU repairs that are not authorized by Dell Technologies.

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

Battery

Rechargeable Li-ion battery precautions

WARNING:

- **Exercise caution when handling rechargeable Li-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the computer and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **To prevent accidental puncture or damage to the battery and other components, ensure that no screws are lost or misplaced during the servicing of the computer.**
- **Always purchase genuine batteries from Dell Site or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen rechargeable Li-ion batteries, see Handling swollen rechargeable Li-ion batteries.**

Removing the battery

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the battery and provide a visual representation of the removal procedure.

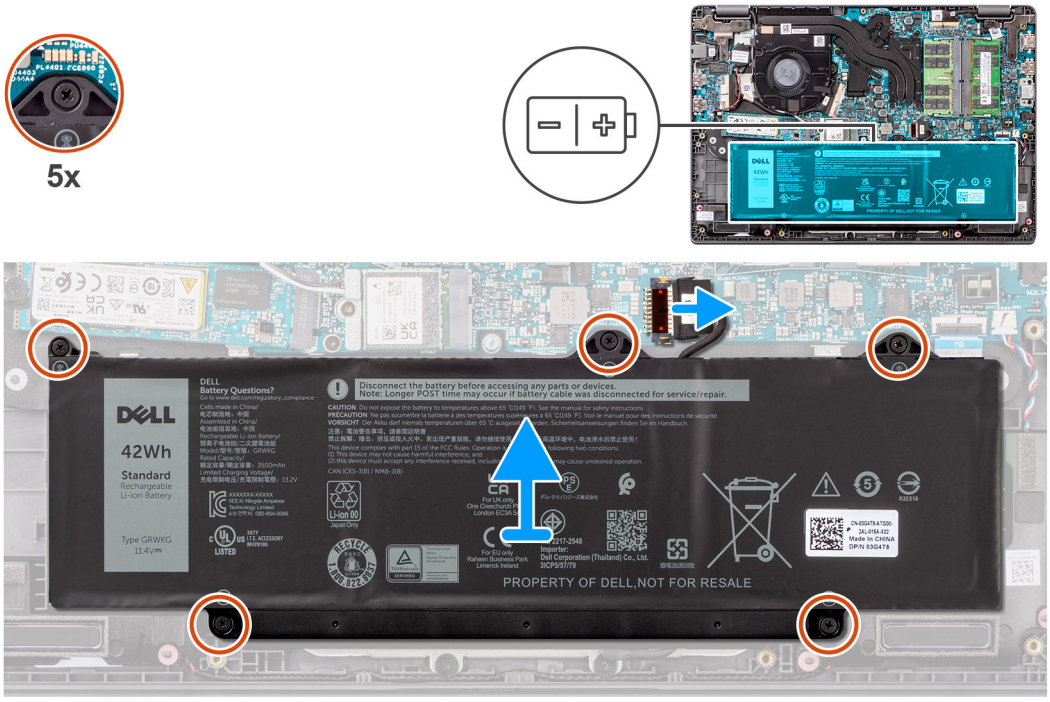


Figure 25. Removing the battery

Steps

1. Use the pull tab to disconnect the battery cable from the connector on the system board.
2. Loosen the five captive screws that secure the battery to the palm-rest and keyboard assembly.
3. Lift the battery off the palm-rest and keyboard assembly.

Installing the battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the battery and provide a visual representation of the installation procedure.

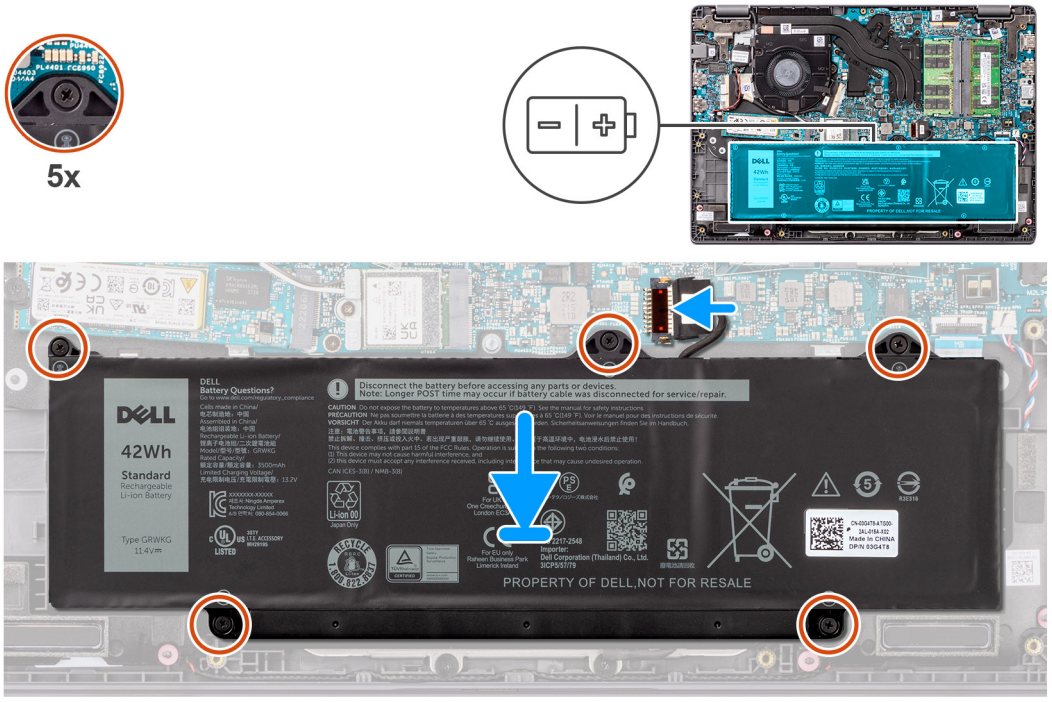


Figure 26. Installing the battery

Steps

1. Align the screw holes on the battery to the screw holes on the palm-rest and keyboard assembly.
2. Tighten the five captive screws to secure the battery to the palm-rest and keyboard assembly.
3. Connect the battery cable to the connector on the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Battery cable

Removing the battery cable

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.

About this task

The following image indicates the location of the battery cable and provides a visual representation of the removal procedure.

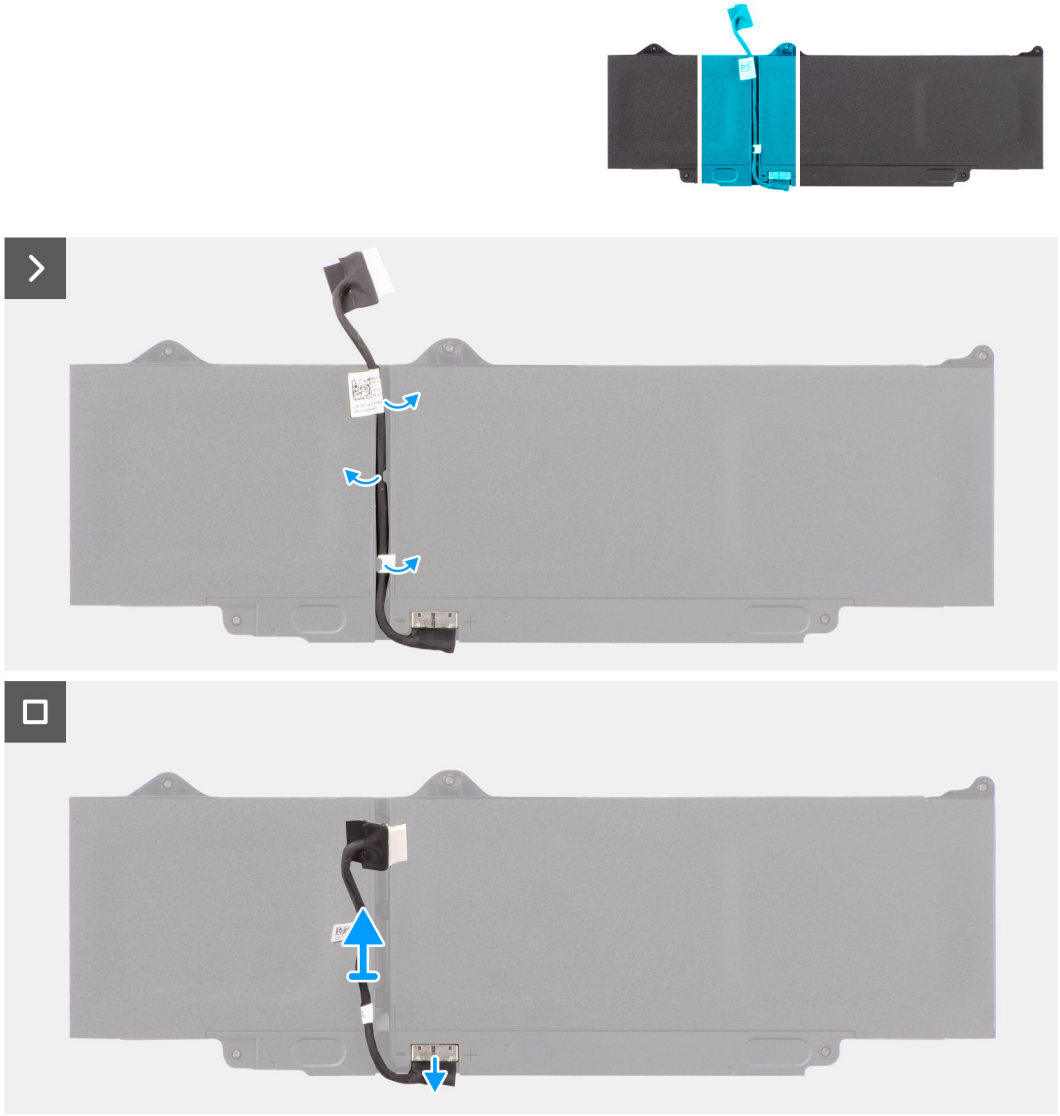


Figure 27. Removing the battery cable

Steps

1. Unroute the battery cable from the routing guides on the battery.
2. Disconnect the battery cable from the connector on the battery.
3. Lift the battery cable away from the battery.

Installing the battery cable

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the battery cable and provides a visual representation of the installation procedure.

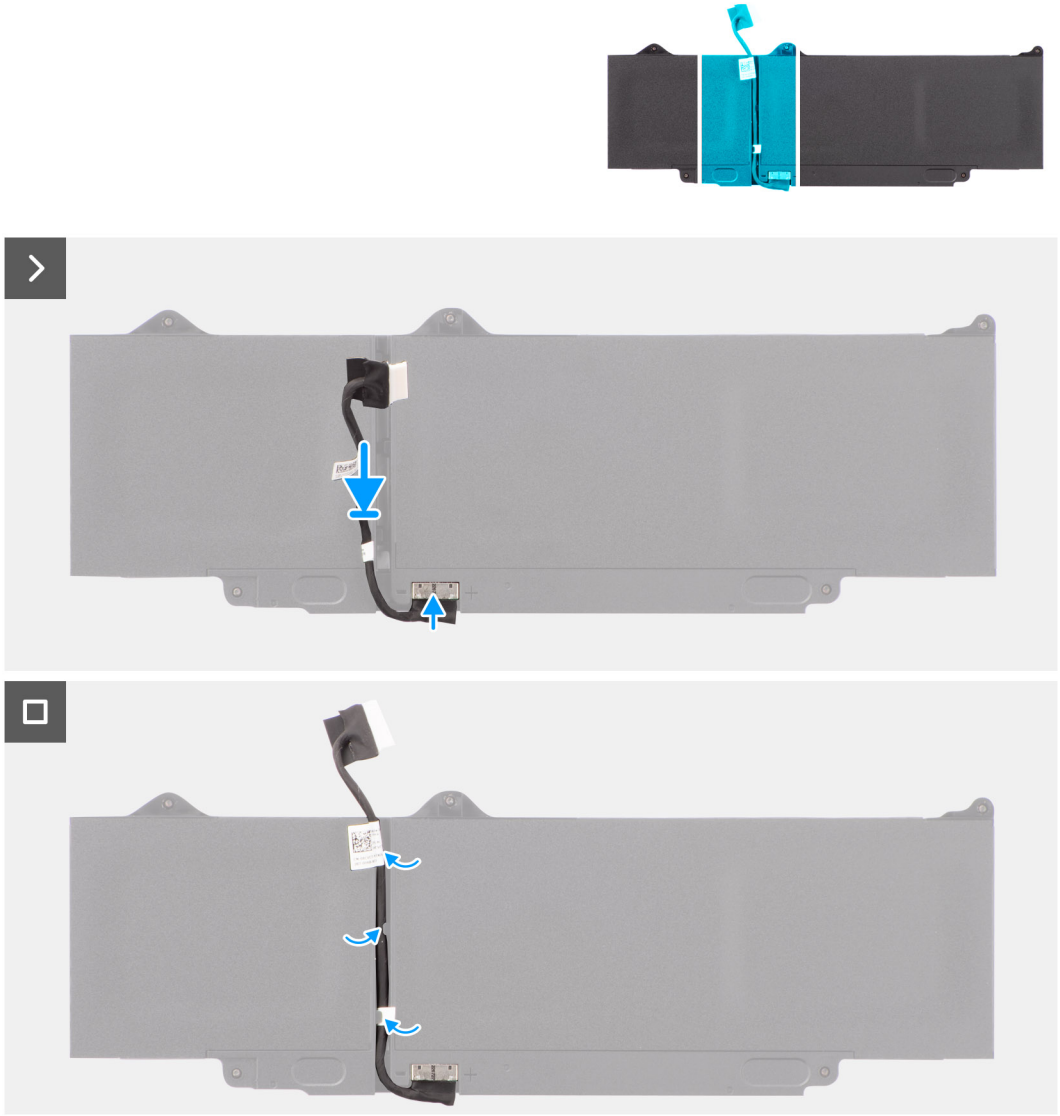


Figure 28. Installing the battery cable

Steps

1. Connect the battery cable to the connector on the battery.
2. Route the battery cable through the routing guides on the battery.

Next steps

1. Install the battery.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

Power-adapter port

Removing the power-adapter port

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the power-adapter port and provide a visual representation of the removal procedure.

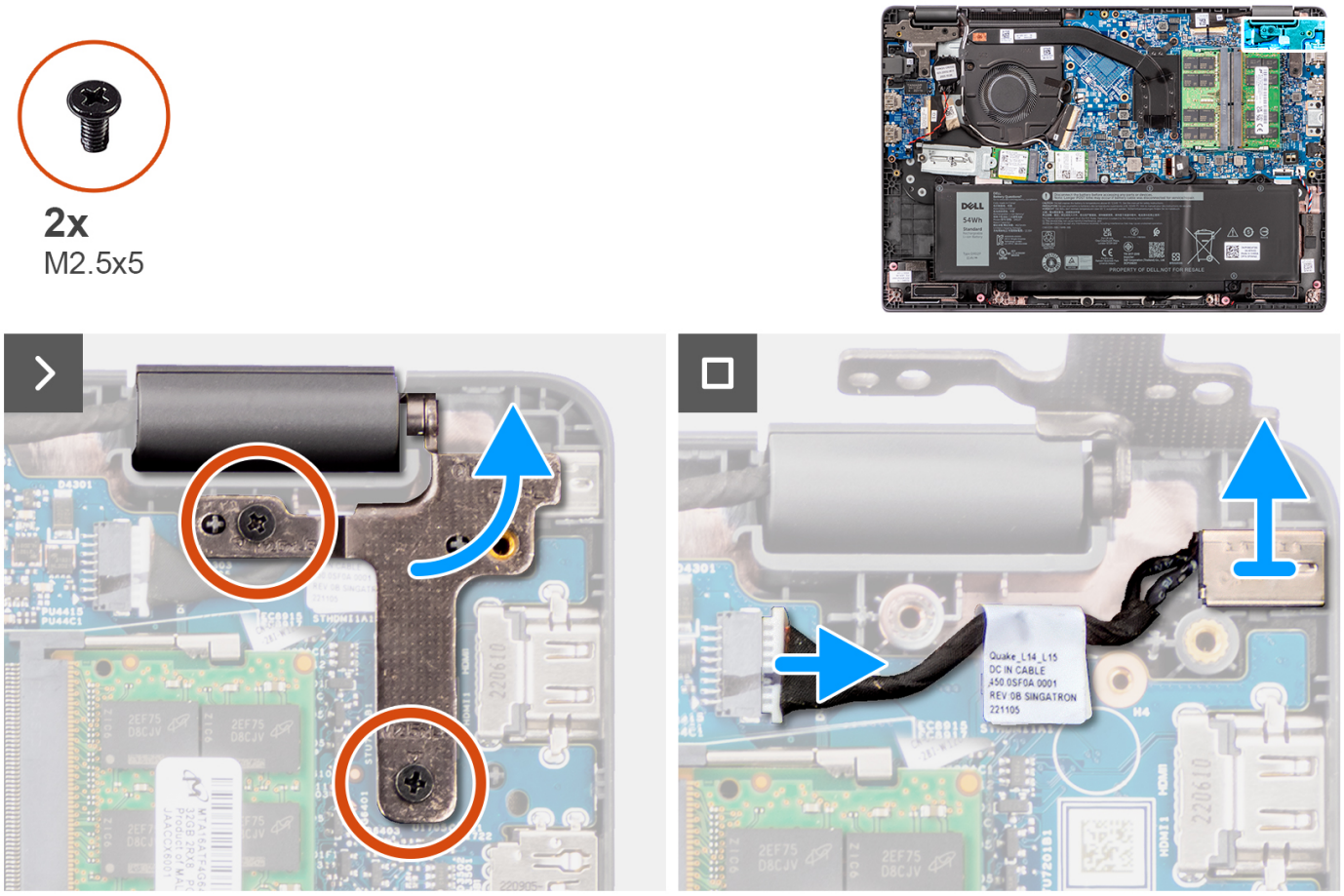


Figure 29. Removing the power-adapter port

Steps

1. Remove the two screws (M2.5x5) that secure the left display hinge to the system.
2. Lift the left display hinge in upward direction away from the system.
3. Disconnect the power-adapter port cable from the connector on the system board and remove the power-adapter port from the system board.

Installing the power-adapter port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the power-adapter port and provide a visual representation of the installation procedure.

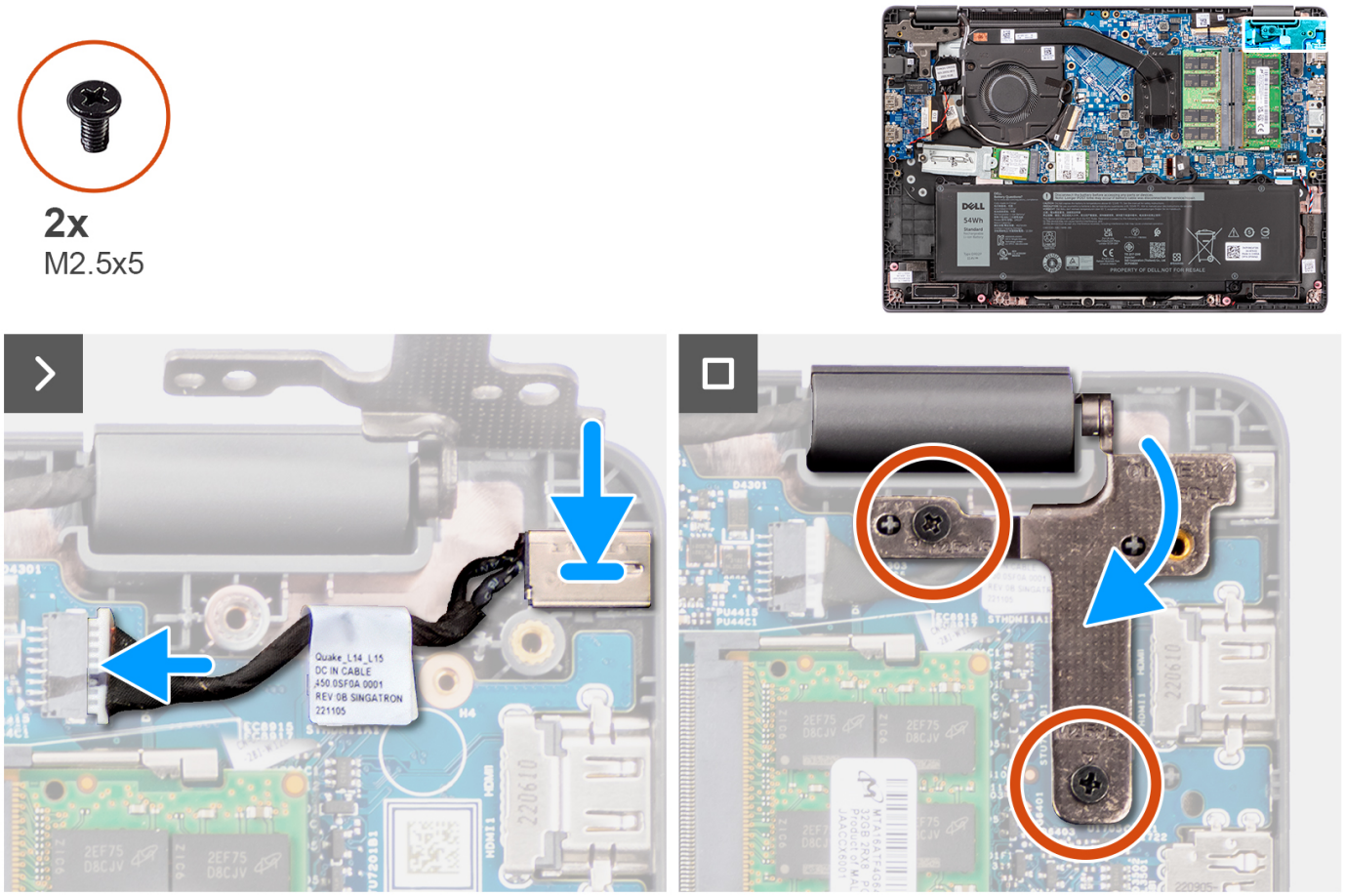


Figure 30. Installing the power-adapter port

Steps

1. Align and place the power-adapter port on the system board.
2. Connect the power-adapter port cable to the connector on the system board.
3. Gently press the left display hinge in downward direction towards the system.
4. Align the screw holes on the left display hinge with the screw holes on the system.
5. Replace the two screws (M2.5x5) to secure the left display hinge to the system.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Heat sink

Removing the heat-sink for integrated graphics

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

NOTE: The heat-sink may become hot during normal operation. Allow sufficient time for the heat-sink to cool before you touch it.

NOTE: For maximum cooling of the processor, do not touch the heat-transfer areas on the heat-sink. The oils in your skin can reduce the heat-transfer capability of the thermal grease.

The following image indicates the location of the heat-sink and provides a visual representation of the removal procedure.

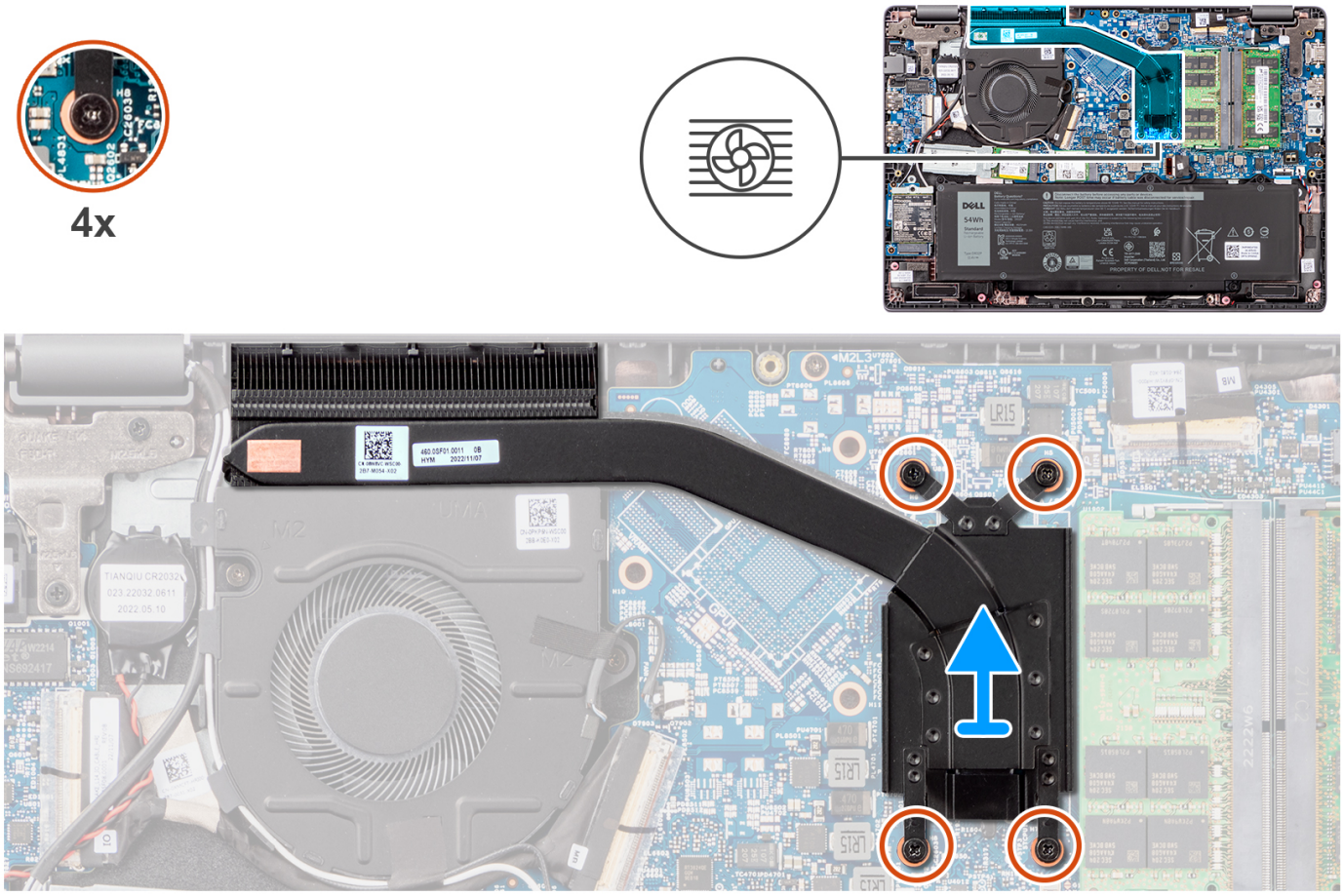


Figure 31. Removing the heat-sink for integrated graphics

Steps

1. Loosen the four captive screws that secure the heat-sink to the system board in the reverse sequential order mentioned on the heat-sink [4 > 3 > 2 > 1].
2. Lift and remove the heat-sink from the system board.

Installing the heat-sink for integrated graphics

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: If either the system board or the heat-sink is replaced, use the thermal grease provided in the kit to ensure that thermal conductivity is achieved.

The following image indicates the location of the heat-sink and provides a visual representation of the installation procedure.

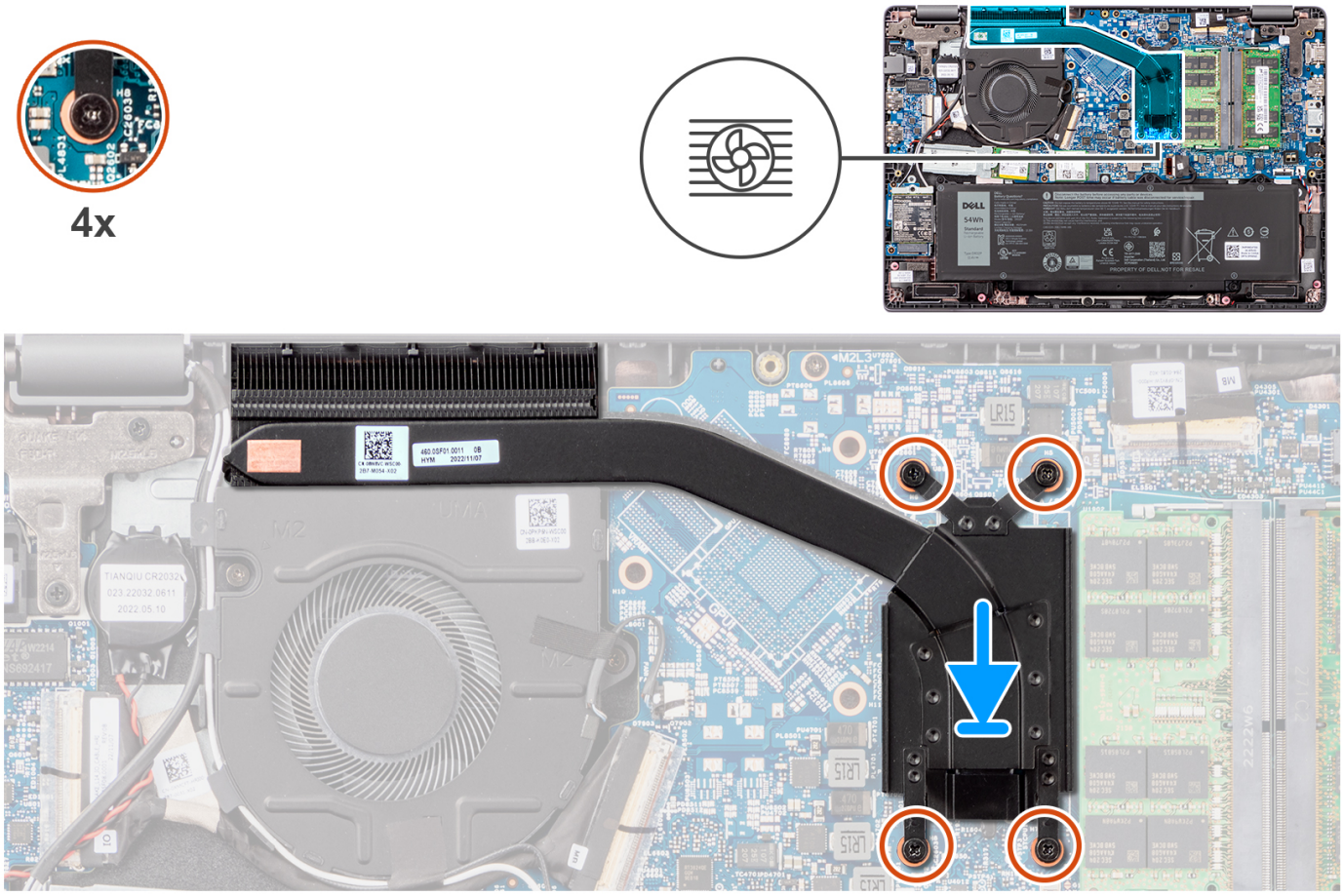


Figure 32. Installing the heat-sink for integrated graphics

Steps

1. Place the heat-sink into its slot on the system board.
2. Align the screw holes on the heat-sink to the screw holes on the system board in the sequential order mentioned on the heat-sink [1 > 2 > 3 > 4] .
3. Tighten the four captive screws to secure the heat-sink to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Removing the heat-sink for discrete graphics

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

NOTE: The heat-sink may become hot during normal operation. Allow sufficient time for the heat-sink to cool before you touch it.

NOTE: For maximum cooling of the processor, do not touch the heat transfer areas on the heat-sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

The following image indicates the location of the heat-sink and provides a visual representation of the removal procedure.

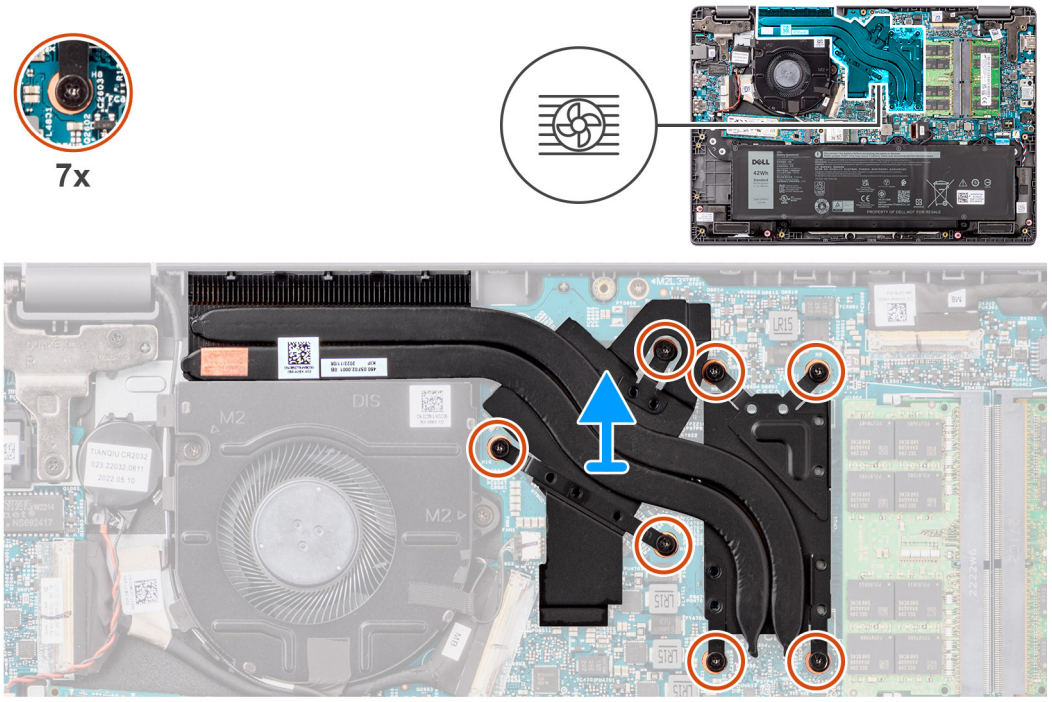


Figure 33. Removing the heat-sink for discrete graphics

Steps

1. Loosen the seven captive screws that secure the heat-sink to the system board in the reverse sequential order mentioned on the thermal heat-sink [7 > 6 > 5 > 4 > 3 > 2 > 1].
2. Lift and remove the heat-sink from the system board.

Installing the heat-sink for discrete graphics

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: If either the system board or the heat-sink is replaced, use the thermal grease that is provided in the kit to ensure that thermal conductivity is achieved.

The following image indicates the location of the heat-sink and provides a visual representation of the installation procedure.

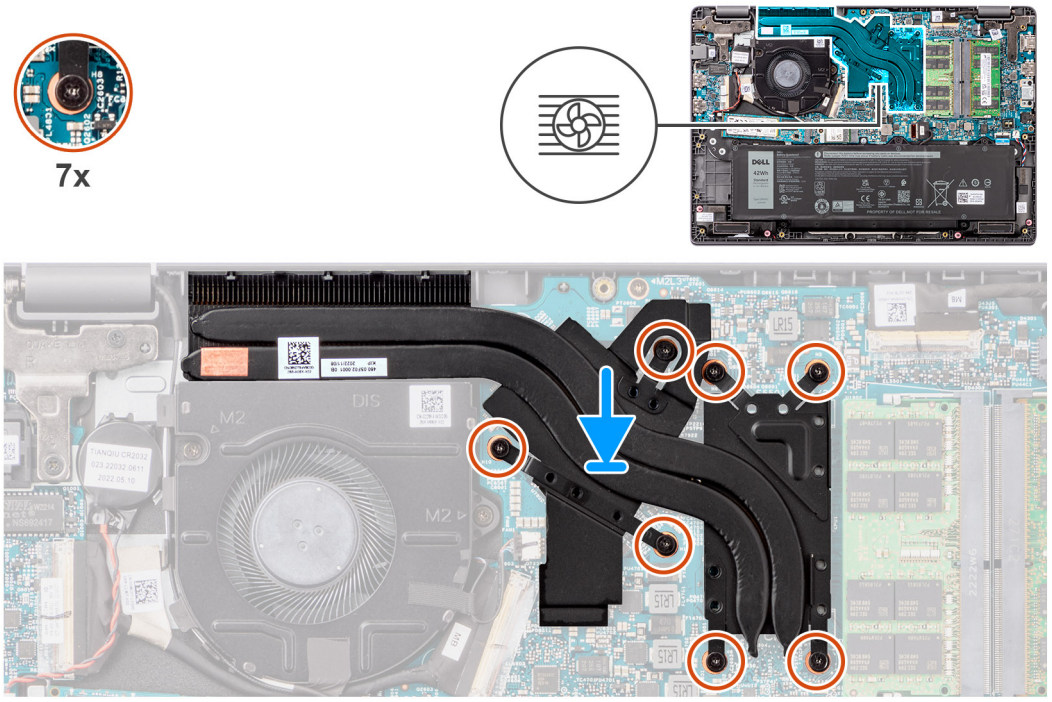


Figure 34. Installing the heat-sink for discrete graphics

Steps

1. Place the heat-sink into its slot on the system board.
2. Align the screw holes on the heat-sink to the screw holes on the system board in the sequential order mentioned on the heat-sink [1 > 2 > 3 > 4 > 5 > 6 > 7] .
3. Tighten the seven captive screws to secure the heat-sink to the system board.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Touchpad

Removing the touchpad

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.

About this task

The following images indicate the location of the touchpad and provide a visual representation of the removal procedure.

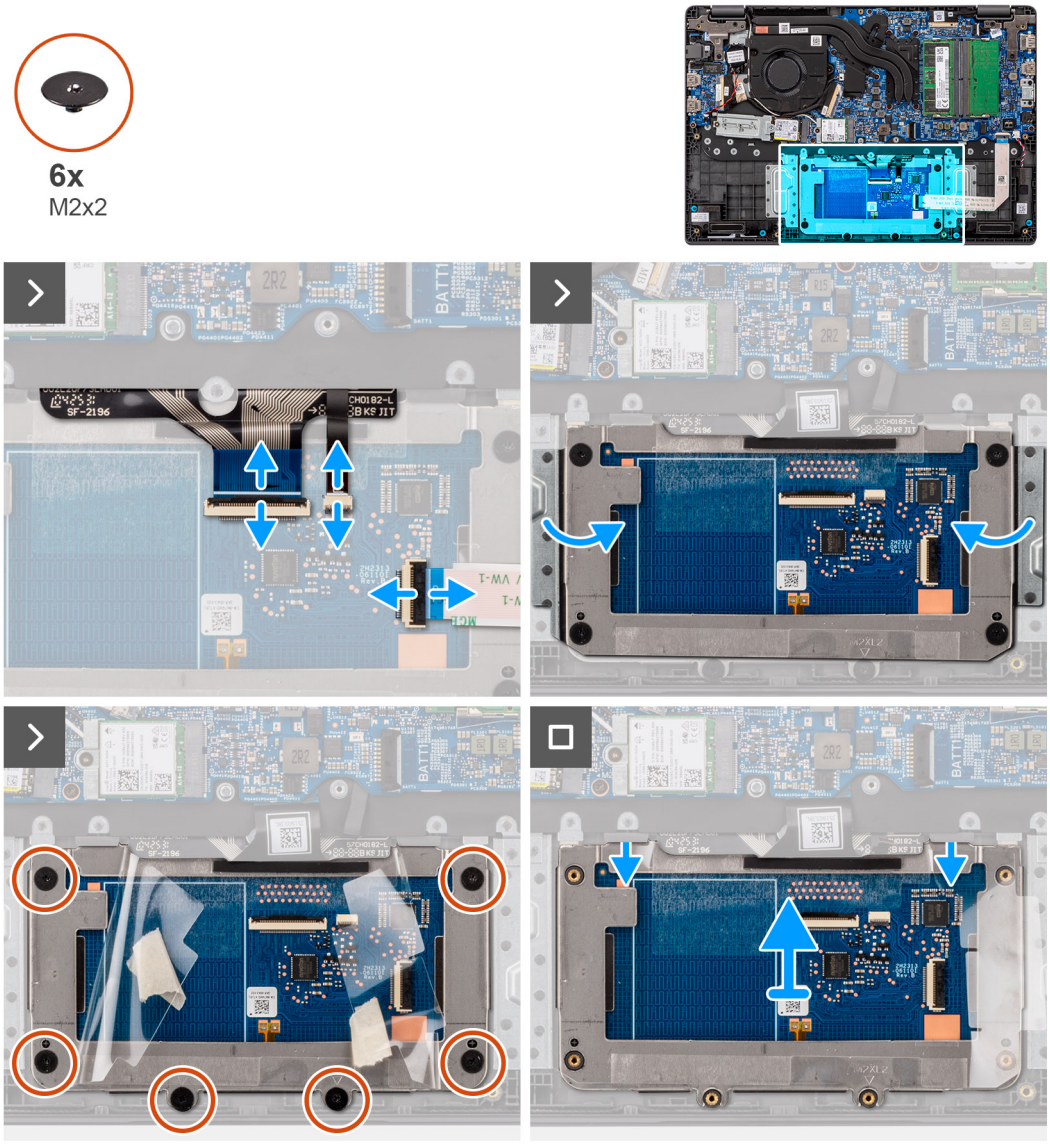


Figure 35. Removing the touchpad

Steps

1. Open the latch and disconnect the touchpad cable from the connector on the system board.
2. Open the latch and disconnect the keyboard cable from the connector on the touchpad module.
3. Open the latch and disconnect the Keyboard-backlight cable from the connector on the touchpad.
4. Partially peel and lift up the adhesive shielding cover from over the touchpad.
5. Remove the six screws (M2x2) that secure the touchpad bracket to the touchpad module.
6. Lift the touchpad module at an angle and slide it out to remove the touchpad module from the palm-rest and keyboard assembly.

Installing the touchpad

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the touchpad and provide a visual representation of the installation procedure.

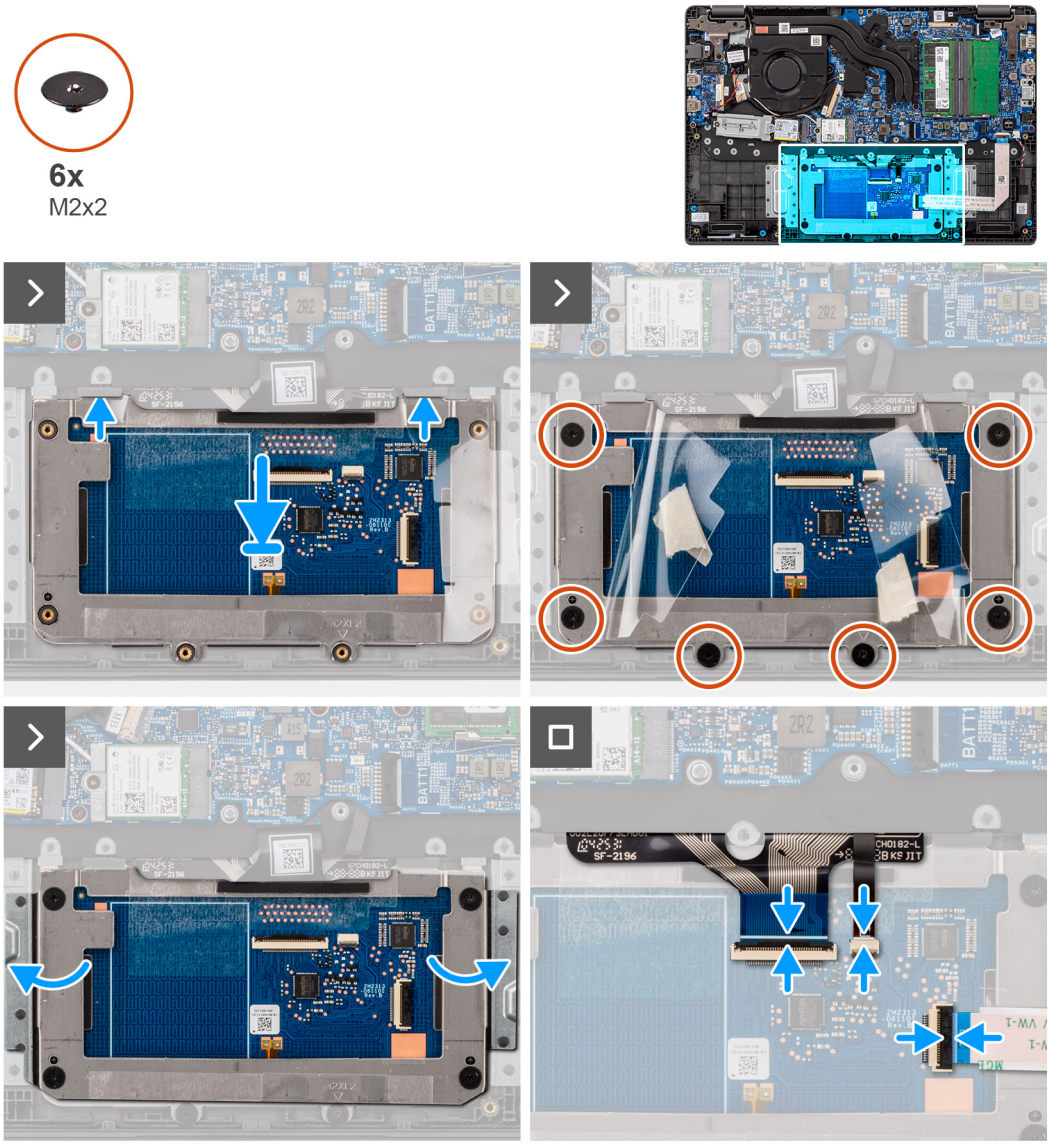


Figure 36. Installing the touchpad

Steps

1. Align and place the touchpad module into the slot on the palm-rest and keyboard assembly.
2. Replace the six screws (M2x2) to secure the touchpad module to the palm-rest and keyboard assembly.
3. Adhere the adhesive shielding cover over the touchpad.
4. Connect the keyboard-backlight cable to the connector on the touchpad module. .
5. Connect the keyboard cable to the connector on the touchpad module close the latch.
6. Connect the touchpad cable to the connector on the system board and close the latch.

Next steps

1. Install the battery.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

I/O board

Removing the I/O board

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.

About this task

The following images indicate the location of the I/O board and provide a visual representation of the removal procedure.

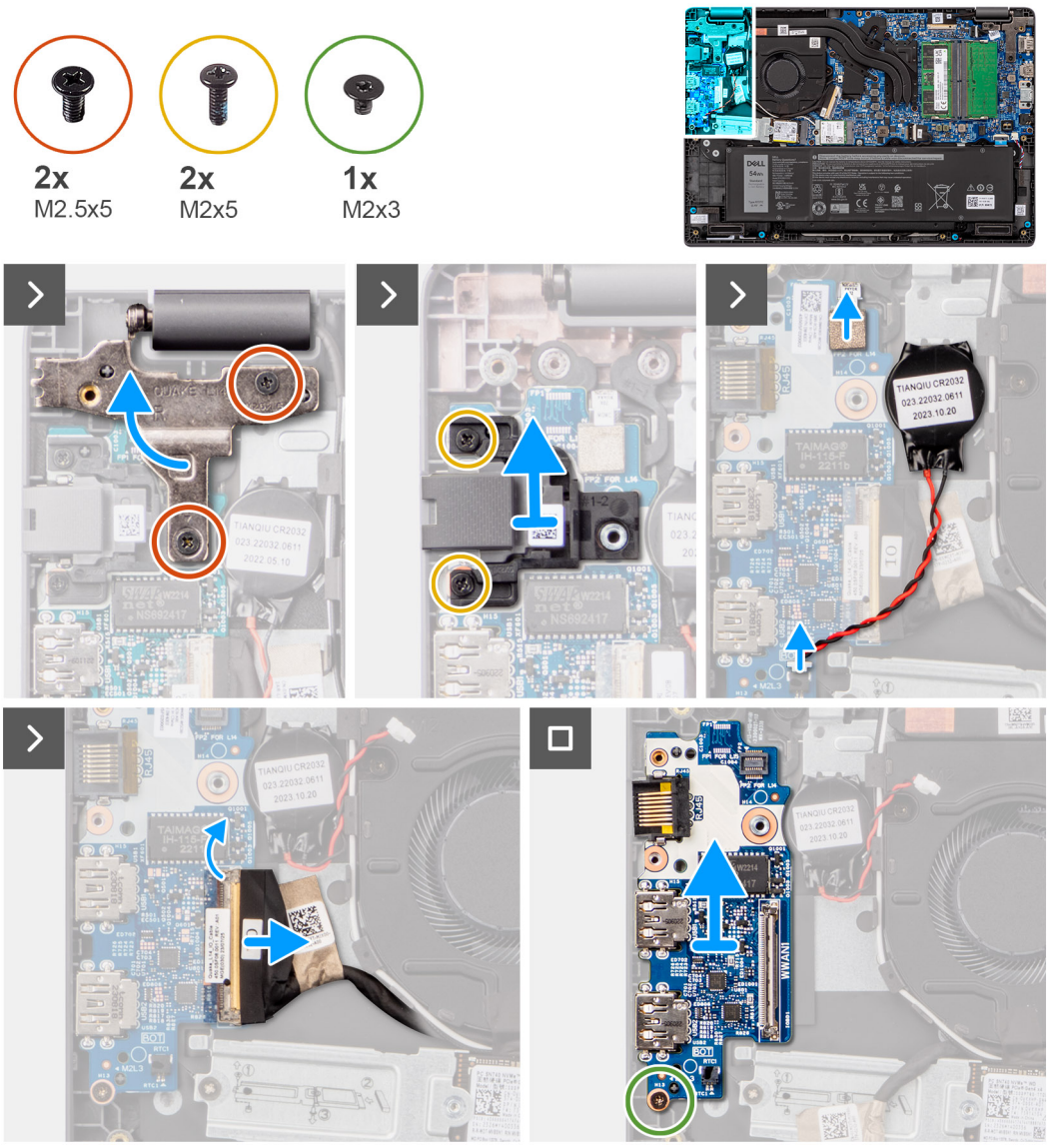


Figure 37. Removing the I/O board

CAUTION: The system has a coin-cell battery that is connected to the I/O board. Disconnecting the I/O board cable resets the BIOS setup program settings to default. Note the BIOS setup program settings before disconnecting the I/O board cable.

Steps

1. Remove the two screws (M2.5x5) that secure the right display hinge to the system.
2. Lift the right display hinge in upward direction away from the system.
3. Remove the two screws (M2x5) that secure the network port.

   NOTE: The RJ45 Ethernet port cover can be removed or installed as a stand-alone component.

4. Lift and remove the network port from the system.
5. Disconnect the coin-cell battery cable from the connector on the I/O board.
6. Disconnect the fingerprint reader flexible printed circuits from the connector on the I/O board.

   NOTE: This procedure applies only to systems shipped with a power button with fingerprint reader installed.

7. Open the latch and disconnect the I/O-board cable from the I/O board.
8. Remove the screw (M2x3) that secures the I/O board to the palm-rest and keyboard assembly.
9. Lift the I/O board off the palm-rest and keyboard assembly.

Installing the I/O board

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the I/O board and provide a visual representation of the installation procedure

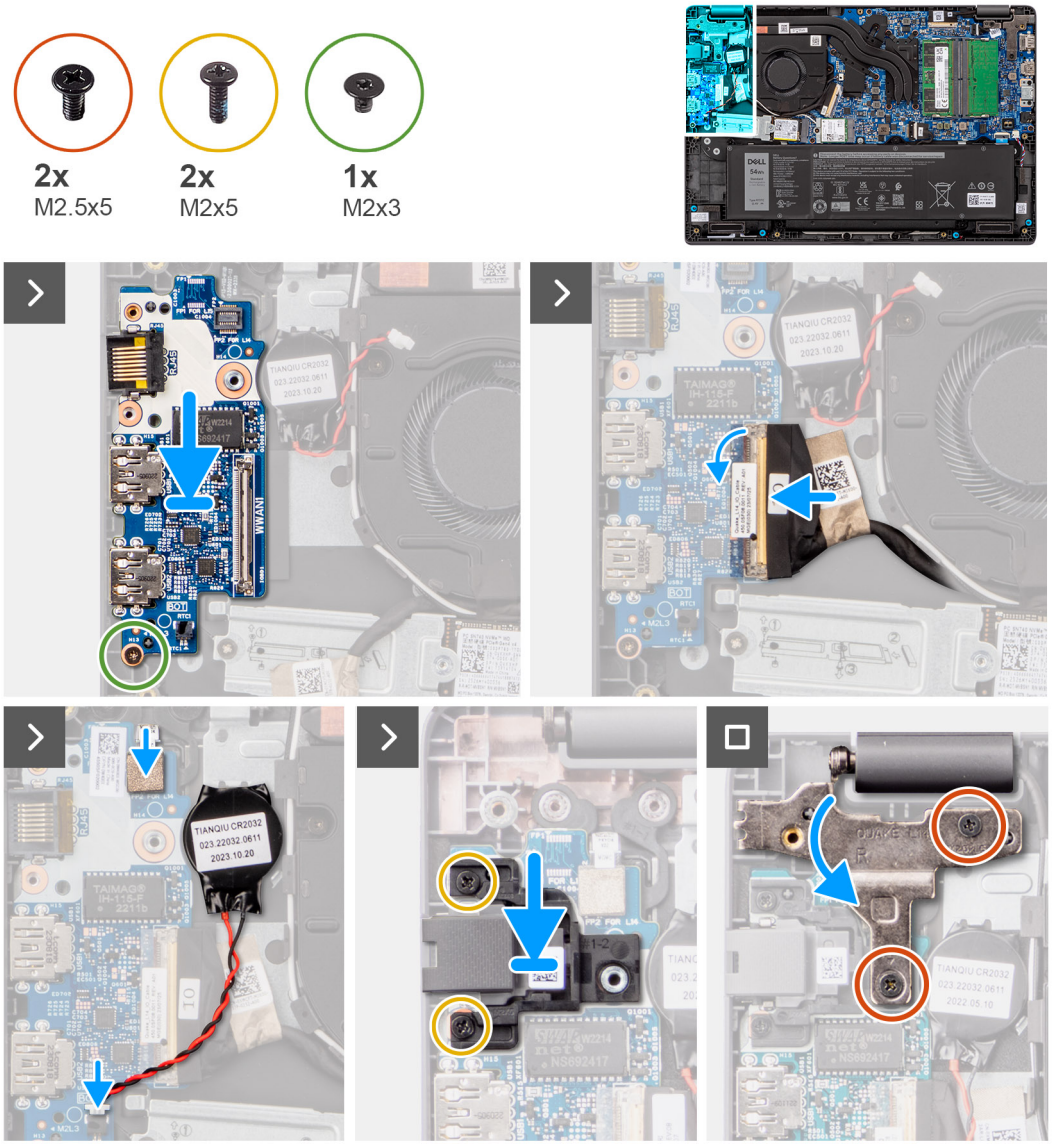


Figure 38. Installing the I/O board

.

CAUTION: The system has a coin-cell battery that is connected to the I/O board. Disconnecting the I/O board cable resets the BIOS setup program settings to default. Note the BIOS setup program settings before disconnecting the I/O board cable.

Steps

1. Place and align the screw holes on the I/O board with the screw holes on the palm-rest and keyboard assembly.
2. Replace the screw (M2x3) to secure the I/O board to the palm-rest and keyboard assembly.
3. Connect the I/O-board cable to the connector on the I/O board and close its latch.
4. Connect the fingerprint reader flexible printed circuits to the connector on the I/O board securing the fingerprint reader flexible printed circuits.

   NOTE: This procedure applies only to systems shipped with a power button with fingerprint reader installed.

5. Connect the coin-cell battery cable to the connector on the I/O board.
6. Connect the network port on the I/O board.
7. Replace the two screws (M2x5) to secure the network port.
8. Gently press the right display hinge in downward direction towards the system.

9. Align the screw holes on the right display hinge with the screw holes on the system.
10. Replace the three screws (M2.5x5) to secure the right display hinge to the system.

Next steps

1. Install the base cover.
2. Follow the procedure in After working inside your computer.

Power-button board

Removing the power button

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the I/O board.

About this task

The following images indicate the location of the power button and provide a visual representation of the removal procedure.

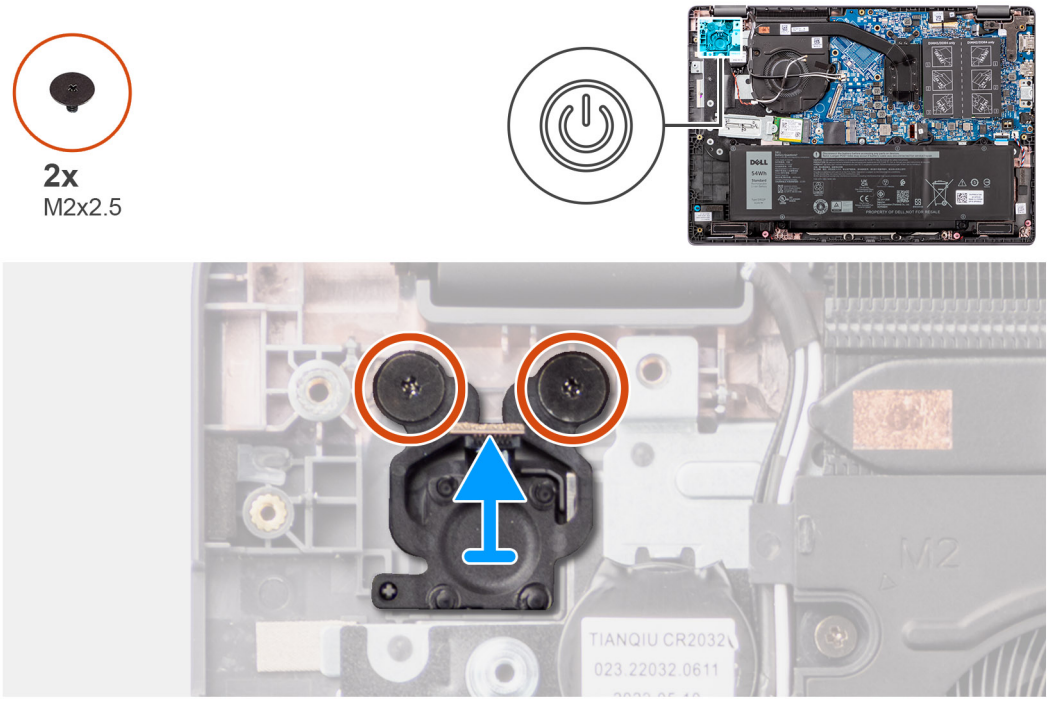


Figure 39. Removing the power button

Steps

1. Remove the two screws (M2x2.5) that secures the power button to the palm-rest and keyboard assembly.
2. Lift to remove the power button from the slot on the palm-rest and keyboard assembly.

Installing the power button

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the power button and provide a visual representation of the installation procedure.

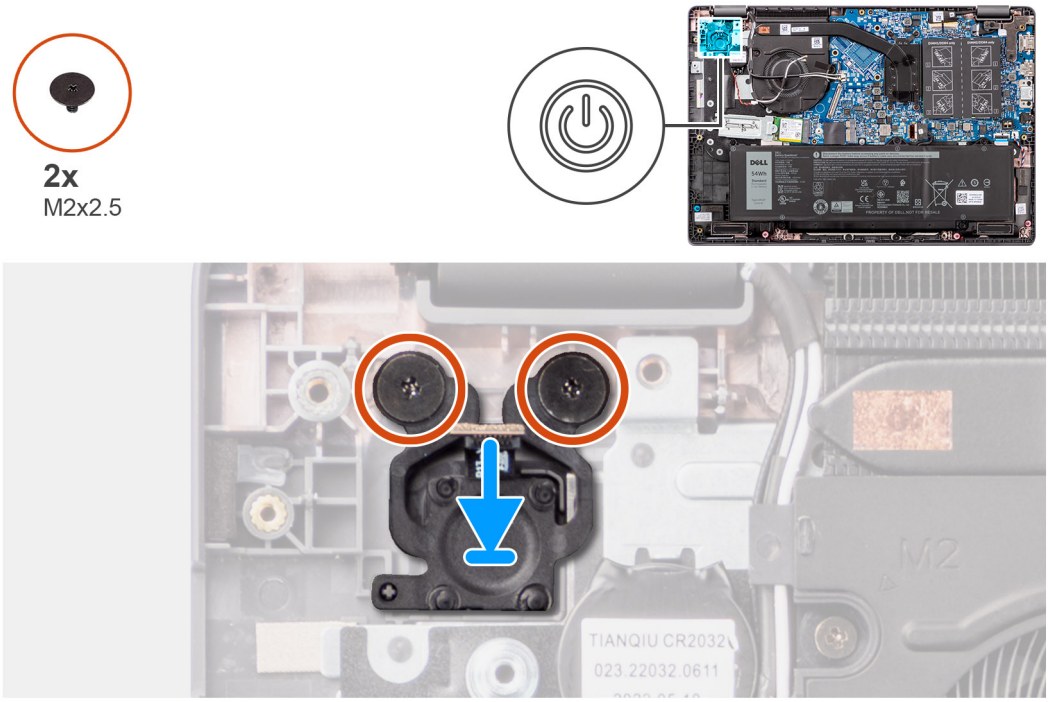


Figure 40. Installing the power button

Steps

1. Align the screw holes on the power button to the screw holes on the palm-rest and keyboard assembly.
2. Replace the two screws (M2x2.5) to secure the power button to the palm-rest and keyboard assembly.

Next steps

1. Install the I/O board.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

System board

Removing the system board

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the M.2 2230 solid-state drive
5. Remove the wireless card.
6. Remove the fan.
7. Remove the heat sink.
8. Remove the display assembly.

About this task

The following image indicates the connectors on your system board.

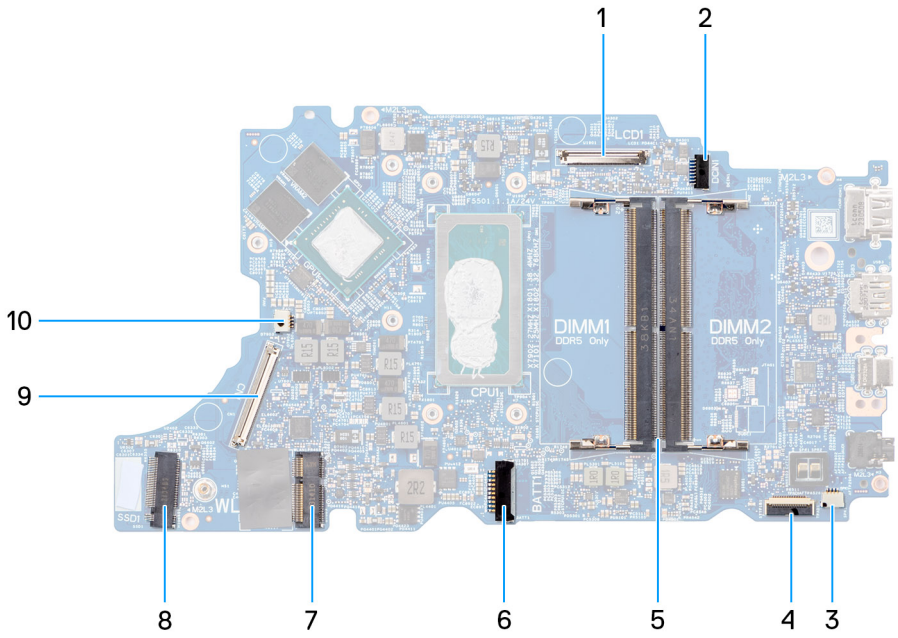


Figure 41. System-board connectors

1. Display-cable connector
2. DC-in port connector
3. Speaker-cable connector
4. Touchpad-cable connector
5. Memory-module connectors
6. Battery-cable connector
7. WLAN-card connector
8. M.2 solid-state drive connector
9. I/O-board cable connector
10. Fan-cable connector

The following images indicate the location of the system board and provide a visual representation of the removal procedure.

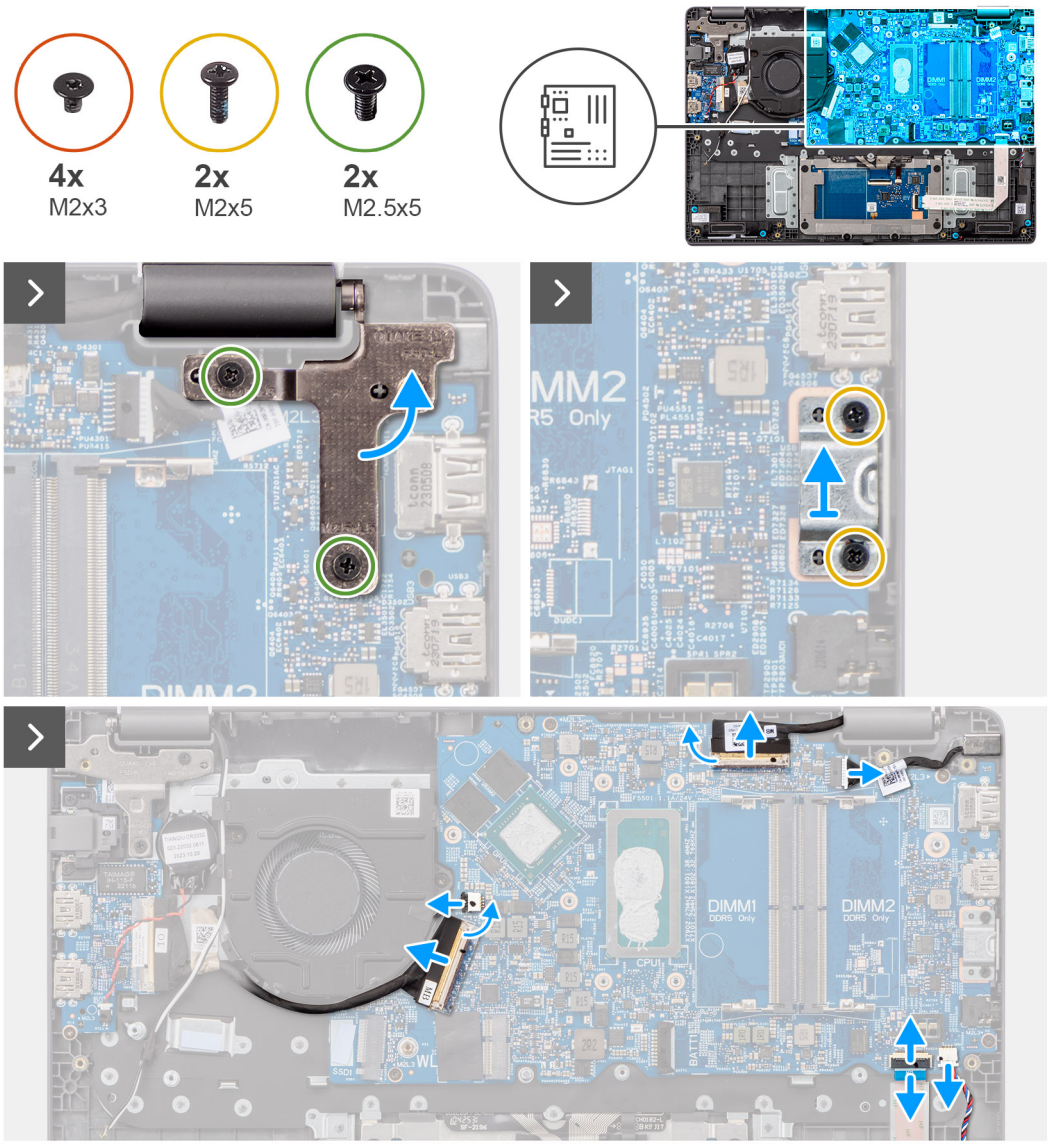
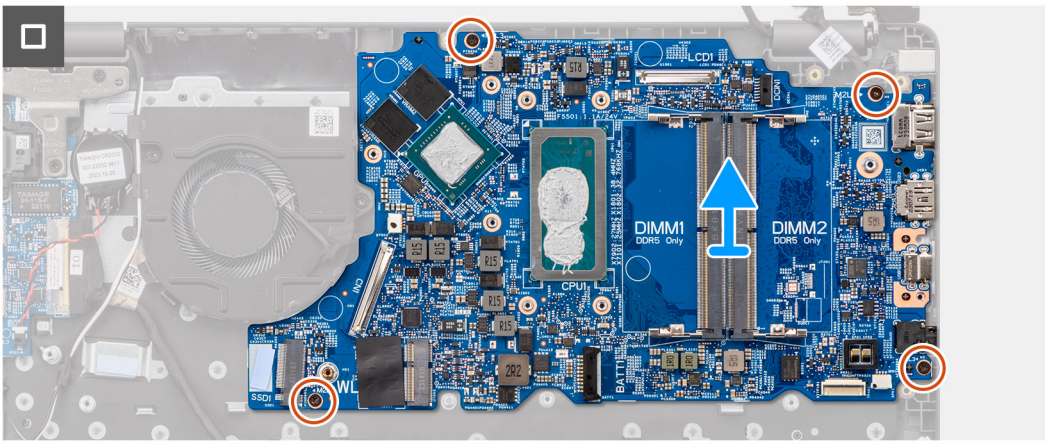


Figure 42. Removing the System Board



CAUTION: The system has a coin-cell battery that is connected to the I/O board. Disconnecting the I/O board cable resets the BIOS setup program settings to default. Note the BIOS setup program settings before disconnecting the I/O board cable.

Steps

1. Remove the two screws (M2.5x5) that secure the left display hinge to the system board.
2. Lift the left display hinge in upward direction away from the system board.
3. Remove the two screws (M2x5) that secure the USB type-C bracket to the system board.
4. Lift and remove the USB type-C bracket from the system board.
5. Disconnect the following cables from the respective connectors on the system board:

- Touchpad cable
- I/O board cable
- Speaker cable
- Fan cable
- Display cable
- Power adapter port cable

6. Remove the four screws (M2x3) that secure the system board to the palm-rest and keyboard assembly.
7. Remove the system board from the palm-rest and keyboard assembly.

Installing the system board

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the system board and provide a visual representation of the installation procedure.

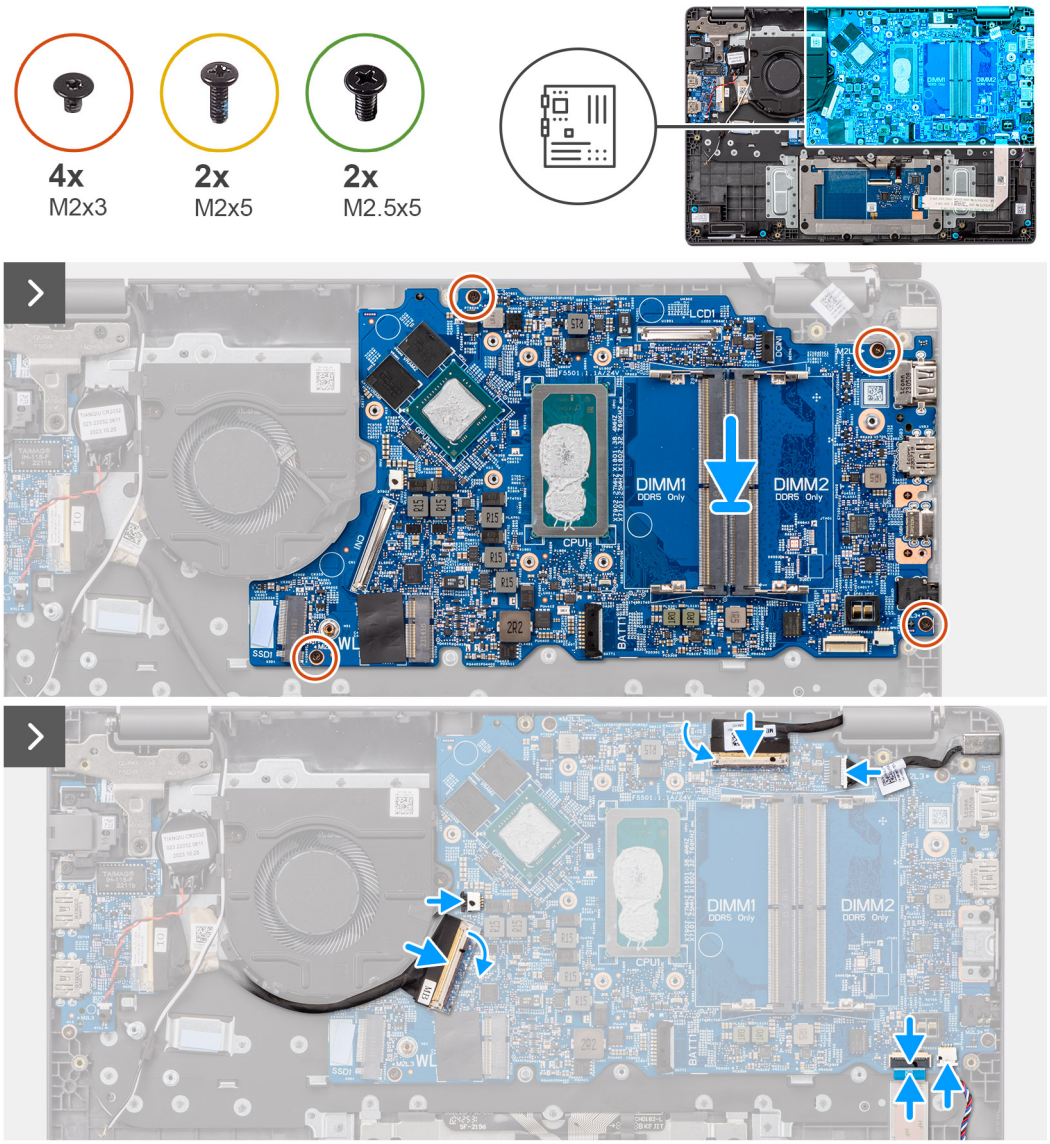


Figure 43. Installing the system board

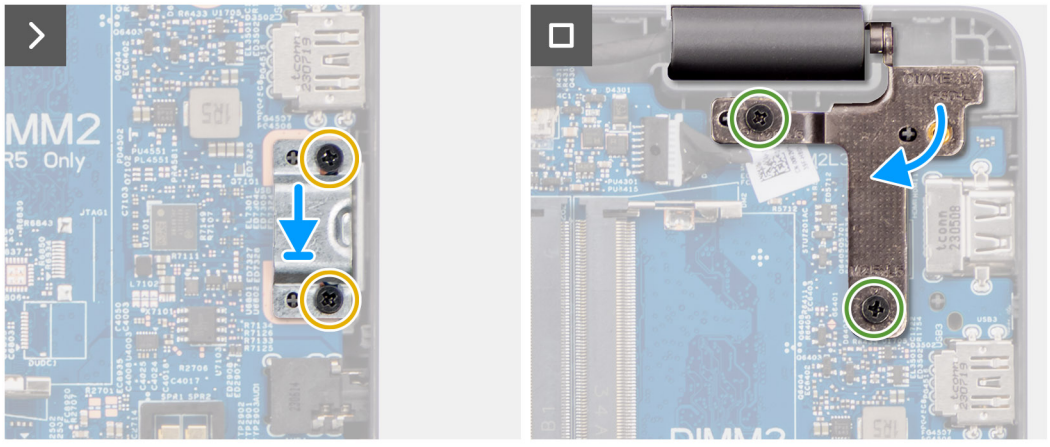


Figure 44. Installing the system board

CAUTION: The system has a coin-cell battery that is connected to the I/O board. Disconnecting the I/O board cable resets the BIOS setup program settings to default. Note the BIOS setup program settings before disconnecting the I/O board cable.

Steps

1. Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
2. Replace the four screws (M2x3) to secure the system board to the palm-rest and keyboard assembly.
3. Connect the following cables to the respective connectors on the system board:

- Touchpad cable
- I/O board cable
- Speaker cable
- Fan cable
- Display cable
- Power adapter port cable

4. Align the screw holes on the USB type-C bracket with the screw holes on the system board.
5. Replace the screw (M2x5) to secure the USB type-C bracket to the system board.
6. Gently press the left display hinge in downward direction towards the system board.
7. Align the screw holes on the left display hinge with the screw holes on the system board.
8. Replace the two screws (M2.5x5) to secure the left display hinge to the system board.

Next steps

1. Install the display assembly.
2. Install the heat-sink.
3. Install the fan.
4. Install the wireless card.
5. Install the M.2 2230 solid-state drive
6. Install the battery.
7. Install the base cover.
8. Follow the procedure in After working inside your computer.

Palm-rest and keyboard assembly

Removing the palm-rest and keyboard assembly

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the battery.
4. Remove the M.2 2230 solid-state drive
5. Remove the wireless card.
6. Remove the coin-cell battery.
7. Remove the display assembly.
8. Remove the I/O board.
9. Remove the power button
10. Remove the speakers.
11. Remove the touchpad.
12. Remove the fan.
13. Remove the heat-sink.
14. Remove the system board.

NOTE: The system board can be removed with the heat-sink that is attached to it in order to simplify the procedure and preserve the thermal bond between the system board and the heat-sink.

15. Remove the power-adapter port.

About this task

NOTE: The palm-rest assembly cannot be further disassembled once all the pre-removal parts procedures are completed. If the keyboard is malfunctioning and is required to be replaced, replace the entire palm-rest assembly.

The image below shows the palm-rest assembly after the pre-removal parts procedures have been performed, after performing the steps mentioned in the prerequisites, you are left with the palm-rest assembly.

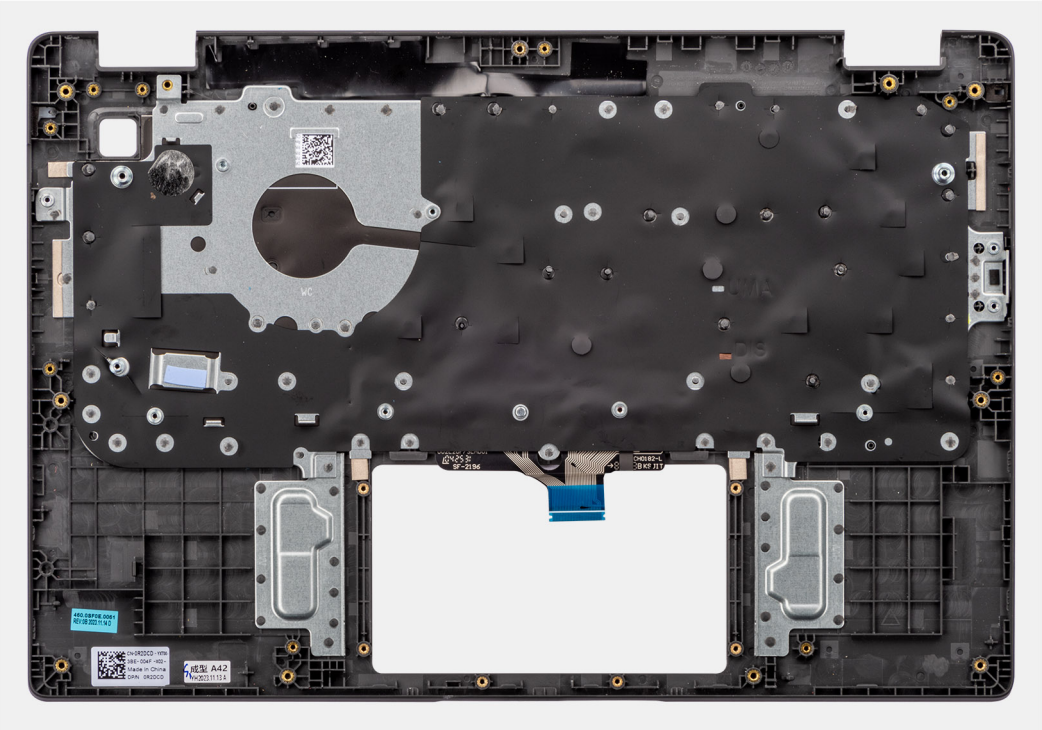


Figure 45. Removing the palm-rest and keyboard assembly

Installing the palm-rest and keyboard assembly

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image shows the palm-rest and keyboard assembly.

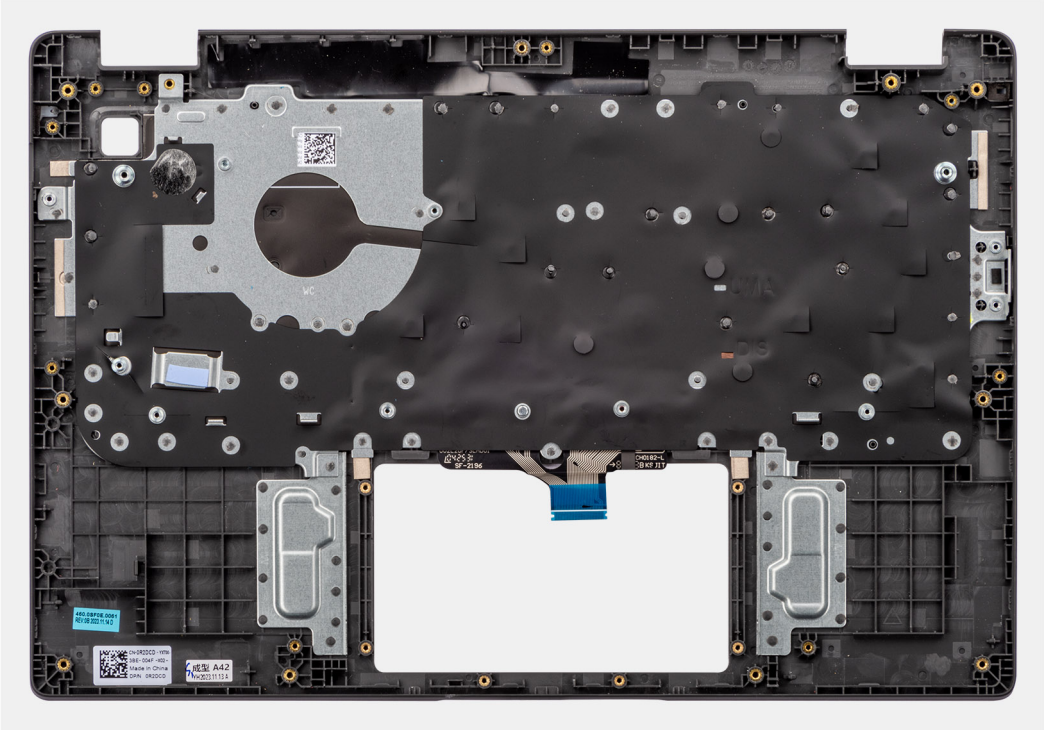


Figure 46. Installing the palm-rest and keyboard assembly

Steps

Place the palm-rest and keyboard assembly on a flat surface.

Next steps

1. Install the power-adapter port.
2. Install the system board.

   NOTE: The system board can be installed with the thermal heat-sink attached to it in order to simplify the procedure and preserve the thermal bond between the system board and the thermal heat-sink.

3. Install the touchpad.
4. Install the speakers.
5. Install the power button .
6. Install the I/O board.
7. Install the display assembly.
8. Install the coin-cell battery.
9. Install the heat-sink.
10. Install the fan.
11. Install the wireless card.
12. Install the M.2 2230 solid-state drive
13. Install the battery.
14. Install the base cover.
15. Follow the procedure in After working inside your computer.

Display assembly

Removing the display assembly

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the wireless card.

About this task

NOTE: The display assembly removal procedure is the same for both clamshell and 2-in-1 convertible chassis.

The following images indicate the location of the display assembly and provide a visual representation of the removal procedure.

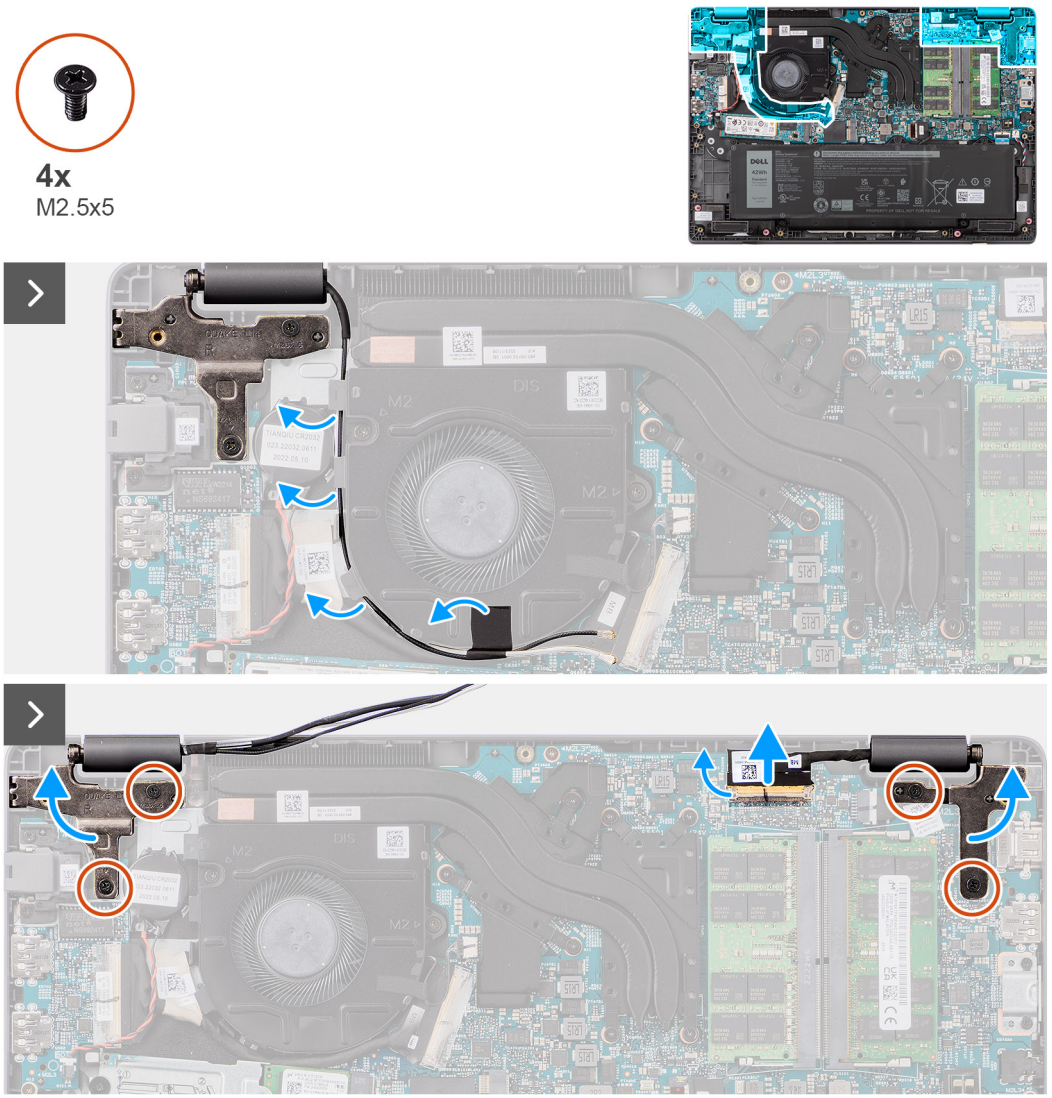


Figure 47. Removing the display assembly

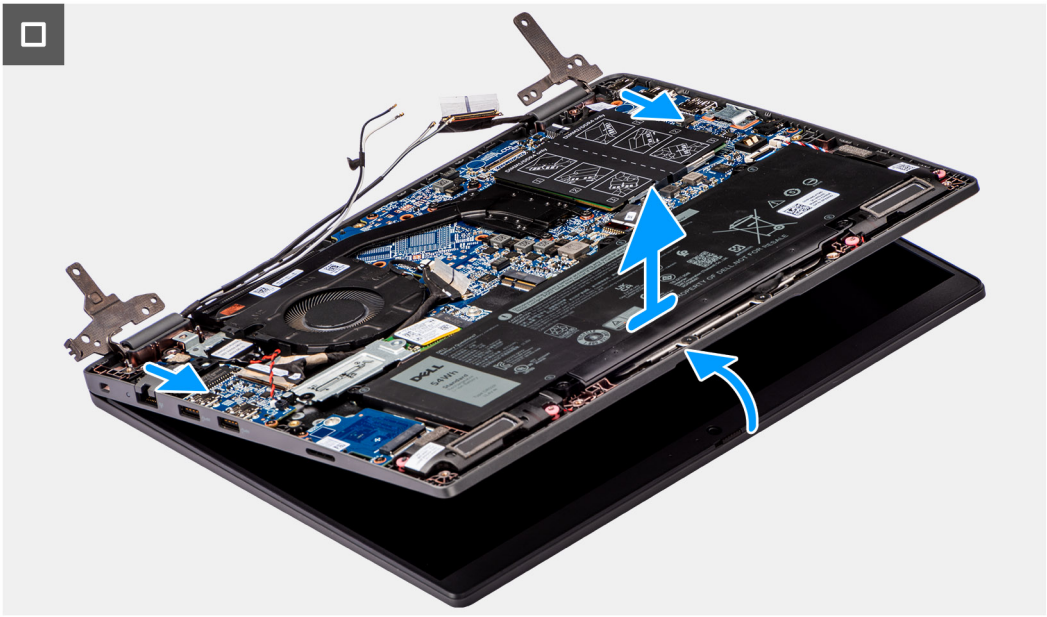


Figure 48. Removing the display assembly

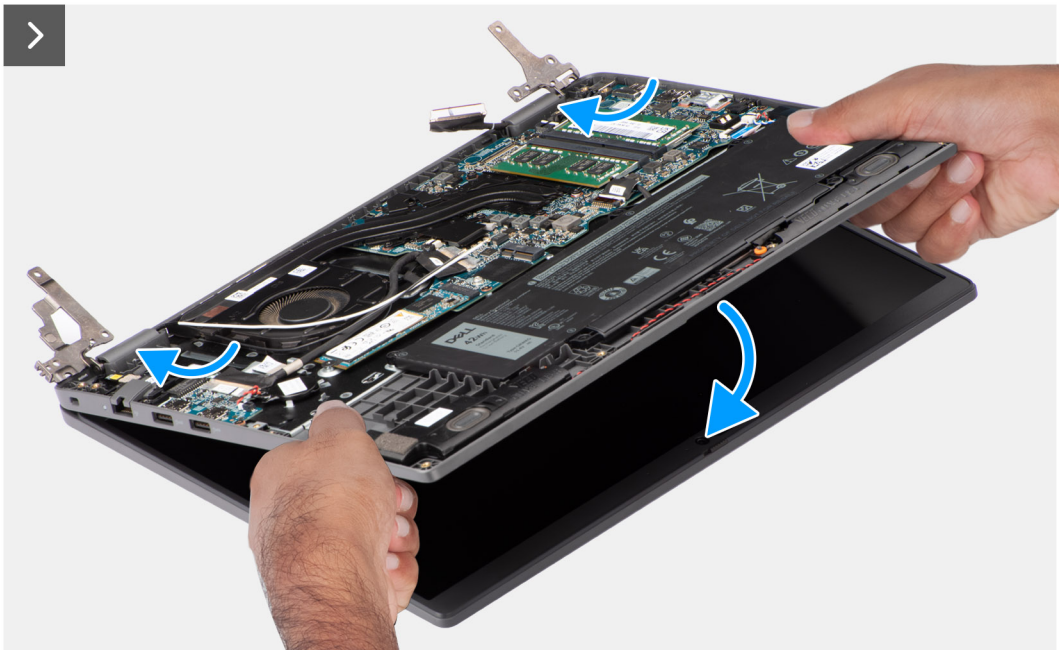


Figure 49. Removing the display assembly

Steps

1. Place the system on a flat surface such that the palm-rest and keyboard assembly lay flat on the surface.
2. Peel the adhesive tape that secures the display cable and remove antenna cable from routing guides.
3. Open the latch and disconnect the display cable from the connector on the system board.
4. Remove the four screws (M2.5x5) that secure the display hinges to the palm-rest and keyboard assembly.
5. Lift the left and right hinges in upward direction, away from the system.
6. Lift the palm-rest and keyboard assembly at an angle to free it from the hinges and remove it from the display assembly.

Installing the display assembly

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

NOTE: The display assembly installation procedure is the same for both clamshell and 2-in-1 convertible chassis.

NOTE: Ensure that the hinges are opened to the maximum before replacing the display assembly on the palm-rest and keyboard assembly.

The following images indicate the location of the display assembly and provide a visual representation of the installation procedure.

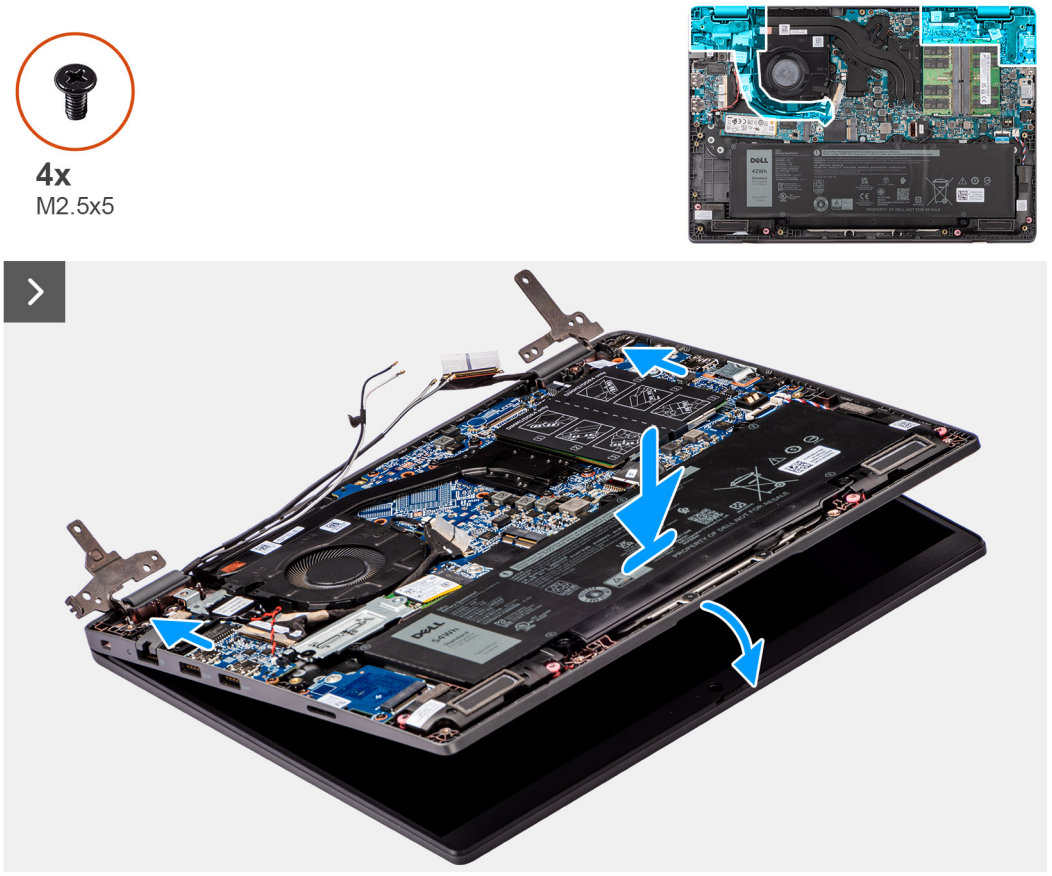


Figure 50. Installing the display assembly

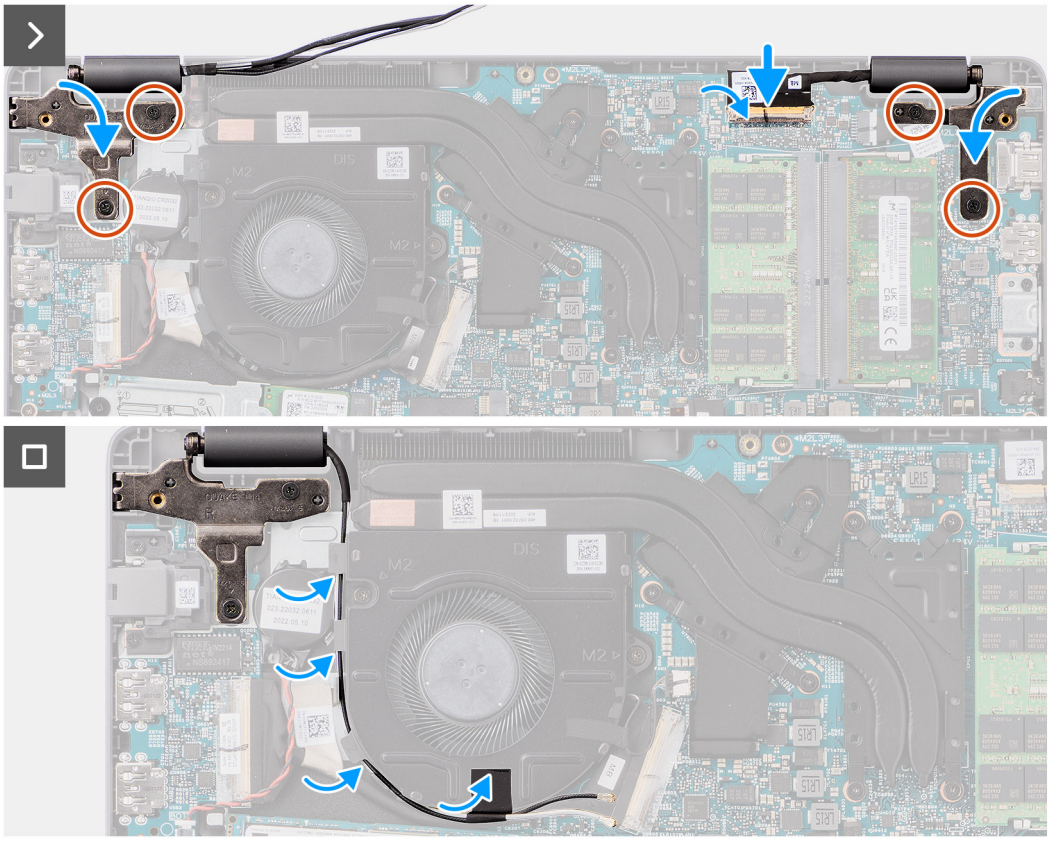


Figure 51. Installing the display assembly

Steps

1. Place the display assembly on a flat surface.
2. Slide the chassis assembly at an angle and place the system chassis under the hinges of the display assembly.
3. Gently press down on the display hinges to align the screw holes on the display hinges with the screw holes on the palm-rest and keyboard assembly.
4. Replace the four screws (M2.5x5) to secure the display hinges to the palm-rest and keyboard assembly.
5. Connect the display cable to its connector on the system board.
6. Adhere the adhesive tape to secure the display cable.
7. Re-route the wireless card antenna cable back into their routing guides.

Next steps

1. Install the wireless card.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

Display bezel

Removing the display bezel

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the display assembly.

About this task

The following image shows the display bezel and provide a visual representation of the removal procedure.

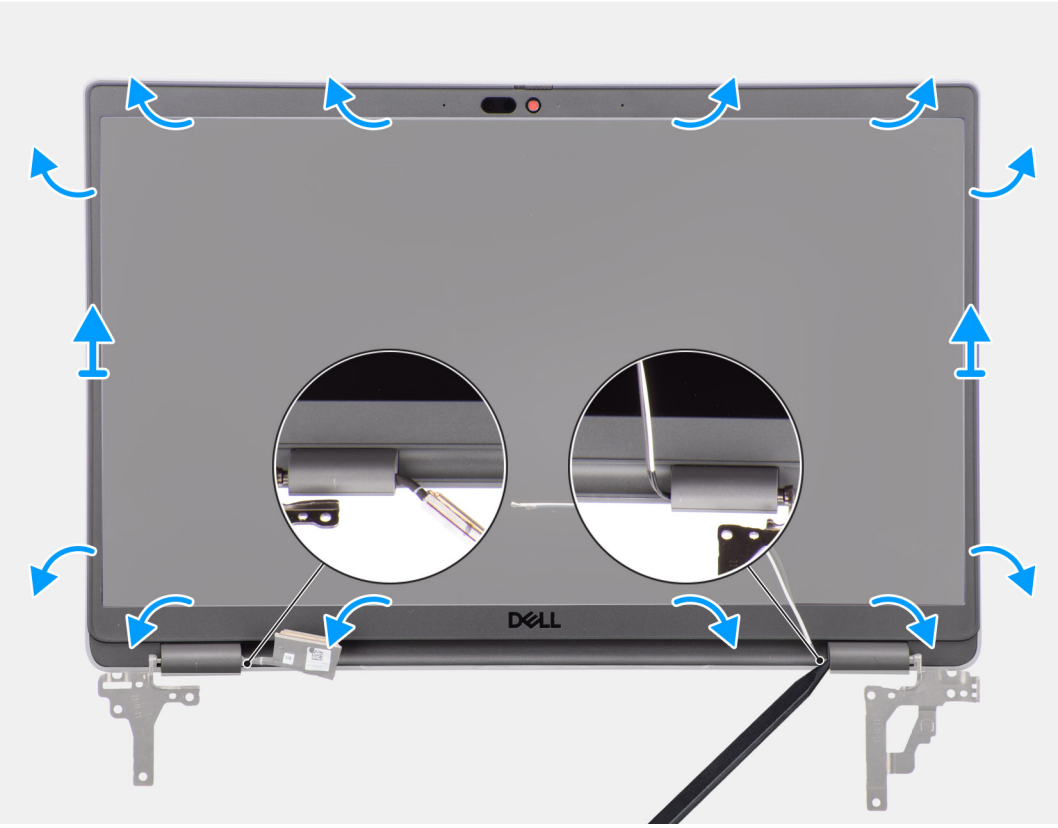


Figure 52. Removing the display bezel

Steps

NOTE: The display bezel is adhered to the display panel with adhesive. Insert a plastic scribe into the recesses near both hinge caps to start the prying process to release the display bezel. Pry along the outside edge of the display bezel and work your way around the entire display bezel until the display bezel is separated from the display cover.

CAUTION: Carefully pry and remove the display bezel to minimize the risk of display panel damages.

1. Using a plastic scribe, pry open the recesses near the left and right hinges on the bottom edge of the display bezel.
2. Carefully work your way around the edges of the display bezel to release it from the display back cover.
3. Lift the display bezel from the display assembly.

   NOTE: The display bezel is a consumable part and should be replaced with a new display bezel anytime it is removed from the system.

Installing the display bezel

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the display bezel and provides a visual representation of the installation procedure.

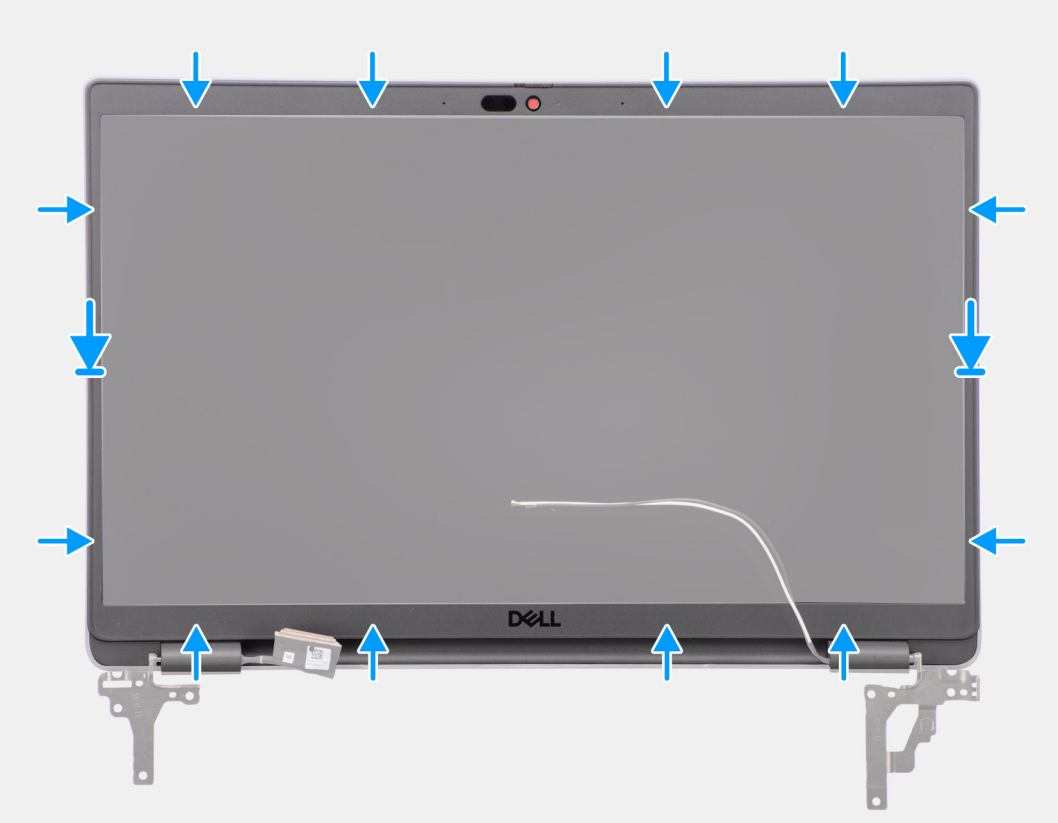


Figure 53. Installing the display bezel

Steps

NOTE: The replacement display bezel is not pre-assembled with the camera shutter. When replacing it, ensure that the camera shutter is transferred over to the replacement display bezel.

CAUTION: You must take extra care when peeling the tape. An abrupt peeling may remove the camera shutter from the display bezel and damage the camera shutter.

1. Align and place the display bezel on the display assembly.
2. Gently snap the display bezel into place.

Next steps

1. Install the display assembly.
2. Install the base cover.
3. Follow the procedure in After working inside your computer.

Display panel

Removing the display panel

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the display assembly.
4. Remove the display bezel.

About this task

The following images indicate the location of the display panel and provide a visual representation of the removal procedure.

Figure 54. Removing the display panel



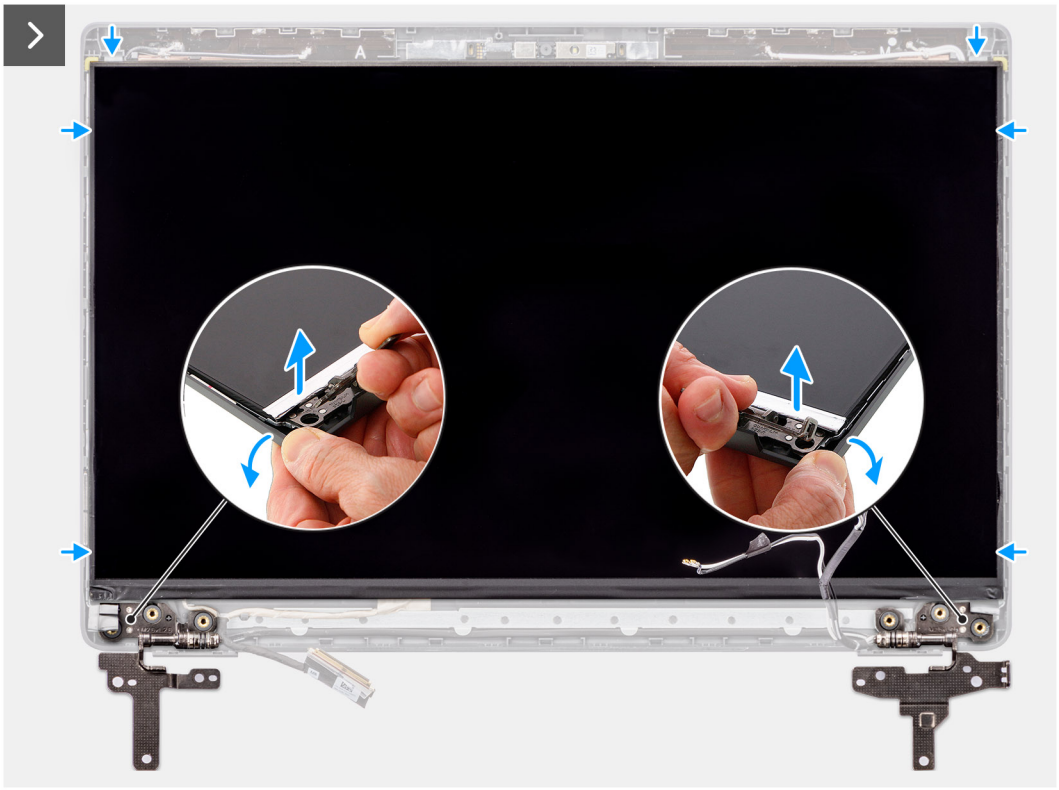


Figure 55. Removing the display panel



Figure 56. Removing the display panel

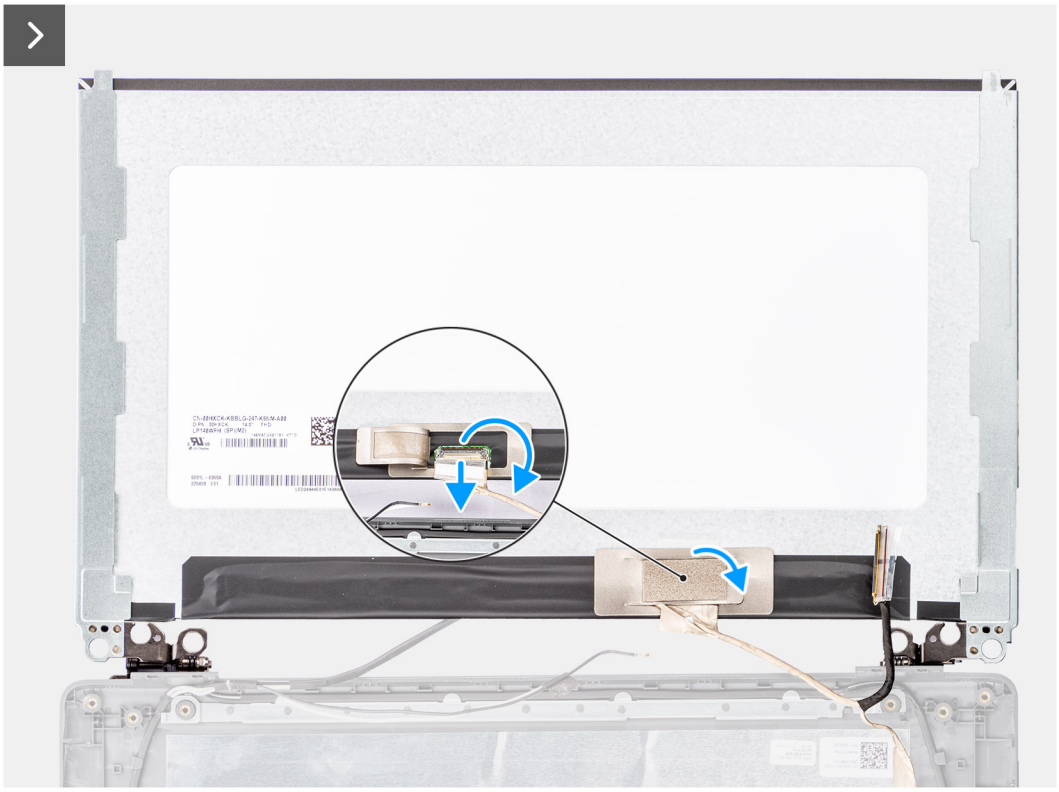


Figure 57. Removing the display panel

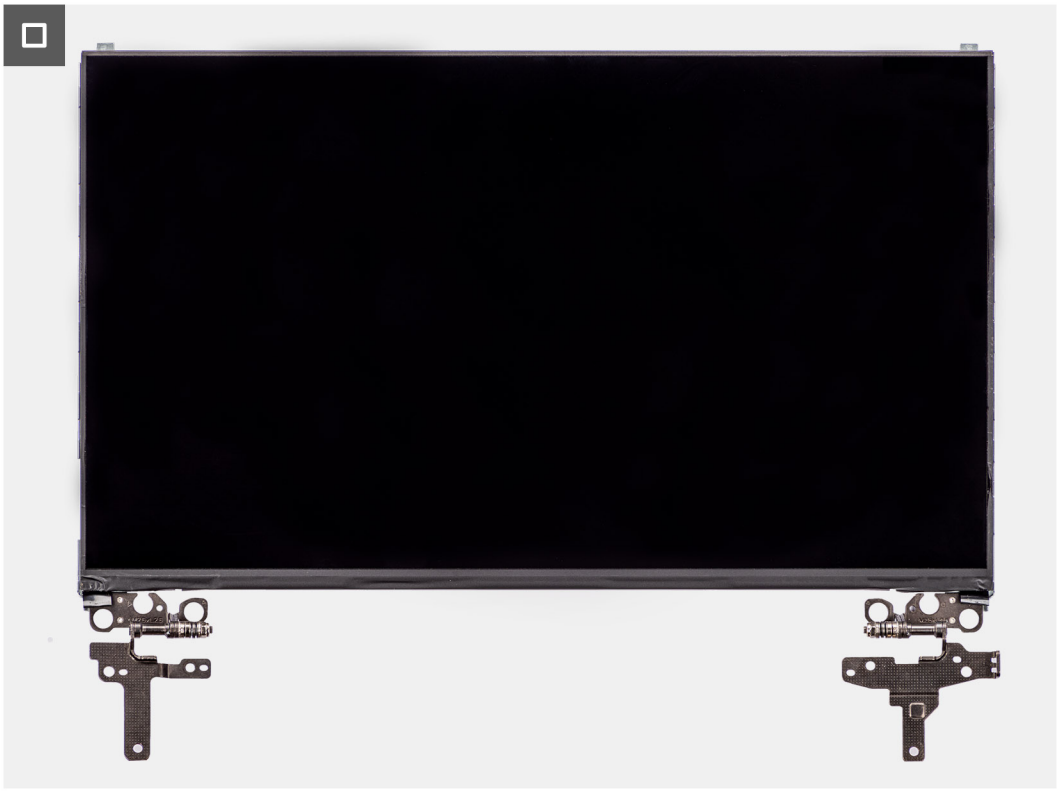


Figure 58. Removing the display panel

Steps

NOTE: The display panel is preassembled with the display brackets as a single service part. Do not pull the Stretch Release (SR) tapes and separate the brackets from the display panel.



1. Remove the six (M2.5x2.5) screws that secures the left and right hinges to the display back cover.

   NOTE: While removing the display panel, disengage the display panel tabs from the display cover before flipping it over.

2. Lift up the lower portion of the LCD panel, slide it downwards, and then flip the panel over to access the display cable.
3. Peel the conductive tape on the display cable connector.
4. Open the latch and disconnect the cable from the connector on the display panel.
5. Lift the display panel away from the display back cover.

Installing the display panel

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the display panel and provides a visual representation of the installation procedure.



Figure 59. Installing the display panel

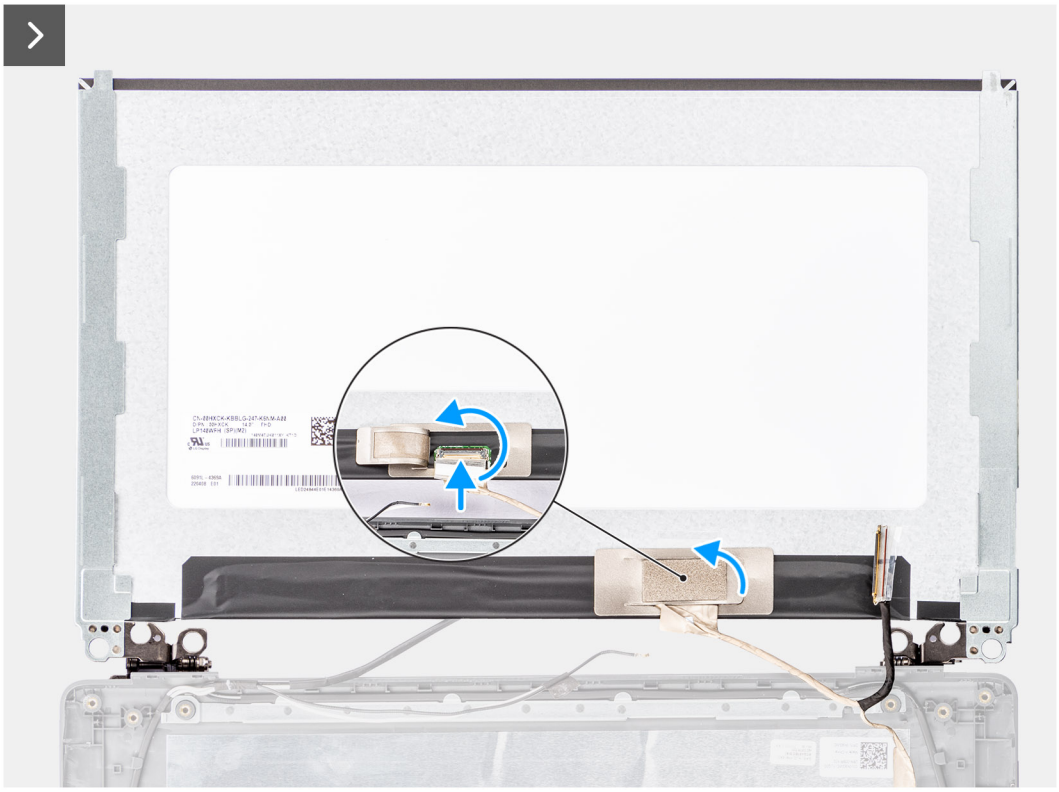


Figure 60. Installing the display panel



Figure 61. Installing the display panel

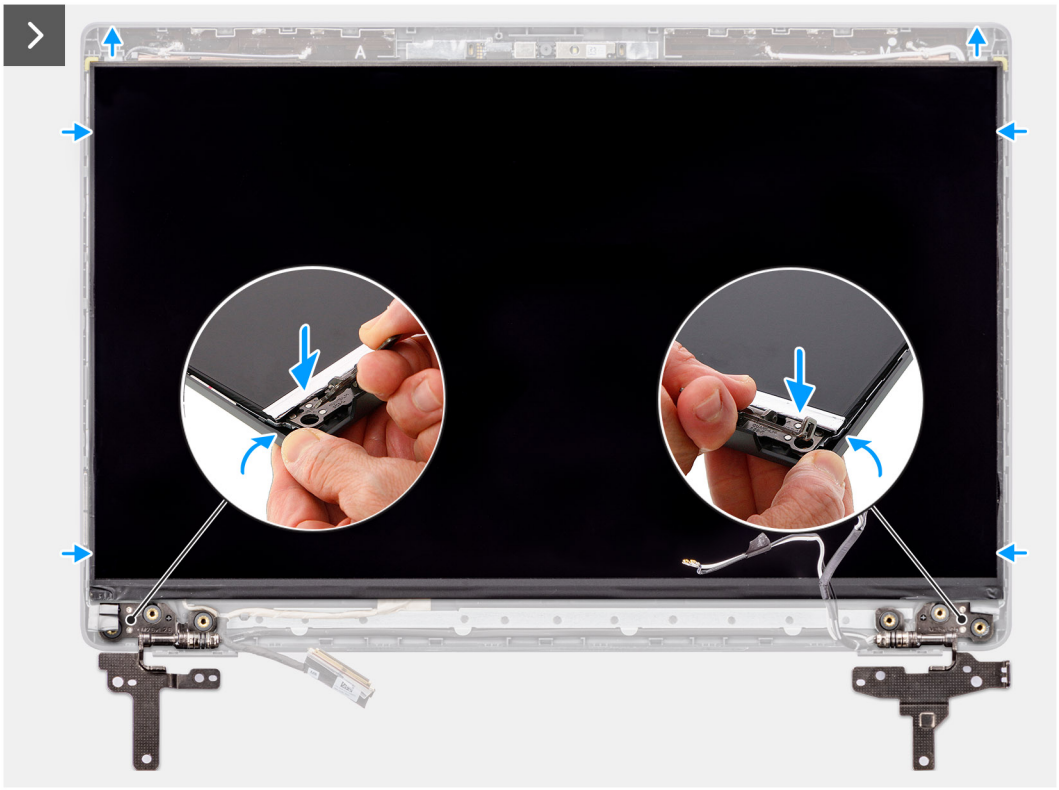


Figure 62. Installing the display panel



Figure 63. Installing the display panel

Steps

1. Place the display panel on flat and clean surface.
2. Connect the display cable to the connector on the display panel and close the latch.
3. Adhere the conductive tape to secure the display cable to the display panel.
4. Insert the display panel tabs into the slots on the display cover.
5. Replace the six (M2.5x2.5) screws to secure the display panel to the display back cover.

Next steps

1. Install the display bezel.
2. Install the display assembly.
3. Install the base cover.
4. Follow the procedure in After working inside your computer.

Camera

Removing the camera

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.

About this task

The following images indicate the location of the camera and provide a visual representation of the removal procedure.



Figure 64. Removing the camera

Steps

1. Disconnect the camera cable from the camera module.

2. Lift to remove the camera module from the display back cover.

Installing the camera

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the display panel and provides a visual representation of the installation procedure.



Figure 65. Installing the camera

Steps

1. Align and replace the camera module on the display back cover.
2. Connect the camera cable to the camera module.

Next steps

1. Install the display panel.
2. Install the display bezel.

3. Install the display assembly.
4. Install the base cover.
5. Follow the procedure in After working inside your computer.

eDP cable

Removing the eDP cable

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.
6. Remove the camera.

About this task

The following image indicates the location of the eDP cable and provide a visual representation of the removal procedure.

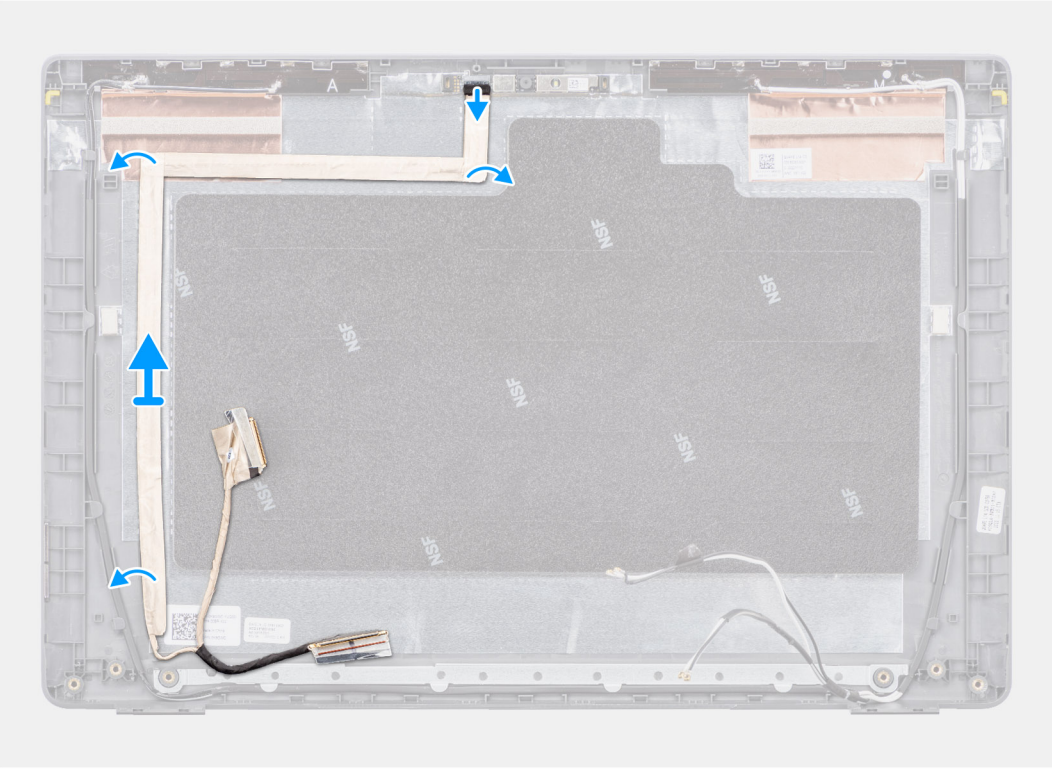


Figure 66. Removing the eDP cable

Steps

1. Disconnect the eDP cable from the connector on the camera module.
2. Peel the conductive tape and unroute the eDP cable to release it from adhesive and lift the eDP cable from the display back cover.

Installing the eDP cable

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the eDP cable and provides a visual representation of the installation procedure.

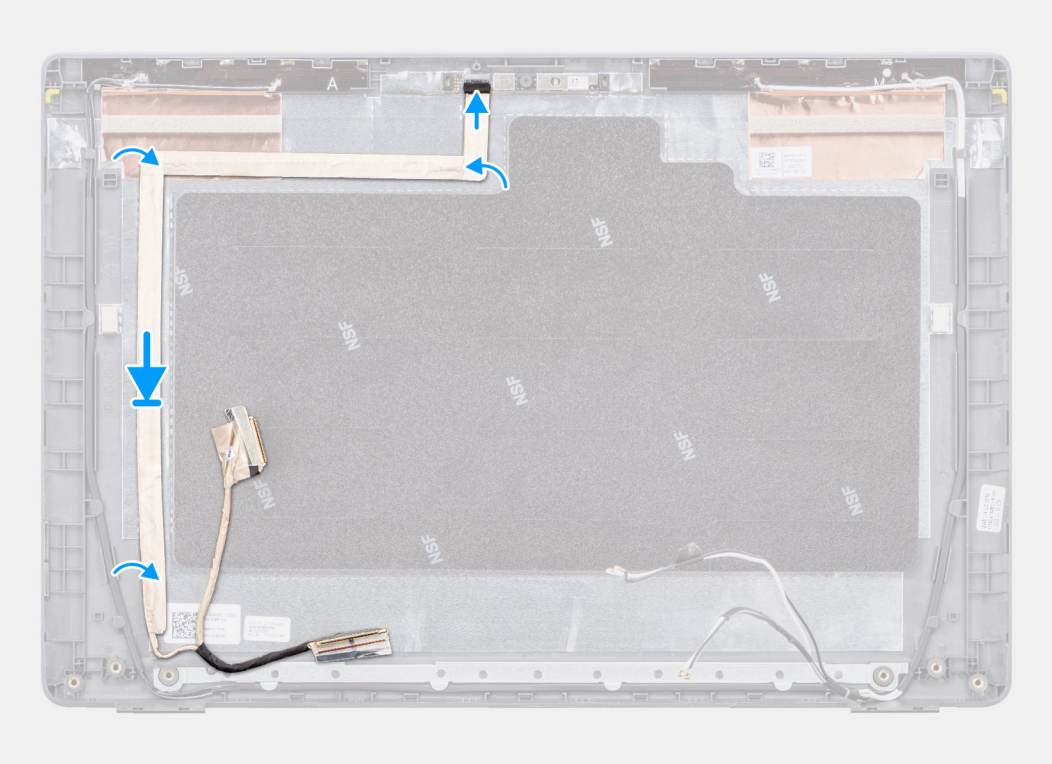


Figure 67. Installing the eDP cable

Steps

1. Connect the eDP cable to the connector on the camera module.
2. Adhere the eDP cable to the display back cover.

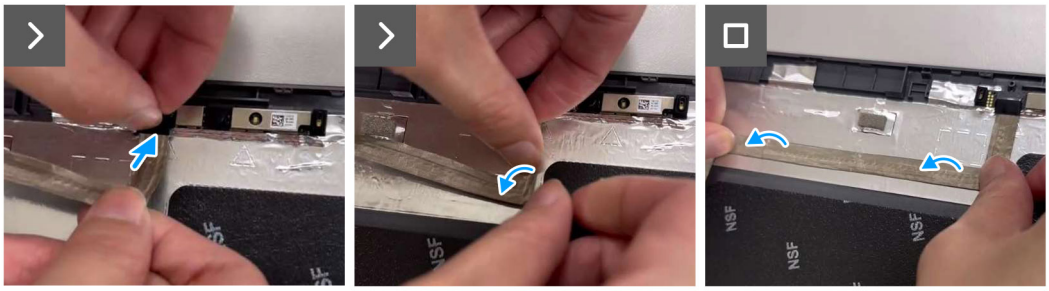


Figure 68. Installing the eDP cable

NOTE: Press the corner beneath the camera module and move your finger on the cable to secure it to the base cover.

3. Adhere the conductive tape and route the eDP cable to the display back cover.

Next steps

1. Install the camera.
2. Install the display panel.
3. Install the display bezel.
4. Install the display assembly.
5. Install the base cover.
6. Follow the procedure in After working inside your computer.

Display back cover

Removing the display back cover

Prerequisites

1. Follow the procedure in Before working inside your computer.
2. Remove the base cover.
3. Remove the display assembly.
4. Remove the display bezel.
5. Remove the display panel.
6. Remove the camera.
7. Remove the eDP cable.

About this task

The following image shows the display back cover and provide a visual representation of the removal procedure.

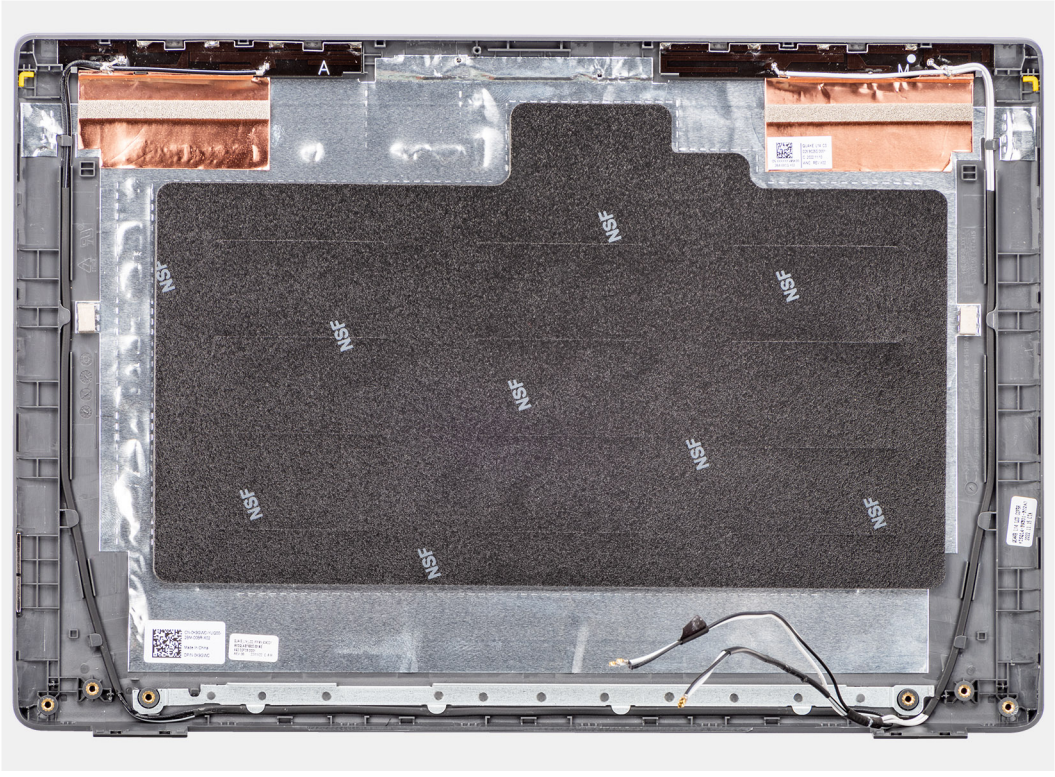


Figure 69. Removing the display back cover

Steps

After performing the steps in the pre-requisites, we are left with the display back cover.

Installing the display back cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the display back cover and provides a visual representation of the installation procedure.

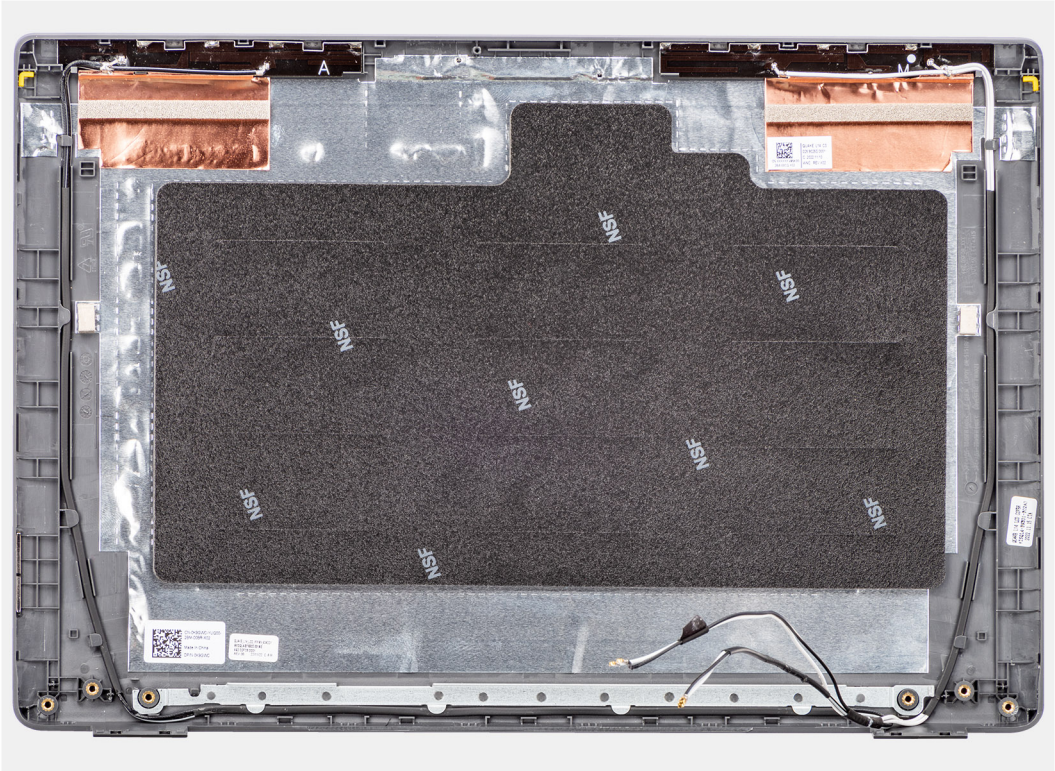


Figure 70. Installing the display back cover

Steps

Place the display back cover on a clean and flat surface.

Next steps

1. Install the eDP cable.
2. Install the camera.
3. Install the display panel.
4. Install the display bezel.
5. Install the display assembly.
6. Install the base cover.
7. Follow the procedure in After working inside your computer.

7

Software

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

Operating system

Your Latitude 3450 supports the following operating systems:

- Windows 11 Pro
- Windows 11 Home
- Ubuntu 22.04 LTS, 64-bit

Drivers and downloads

When troubleshooting, downloading, or installing drivers, it is recommended that you read the Dell Knowledge Base article Drivers and Downloads FAQs 000123347.

8

BIOS Setup

CAUTION: Certain changes can make your computer work incorrectly. Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.

NOTE: Depending on the computer and the installed devices, the options that are listed in this section may differ.

Use BIOS Setup for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the capacity of the storage device.
- Change the system configuration information.
- Set or change user-selectable options such as the user password, enabling or disabling base devices, and configuring hard drive settings.

Entering BIOS Setup program

About this task

Turn on (or restart) your computer and press F2 immediately.

Navigation keys

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

Table 35. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follows 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 restart the computer.

F12 One Time Boot menu

To enter the One Time Boot menu, turn on or restart your computer, and then press F12 immediately.

NOTE: If you are unable to enter the One Time Boot menu, repeat the above action.

The One Time Boot menu displays the devices that you can boot from and also display the options to start diagnostics. The boot menu options are:

- Removable Drive (if available)

- STXXXX Drive (if available)

  NOTE: XXX denotes the SATA drive number.

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

The One Time Boot menu screen also displays the option to access BIOS Setup.

View Advanced Setup options

About this task

Some BIOS Setup options are only visible by enabling **Advanced Setup** mode, which is disabled by default.

NOTE: BIOS Setup options, including **Advanced Setup** options, are described inSystem setup options .

To enable Advanced Setup

Steps

1. Enter BIOS Setup.
   The Overview menu appears.
2. Click the **Advanced Setup** option to move it to the **ON** mode.
   Advanced BIOS Setup options are visible.

View Service options

About this task

Service options are hidden by default and only visible by entering a hotkey command.

NOTE: Service options are described in System setup options .

To view Service options:

Steps

1. Enter BIOS Setup.
   The Overview menu appears.
2. Enter the hotkey combination **Ctrl +Alt + s** to view the **Service** options.
   Service options are visible.

System setup options

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

Table 36. System setup options—Overview menu

Overview	
Latitude 3450	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.

Table 36. System setup options—Overview menu (continued)

Overview	
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the Express Service Code of the computer.
Ownership Tag	Displays the Ownership Tag of the computer.
Battery Information	
Primary	Displays the primary battery of the computer.
Battery Level	Displays the battery level of the computer.
Battery State	Displays the battery state of the computer.
Health	Displays the battery health of the computer.
AC Adapter	Displays whether an AC adapter is connected. If connected, displays the type of AC adapter that is connected.
Battery Life Type	Displays battery life type of the computer.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
Memory Information	
Memory Installed	Displays the total computer memory installed.
Memory Available	Displays the total computer memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
DIMM_SLOT 1	Displays DIMM_SLOT 1 of the computer.
DIMM_SLOT 2	Displays DIMM_SLOT 2 of the computer.
Devices Information	
Panel Type	Displays the Panel Type of the computer.
Video Controller	Displays the video controller type of the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the wireless device information of the computer.
Native Resolution	Displays the native resolution of the computer.

Table 36. System setup options—Overview menu (continued)

Overview	
Video BIOS Version	Displays the video BIOS version of the computer.
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays the Bluetooth device information of the computer.
LOM MAC Address	Displays the MAC address of the LAN on motherboard.
Pass Through MAC Address	Displays the MAC address of the video pass-through.
Cellular Device	Displays the cellular device information of the computer.
dGPU video controller	Displays the dGPU video controller information of the computer.

Table 37. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of the computer.
Boot Sequence	Displays the boot sequence.
Secure Boot	Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system and PCI add-in cards. The computer stops booting to the operating system when a component is not authenticated during the boot process. Secure Boot can be enabled in BIOS setup or using management interfaces like Dell Command|Configure, but can only be disabled from BIOS setup.
Enable Secure Boot	Enables the computer to boot using only validated boot software. By default, the **Enable Secure Boot** option is enabled. For additional security, Dell Technologies recommends keeping the **Secure Boot** option enabled to ensure that the UEFI firmware validates the operating system during the boot process. **NOTE:** For Secure Boot to be enabled, the computer is required to be in UEFI boot mode and the Enable Legacy Option ROMs option is required to be turned off.
Secure Boot Mode	Enables or disables the Secure Boot operation mode. By default, the **Deployed Mode** is selected. **NOTE:** **Deployed Mode** should be selected for normal operation of Secure Boot.
Enable Microsoft UEFI CA	When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database. **NOTE:** When disabled, the Microsoft UEFI CA could render your computer unable to boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable. By default, the **Enable Microsoft UEFI CA** option is enabled. For additional security, Dell Technologies recommends keeping the **Microsoft UEFI CA** option enabled to ensure the broadest compatibility with devices and operating systems.
Expert Key Management	
Enable Custom Mode	Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the **Enable Custom Mode** option is disabled.

Table 37. System setup options—Boot Configuration menu (continued)

Boot Configuration	
Custom Mode Key Management	Selects the custom values for expert key management. By default, the **PK** option is selected.

Table 38. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can switch between a 12-hour and 24-hour clock. Changes to the time format take effect immediately.
Camera	
Enable Camera	Enables the camera. By default, the **Enable Camera** option is enabled. **NOTE:** Depending on the configuration ordered, the camera setup option may not be available.
Audio	
Enable Audio	Enables all integrated audio controller. By default, all the options are enabled.
Enable Microphone	Enables the microphone. By default, the **Enable Microphone** option is enabled. **NOTE:** Depending on the configuration ordered, the microphone setup option may not be available.
Enable Internal Speaker	Enables the internal speaker. By default, the **Enable Intenal Speaker** option is enabled.
USB/Thunderbolt Configuration	
Enable USB Boot Support	Enables booting from USB mass storage devices that are connected to external USB ports. By default, the **Enable USB Boot Support** option is enabled.
Enable External USB Ports	Enables the external USB ports. By default, the **Enable External USB Ports** option is enabled.
Disable USB4 PCIE Tunneling	Disables the USB4 PCIE Tunneling option. By default, the **Disable USB4 PCIE Tunneling** option is disabled.
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables the Fingerprint Reader Device option. By default, the **Enable Fingerprint Reader Device** option is enabled.

Table 39. System setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller.

Table 39. System setup options—Storage menu (continued)

Storage	
	By default, the **RAID On** option is selected. The storage device is configured for RAID On mode.
Storage Interface	Displays the information of various onboard drives.
Port Enablement	Enables or disables the M.2 PCIe SSD option. By default, the **M.2 PCIe SSD** option is enabled.
Drive Information	Displays the information of onboard drives.

Table 40. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Enables to set the screen brightness when the computer is running on battery power. By default, the screen brightness is set to 50 when the computer is running on battery power.
Brightness on AC power	Enables to set the screen brightness when the computer is running on AC power. By default, the screen brightness is set to 100 when the computer is running on AC power.
Touchscreen	Enables or disables the touch screen option. By default, the **Touchscreen** option is enabled.
Enable EcoPower	Enables or disables the EcoPower. By default, the **EcoPower** option is enabled.
Full Screen Logo	Enables or disables the computer to display a full-screen logo, if the image matches screen resolution. By default, the **Full Screen Logo** option is disabled.

Table 41. System setup options—Connection menu

Connection	
Integrated NIC	Controls the on-board LAN Controller. By default, the **Enabled with PXE** option enabled.
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the **WLAN** option enabled.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the **Bluetooth** option enabled.
Enable UEFI Network Stack	Enables or disables the UEFI Network Stack and controls the onboard LAN Controller. By default, the **Enable UEFI Network Stack** option is enabled.
Wireless Radio Control	
Control WLAN Radio	Enables to sense the connection of the computer to a wired network and then disables the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network, the selected wireless radios are reenabled. C

Table 41. System setup options—Connection menu (continued)

Connection	
HTTP(s) Boot	Enables or disables the HTTP(s) Boot capabilities. By default, the **Auto Mode** option is enabled.

Table 42. System setup options—Power menu

Power	
Battery Configuration	Enables or disables the computer to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day. By default, the **Adaptive** option is selected. Battery settings are adaptively optimized based on your typical battery usage pattern.
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enables Advanced Battery Charge Configuration from the beginning of the day to a specified work period. When enabled, Advanced Battery Charged maximizes battery health while still supporting heavy use during the work day. By default, the **Enable Advanced Battery Charge Configuration** option is disabled.
Peak Shift	
Enable Peak Shift	Enables the external devices to be powered or charged using the stored system battery while the system is in sleep state. By default, the **Enable USB PowerShare** option is disabled.
USB PowerShare	
Enable USB PowerShare	Enables the computer to run on battery during peak power usage hours. By default, the **Enable Peak Shift** option is disabled.
Thermal Management	Enables or disables cooling of fan and manages processor heat to adjust the computer performance, noise, and temperature. By default, the **Optimized** option is selected. Standard setting for balanced performance, noise, and temperature.
USB Wake Support	
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock wakes the computer from Standby, Hibernate, and Power Off. By default, the **Wake on Dell USB-C Dock** option is disabled.
Block Sleep	Enables or disables the computer from entering Sleep (S3) mode in the operating system. By default, the **Block Sleep** option is disabled. **NOTE:** When enabled, the computer does not go to Sleep, Intel Rapid Start is disabled automatically, and the operating system power option is blank if it was set to Sleep.
Lid Switch	
Enable Lid Switch	Enables or disables the Lid Switch. By default, the **Enable Lid Switch** option is enabled.
Intel Speed Shift Technology	Enables or disables the Intel Speed Shift Technology support. When enabled, the operating system selects the appropriate processor performance automatically. By default, the **Intel Speed Shift Technology** option is enabled.

Table 43. System setup options—Security menu

Security	
Trusted Platform Module (TPM)	The Trusted Platform Module (TPM) provides various cryptographic services which serve as the cornerstone for many platform security technologies. Trusted Platform Module (TPM) is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation. By default, the **Trusted Platform Module (TPM)** option is enabled. For additional security, Dell Technologies recommends keeping **Trusted Platform Module (TPM)** enabled to allow these security technologies to fully function. **NOTE:** The options that are listed apply to computers with a discrete **Trusted Platform Module (TPM)** chip.
TPM On	Allows you to enable or disable TPM. By default, the **TPM On** option is enabled. For additional security, Dell Technologies recommends keeping **TPM On** enabled to allow these security technologies to fully function.
Physical Presence Interface (PPI) Bypass for Enable Commands	The Physical Presence Interface (PPI) Bypass options can be used to allow the operating system to manage certain aspects of the TPM. If these options are enabled, you are not prompted to confirm certain changes to the TPM configuration. By default, the **PPI Bypass for Enable Commands** option is enabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Enable Commands** option enabled.
Physical Presence Interface (PPI) Bypass for Disable Commands	By default, the **PPI Bypass for Disable Commands** option is disabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Disable Commands** option disabled.
Physical Presence Interface (PPI) Bypass for Clear Commands	By default, the **PPI Bypass for Clear Commands** option is disabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Commands** option disabled.
Attestation Enable	The **Attestation Enable** option controls the endorsement hierarchy of TPM. Disabling the **Attestation Enable** option prevents TPM from being used to digitally sign certificates. By default, the **Attestation Enable** option is enabled. For additional security, Dell Technologies recommends keeping the **Attestation Enable** option enabled. **NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.
Key Storage Enable	The **Key Storage Enable** option controls the storage hierarchy of TPM, which is used to store digital keys. Disabling the **Key Storage Enable** option restricts the ability of TPM to store owner's data. By default, the **Key Storage Enable** option is enabled. For additional security, Dell Technologies recommends keeping the **Key Storage Enable** option enabled. **NOTE:** When disabled, this feature may cause compatibility issues or loss of functionality in some operating systems.

Table 43. System setup options—Security menu (continued)

Security	
SHA-256	Allows you to control the hashing algorithm that is used by the TPM. When enabled, the TPM uses the SHA-256 hashing algorithm. When disabled, the TPM uses the SHA-1 hash algorithm. By default, the **SHA-256** option is enabled. For additional security, Dell Technologies recommends keeping the **SHA-256** option enabled.
Clear	When enabled, the **Clear** option clears information that is stored in the TPM after exiting the computer's BIOS. This option returns to the disabled state when the computer restarts. By default, the **Clear** option is disabled. Dell Technologies recommends enabling the **Clear** option only when TPM data is required to be cleared.
TPM State	Enables or disables the Trusted Platform Module (TPM). This is the normal operating state for the Trusted Platform Module (TPM) when you want to use its complete array of capabilities. By default, the **TPM State** option is enabled.
Intel Platform Trust Technology (PTT)	Intel PTT is a firmware-based Trusted Platform Module (fTPM) device that is part of Intel chipsets. It provides credential storage and key management that can replace the equivalent functionality of a discrete TPM chip. **NOTE:** The options that are listed apply to computers with a discrete **Trusted Platform Module (TPM)**.
PTT On	Enables or disables the Intel PTT option. By default, the **PTT On** option is enabled. For additional security, Dell Technologies recommends keeping the **PTT On** option enabled.
Physical Presence Interface (PPI) Bypass for Clear Commands	The PPI Bypass for Clear Commands option allows the operating system to manage certain aspects of PTT. When enabled, you are not prompted to confirm changes to the PTT configuration. By default, the **PPI Bypass for Clear Commands** option is disabled. For additional security, Dell Technologies recommends keeping the **PPI Bypass for Clear Commands** option disabled.
Clear	When enabled, the **Clear** option clears the information that is stored in the PTT fTPM after exiting the computer's BIOS. This option returns to the disabled state when the computer restarts. By default, the **Clear** option is disabled. Dell Technologies recommends enabling the **Clear** option only when PTT fTPM data needs to be cleared.
Chassis intrusion	
Chassis Intrusion Detection	The chassis intrusion detection enables a physical switch that triggers an event when the computer cover is opened. When set to **Enabled**, a notification is displayed on the next boot and the event is logged in the BIOS Events log. When set to **On-Silent**, the event is logged in the BIOS Events log, but no notification is displayed. When set to **Disabled**, no notification is displayed and no event is logged in the BIOS Events log.

Table 43. System setup options—Security menu (continued)

Security	
	By default, the **Chassis Intrusion Detection** option is enabled. For additional security, Dell Technologies recommends keeping the **Chassis Intrusion Detection** option enabled.
Block Boot Until Cleared	Enables or disables the Block Boot Until Cleared option. By default, the **Block Boot Until Cleared** option is enabled. **NOTE:** When enabled, the computer does not boot until the chassis intrusion is cleared. If the administrator password is set, Setup has to be unlocked before the warning can be cleared.
OROM Keyboard Access	The OROM Keyboard Access feature allows you to enter the Option ROM configuration screens using hotkeys during the boot process. This setting controls only the Intel RAID (CTRL+I), MEBX (CTRL+P), and LSI RAID (CTRL+C) Option ROMs. Other preboot Option ROMs which support entry via a key sequence are not affected by this setting. For additional security, Dell Technologies recommends keeping the **OROM Keyboard Access** option enabled.
Legacy Manageability Interface Access	Allows the administrator to control the access to BIOS configuration through the Legacy Manageability Interface option. When enabled, this prevents the BIOS Administrator password-based manageability tools from running, prevents some Dell software applications from reading configuration settings, and/or prevents changes to the BIOS configuration settings. When enabled, this option only supports the Authenticated BIOS Manageability Interface (ABI) for managing the BIOS configuration changes. To support this feature, ABI must be enabled and provisioned. When set to **Enabled**, the Legacy Manageability Interface can be used to read and change BIOS configuration settings. When set to **Read-Only**, BIOS configuration settings can be read, but cannot be changed through the Legacy Manageability Interface. When set to **Disabled**, the Legacy Manageability Interface is disabled. BIOS configuration reads and writes are blocked.
SMM Security Mitigation	Enables or disables additional UEFI SMM Security Mitigation protections. This option uses the Windows SMM Security Mitigations Table (WSMT) to confirm to the operating system that security best practices have been implemented by the UEFI firmware. By default, the **SMM Security Mitigation** option is enabled. For additional security, Dell Technologies recommends keeping the **SMM Security Mitigation** option enabled unless you have a specific application which is not compatible. **NOTE:** This feature may cause compatibility issues or loss of functionality with some legacy tools and applications.
Data Wipe on Next Boot	
Start Data Wipe	Data Wipe is a secure wipe operation that deletes information from a storage device. **CAUTION: The secure Data Wipe operation deletes information in a way that it cannot be reconstructed.** Commands such as delete and format in the operating system may remove files from showing up in the file system. However, they can be reconstructed through forensic means as they are still represented on the physical media. Data Wipe prevents this reconstruction and is not recoverable.

Table 43. System setup options—Security menu (continued)

Security	
	When enabled, the data wipe option will prompt to wipe any storage devices that are connected to the computer on the next boot. By default, the **Start Data Wipe** option is disabled.
Absolute	Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute for configuration and activation. By default, the **Absolute** option is enabled. For additional security, Dell Technologies recommends keeping the **Absolute** option enabled. **NOTE:** When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS setup screen.
UEFI Boot Path Security	Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu. By default, the **Always Except Internal HDD** option is enabled.
Firmware Device Tamper Detection	Allows you to control the firmware device tamper detection feature. This feature notifies the user when the firmware device is tampered. When enabled, a screen warning messages are displayed on the computer and a tamper detection event is logged in the BIOS Events log. The computer fails to reboot until the event is cleared. By default, the **Firmware Device Tamper Detection** option is enabled. For additional security, Dell Technologies recommends keeping the **Firmware Device Tamper Detection** option enabled.

Table 44. System setup options—Passwords menu

Passwords	
Administrator Password	The Administrator Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS setup options can only be modified after providing the correct password. The following rules and dependencies apply to the Administrator Password - • The administrator password cannot be set if computer and/or internal hard drive passwords are previously set. • The administrator password can be used in place of the computer and/or internal hard drive passwords. • When set, the administrator password must be provided during a firmware update. • Clearing the administrator password also clears the computer password (if set). Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS setup options.
System Password	The System Password prevents the computer from booting to an operating system without entering the correct password. The following rules and dependencies apply when the System Password is used - • The computer shuts down when idle for approximately 10 minutes at the computer password prompt. • The computer shuts down after three incorrect attempts to enter the computer password.

Table 44. System setup options—Passwords menu (continued)

Passwords	
	• The computer shuts down when the **Esc** key is pressed at the System Password prompt. • The computer password is not prompted when the computer resumes from standby mode. Dell Technologies recommends using the computer password in situations where it is likely that a computer may be lost or stolen.
Hard Drive Password	The Hard Drive Password can be set to prevent unauthorized access of the data stored on the hard drive. The computer prompts for the hard drive password during boot in order to unlock the drive. A password-secured hard drive stays locked even when removed from the computer or placed into another computer. It prevents an attacker from accessing data on the drive without authorization. The following rules and dependencies apply when the Hard Drive Password is used - • The hard drive password option cannot be accessed when a hard drive is disabled in the BIOS setup. • The computer shuts down when idle for approximately 10 minutes at the hard drive password prompt. • The computer shuts down after three incorrect attempts to enter the hard drive password and treats the hard drive as not available. • The hard drive does not accept password unlock attempts after five incorrect attempts to enter the hard drive password from the BIOS Setup. The hard drive password must be reset for the new password unlock attempts. • The computer treats the hard drive as not available when the **Esc** key is pressed at the hard drive password prompt. • The hard drive password is not prompted when the computer resumes from standby mode. When the hard drive is unlocked by the user before the computer goes into standby mode, it remains unlocked after the computer resumes from standby mode. • If the computer and hard drive passwords are set to the same value, the hard drive unlocks after the correct computer password is entered. Dell Technologies recommends using a hard drive password to protect unauthorized data access.
Owner Password	The Owner Password is typically used when a computer is loaned or leased, and the end user sets their own computer or hard drive password. The Owner Password can provide override access to unlock the computer when it is returned. The Owner Password cannot be set using BIOS Setup. System lessors are given a tool which enables them to configure the Owner Password. The following rules and dependencies apply when the Owner Password is used - • The owner password cannot be set when the administrator password is already set. • The owner password can be used in place of the administrator, computer, or hard drive passwords. **NOTE:** The hard drive password must have been set on the computer with the owner password. Dell Technologies recommends that only computer lessors use the owner password.
Strong Password	The Strong Password feature enforces stricter rules for administrator, owner, and computer passwords. When enabled, the following rules are enforced - • The minimum length of the password is set to eight characters.

Table 44. System setup options—Passwords menu (continued)

Passwords	
	• The password is required to include at least one upper case and one lower case character. **NOTE:** These requirements do not affect the hard drive password. By default, the **Strong Password** option is enabled. For additional security, Dell Technologies recommends keeping the **Strong Password** option enabled as it requires passwords to be more complex.
Password Configuration	The Password configuration page includes several options for changing the requirements of BIOS passwords. You can modify the minimum and maximum length of the passwords and require passwords to contain certain character classes (upper case, lower case, digit, special character). Dell Technologies recommends setting the minimum password length to at least eight characters.
Password Bypass	The **Password Bypass** option allows the computer to reboot from the operating system without entering the computer or hard drive password. If the computer has already booted to the operating system, it is presumed that the user has already entered the correct computer or hard drive password. **NOTE:** This option does not remove the requirement to enter the password after shutting down. By default, the **Password Bypass** option is enabled. For additional security, Dell Technologies recommends keeping the **Password Bypass** option enabled.
Password Changes	
Allow Non-Admin Password Changes	The **Allow Non-Admin Password Changes** option in BIOS setup allows an end user to set or change the computer or hard drive passwords without entering the administrator password. This gives an administrator control over the BIOS settings but enables an end user to provide their own password. By default, the **Allow Non-Admin Password Changes** option is disabled. For additional security, Dell Technologies recommends keeping the **Allow Non-Admin Password Changes** option disabled.
Non-Admin Setup Changes	The **Non-Admin Setup Changes** option allows an end user to configure the wireless devices without requiring the administrator password. By default, the **Non-Admin Setup Changes** option is disabled. For additional security, Dell Technologies recommends keeping the **Non-Admin Setup Changes** option disabled.
Admin Setup Lockout	The **Admin Setup Lockout** option prevents an end user from even viewing the BIOS setup configuration without first entering the administrator password (if set). By default, the **Admin Setup Lockout** option is disabled. For additional security, Dell Technologies recommends keeping the **Admin Setup Lockout** option disabled.
Recovery Password	The Recovery Password can be used when a system owner forgets the administrator, system, or hard drive password. You can get an unlock code from Dell Support over the phone after verifying ownership details. The unlock code overrides and removes the existing password. **NOTE:** When a hard drive password is overridden using this method, the data on the hard drive is erased if secure erase was enabled when setting the password.

Table 44. System setup options—Passwords menu (continued)

Passwords	
Master Password Lockout	
Enable Master Password Lockout	The Master Password Lockout setting allows you to disable the Recovery Password feature. If the computer, administrator, or hard drive password is forgotten, the computer becomes unusable. **NOTE:** When the owner password is set, the Master Password Lockout option is not available. **NOTE:** When an internal hard drive password is set, it must first be cleared before Master Password Lockout can be changed. By default, the **Enable Master Password Lockout** option is disabled. Dell does not recommend enabling the **Master Password Lockout** unless you have implemented your own password recovery computer.

Table 45. System setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	
Enable UEFI Capsule Firmware Updates	Enables or disables BIOS updates through UEFI capsule update packages. **NOTE:** Disabling this option blocks the BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS). By default, the **Enable UEFI Capsule Firmware Updates** option is enabled.
BIOS Recovery from Hard Drive	Enables or disables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. By default, the **BIOS Recovery from Hard Drive** option is enabled. **NOTE:** BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED). **NOTE:** BIOS recovery is designed to fix the main BIOS block and cannot work if the Boot Block is damaged. In addition, this feature cannot work in the event of EC corruption, ME corruption, or a hardware issue. The recovery image must exist on an unencrypted partition on the drive.
BIOS Downgrade	
Allow BIOS Downgrade	Controls flashing of the computer firmware to previous revisions. By default, the **Allow BIOS Downgrade** option is enabled.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool in the event of certain computer errors. By default, the **SupportAssist OS Recovery** option is enabled.
BIOSConnect	Enables or disables cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto operating system Recovery Threshold setup option and local Service operating system does not boot or is not installed. By default, the **BIOSConnect** option is enabled.
Dell Auto OS Recovery Threshold	Allows you to control the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery Tool. By default, the **Dell Auto OS Recovery Threshold** value is set to 2.

Table 46. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a computer Asset Tag that can be used by an IT administrator to uniquely identify a particular computer. **NOTE:** Once set in BIOS, the Asset Tag cannot be changed.
AC Behavior	
Wake on AC	Enables or disables the computer to turn on and go to boot when AC power is supplied to the computer. By default, the **Wake on AC** option is disabled.
Wake on LAN	Enables or disables the computer to turn on by a special LAN signal. By default, the **Wake on LAN** option is disabled.
Auto On Time	Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days. By default, the **Auto On Time** option is disabled.
OS Agent Requests	Enable to schedule onboard diagnostics and scans. By default, the **OS Agent Requests** option is enabled.
Power-on-Self-Test Automatic Recovery	Enable if the computer should become unresponsive before completing the BIOSPower-On-Self-Test, the BIOS will attempt to automatically recover the computer. By default, the **Power-on-Self-Test Automatic Recovery** option is enabled.

Table 47. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	Enables or disables the Fn Lock option. By default, the **Fn Lock** option is enabled.
NumLock Options	Enables or disables the NumLock option. By default, the **NumLOck** option is enabled.
Lock Mode	By default, the **Lock Mode Secondary** option is enabled. With this option, the F1-F12 keys scan the code for their secondary functions.
Keyboard Illumination	Configures the operating mode of the keyboard illumination feature. By default, the **Bright** option is selected. Enables the keyboard illumination feature at 100% brightness level.
Keyboard Backlight Timeout on AC	Sets the timeout value for the keyboard backlight when an AC adapter is connected to the computer. By default, the **10 seconds** option is selected.
Keyboard Backlight Timeout on Battery	Sets the timeout value for the keyboard backlight when the computer is running only on the battery power. The keyboard backlight timeout value is only effective when the backlight is enabled. By default, the **10 seconds** option is selected.

Table 48. System setup options—Preboot Behavior menu

Preboot Behavior	
Adapter Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the adapters with less power capacity are detected. By default, the **Enable Dock Warning Messages** option is enabled.
Warnings and Errors	Enables or disables the action to be taken when a warning or error is encountered. By default, the **Prompt on Warnings and Errors** option is selected. Stop, prompt, and wait for user input when warnings or errors are detected. **NOTE:** Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.
USB-C Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the USB-C adapters with less power capacity are detected. By default, the **Enable Dock Warning Messages** option is enabled.
Fastboot	Allows you to configure the speed of the UEFI boot process. By default, the **Thorough** option is selected. Performs complete hardware and configuration initialization during boot.
Extend BIOS POST Time	Sets the BIOS POST (Power-On Self-Test) load time. By default, the **0 seconds** option is selected.
MAC Address Pass-Through	Replaces the external NIC MAC address (in a supported dock or dongle) with the selected MAC address from the computer. By default, the **System Unique MAC Address** option is selected.

Table 49. System setup options—Virtualization menu

Virtualization Support	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	When enabled, the computer can run a Virtual Machine Monitor (VMM). By default, the **Enable Intel Virtualization Technology (VT)** option is enabled.
VT for Direct I/O	
Enable Intel VT for Direct I/O	When enabled, the computer can perform Virtualization Technology for Direct I/O (VT-d). VT-d is an Intel method that provides virtualization for memory map I/O. By default, the **Enable Intel VT for Direct I/O** option is enabled.
DMA Protection	
Enable Pre-Boot DMA Support	Allows you to control the Pre-Boot DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. **NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the **Enable Pre-Boot DMA Support** option is enabled. For additional security, Dell Technologies recommends keeping the **Enable Pre-Boot DMA Support** option enabled.

Table 49. System setup options—Virtualization menu (continued)

Virtualization Support	
	NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Enable OS Kernel DMA Support	Allows you to control the Kernel DMA protection for both internal and external ports. This option does not directly enable DMA protection in the operating system. For operating systems that support DMA protection, this setting indicates to the operating system that the BIOS supports the feature. **NOTE:** This option is not available when the virtualization setting for IOMMU is disabled (VT-d/AMD Vi). By default, the **Enable OS Kernel DMA Support** option is enabled. **NOTE:** This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Internal Port DMA Compatibility Mode	When enabled, BIOS will notify the OS that the internal ports are not DMA capable. By default, the **Internal Port DMA Compatibility Mode** option is disabled.

Table 50. System setup options—Performance menu

Performance	
Multi-Core Support	
Multiple Atom Cores	Enables to change the number of Atom cores available to the operating system. The default value is set to the maximum number of cores. By default, the **All Cores** option is selected.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the **Enable Intel SpeedStep Technology** option is enabled.
C-State Control	
Enable C-State Control	Enables or disables the ability of the CPU to enter and exit low-power state. When disabled, it disables all C-states. When enabled, it enables all C-states that the chipset or platform allows. By default, the **Enable C-State Control** option is enabled.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enables the Intel TurboBoost mode of the processor. When enabled, the Intel TurboBoost driver increases the performance of the CPU or graphics processor. By default, the **Enable Intel Turbo Boost Technology** option is enabled.
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enables the Intel Hyper-Threading mode of the processor. When enabled, the Intel Hyper-Threading increases the efficiency of the processor resources when multiple threads run on each core. By default, the **Intel Hyper-Threading Technology** option is enabled.

Table 51. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Allows you to select option to keep or clear BIOS events logs.

Table 51. System setup options—System Logs menu (continued)

System Logs	
	By default, the **Keep Log** option is selected.
Thermal Event Log	
Clear Thermal Event Log	Allows you to select option to keep or clear Thermal events logs. By default, the **Keep Log** option is selected.
Power Event Log	
Clear Power Event Log	Allows you to select option to keep or clear Power events logs. By default, the **Keep Log** option is selected.

Updating the BIOS

Updating the BIOS in Windows

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, see the Knowledge Base Resource Updating the BIOS on Dell systems with BitLocker enabled.

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

Steps

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   NOTE: If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, navigate to the folder where the BIOS update file has been saved.
8. Double-click the BIOS update file and follow the on-screen instructions.

   For more information, search in the Knowledge Base Resource at Dell Support Site.

Updating the BIOS in Ubuntu

To update the system BIOS on a computer that is installed with Ubuntu, see the knowledge base article 000131486 at dell support.

Updating the BIOS using the USB drive in Windows

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, see the Knowledge Base Resource Updating the BIOS on Dell systems with BitLocker enabled.

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

Steps

1. Go to Dell Support Site.
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

   NOTE: If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. Create a bootable USB drive. For more information, search in the Knowledge Base Resource at Dell Support Site.
8. Copy the BIOS setup program file to the bootable USB drive.
9. Connect the bootable USB drive to the computer that needs the BIOS update.
10. Restart the computer and press **F12**.
11. Select the USB drive from the **One Time Boot Menu**.
12. Type the BIOS setup program filename and press **Enter**.
    The **BIOS Update Utility** appears.
13. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the One-Time boot menu

To update the BIOS from the One-Time boot menu, see Dell Knowledge Base article 000128928 at Dell Support Site.

System and setup password

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

CAUTION: Ensure that your computer is locked when it is not in use. Anyone can access the data that is stored on your computer, when left unattended.

Table 52. System and setup password

Password type	Description
System password	Password that you must enter to boot to your operating system.
Setup password	Password that you must enter to access and change the BIOS settings of your computer.

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

NOTE: The System and setup password feature is disabled by default.

Assigning a System Setup password

Prerequisites

You can assign a new System or Admin Password only when the status is set to **Not Set**. To enter BIOS System Setup, press F2 immediately after a power-on or reboot.

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to create the system password:
   - Password can be up to 32 characters.
   - Password must contain at least one special character: "(! " # $ % & ' * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | })"
   - The password can contain numbers from 0 to 9.
   - The password can contain alphabets A to Z and a to z.
4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system password or setup password

Prerequisites

Ensure that the **Password Status** is Unlocked in the System Setup before attempting to delete or change the existing system password and/or setup password. You cannot delete or change an existing system password or setup password if the **Password Status** is Locked. To enter the System Setup, press F2 immediately after a power-on or reboot.

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
3. In the **System Security** screen, verify that the **Password Status** is Unlocked.
4. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
5. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.

   NOTE: If you change the system password and/or setup password, reenter the new password when prompted. If you delete the system password and/or setup password, confirm the deletion when prompted.

6. Press Esc. A message prompts you to save the changes.
7. Press Y to save the changes and exit from **System Setup**.
   The computer restarts.

Clearing CMOS settings

About this task

CAUTION: Clearing CMOS settings resets the BIOS settings on your computer.

Steps

1. Remove the base cover.
2. Disconnect the battery cable from the system board.
3. Remove the coin-cell battery.
4. Wait for one minute.
5. Replace the coin-cell battery.
6. Connect the battery cable to the system board.
7. Replace the base cover.

Clearing system and setup passwords

About this task

To clear the system or setup passwords, contact Dell technical support as described at Contact Support.

NOTE: For information about how to reset Windows or application passwords, see the documentation accompanying Windows or your application.

9

Troubleshooting

Handling swollen rechargeable Li-ion batteries

Like most laptops, Dell laptops use Lithium-ion batteries. One type of Lithium-ion battery is the rechargeable Li-ion battery. Rechargeable Li-ion batteries have increased in popularity in recent years and have become a standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to rechargeable Li-ion battery technology is the potential for swelling of the battery cells.

A swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and must be replaced and disposed of properly. We recommend contacting Dell Support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing rechargeable Li-ion batteries are as follows:

- Exercise caution when handling rechargeable Li-ion batteries.
- Discharge the battery before removing it from the laptop. To discharge the battery, unplug the AC adapter from the computer and operate the computer only on battery power. The battery is fully discharged when the computer no longer turns on when the power button is pressed.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell Support at Dell Support Site for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from Dell Site or otherwise directly from Dell.

Rechargeable Li-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information about how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell laptop battery in the Knowledge Base Resource at Dell Support Site.

Locating the Service Tag or Express Service Code of your Dell computer

Your Dell computer is uniquely identified with a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, we recommend entering the Service Tag or Express Service Code at Dell Support Site.

For more information about how to find the Service Tag for your computer, see Instructions on how to find your Service Tag or Serial Number.

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

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 within the BIOS and launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.
- Run thorough tests to add more options and obtain details about any failed devices.
- View status messages that inform you when the 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 when the diagnostic tests are performed.

For more information, see the knowledge base article 000181163.

Running the SupportAssist Pre-Boot System Performance Check

Steps

1. Turn on your computer.
2. As the computer boots, press the F12 key.
3. On the boot menu screen, select **Diagnostics**.
   The diagnostic quick test begins.
   NOTE: For more information about running the SupportAssist Pre-Boot System Performance Check on a specific device, see Dell Support Site.
4. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

Built-in self-test (BIST)

Motherboard Built-In Self-Test (M-BIST)

M-BIST is the system board onboard self-test diagnostics tool that improves the diagnostics accuracy of system board Embedded Controller (EC) failures.

NOTE: M-BIST can be manually initiated before Power On Self-Test (POST).

How to run M-BIST

NOTE: Before initiating M-BIST, ensure that the computer is in a power-off state.

1. Press and hold both the **M** key and the power button to initiate M-BIST.
2. The battery-status light may exhibit two states:
   - Off: No fault was detected.
   - Amber and White: Indicates a problem with the system board.
3. If there is a failure with the system board, the battery-status light flashes one of the following error codes for 30 seconds:

Table 53. LED error codes

Blinking Pattern		Possible Problem
Amber	**White**	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Memory/RAM failure

4. If there is no failure with the system board, the LCD cycles through the solid color screens (that are described in the LCD-BIST) for 30 seconds and then turn off.

Logic Built-in Self-test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (that is if the L-BIST circuit fails), the battery status LED flashes either an error code [2,8] or an error code [2,7].

NOTE: If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

How to invoke the L-BIST

1. Turn on your computer.
2. If the computer does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power that is supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

LCD Built-in Self-Test (LCD-BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and computer settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade, it is always a good practice to isolate the LCD (screen) by running the LCD-BIST.

How to invoke the LCD-BIST

1. Turn off your computer.
2. Disconnect any peripherals that are connected to the computer. Connect only the AC adapter (charger) to the computer.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold the **D** key and press the power button to enter LCD-BIST mode. Continue to hold the **D** key until the computer boots up.
5. The screen displays solid colors and changes colors on the entire screen to white, black, red, green, and blue twice.
6. Then it displays the colors white, black, and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color, or distortion on the screen).
8. At the end of the last solid color (red), the computer shuts down.

NOTE: Dell SupportAssist Preboot diagnostics upon launch initiates an LCD-BIST first, expecting a user intervention to confirm functionality of the LCD.

System-diagnostic lights

This section lists the system-diagnostic lights of your Latitude 3450.

Table 54. System-diagnostic lights

Blinking pattern		Problem description
Amber	**White**	
1	1	TPM detection failure
1	2	Unrecoverable SPI Flash Failure
1	5	EC unable to program i-Fuse
1	6	Generic catch-all for ungraceful EC code flow errors
1	7	Non-RPMC Flash on Boot Guard fused system
2	1	CPU failure
2	2	System board failure (included BIOS corruption or ROM error)
2	3	No memory or RAM detected
2	4	Memory or RAM failure
2	5	Invalid memory installed
2	6	System board or Chipset Error
2	7	LCD failure (SBIOS message)
2	8	LCD failure (EC detection of power rail failure)
3	1	CMOS battery failure
3	2	PCI or Video card or chip failure
3	3	BIOS Recovery image not found
3	4	BIOS Recovery image found but invalid
3	5	Power rail failure
3	6	Flash corruption is detected by SBIOS.
3	7	Timeout waiting on ME to reply to HECI message.

NOTE: Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Num-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a stand-alone tool that is preinstalled on Dell computers running the Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, and restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into the primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at Serviceability Tools at the Dell Support Site. Click **SupportAssist** and then click **SupportAssist OS Recovery**.

NOTE: Windows 11 IoT Enterprise LTSC 2024 and Dell ThinOS 10 do not support Dell SupportAssist. For more information about recovering ThinOS 10, see Recovery mode using R-Key.

Real-Time Clock (RTC Reset)

The Real-Time Clock (RTC) reset function enables you or the service technician to recover Dell computers from No POST/No Power/No Boot situations.

Start the RTC reset with the computer powered off and connected to AC power. Press and hold the power button for twenty-five seconds. The computer RTC Reset occurs after you release the power button.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell provides multiple options for recovering the Windows operating system on your Dell computer. For more information, see Dell Windows Backup Media and Recovery Options.

Network power cycle

About this task

If your computer is unable to access the Internet due to network connectivity issues, reset your network devices by performing the following steps:

Steps

1. Turn off the computer.
2. Turn off the modem.
   NOTE: Some Internet service providers (ISPs) provide a modem and router combo device.
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 the computer.

Drain flea power (perform hard reset)

About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you must drain residual flea power before removing or replacing any components in your computer.

Draining flea power, also known as a performing a "hard reset," is also a common troubleshooting step if your computer does not turn on or boot into the operating system.

Perform the following steps to drain the flea power:

Steps

1. Turn off the computer.
2. Disconnect the power adapter from the computer.
3. Remove the base cover.
4. Remove the battery.

   CAUTION: The battery is a Field Replaceable Unit (FRU) and the removal and installation procedures are intended for authorized service technicians only.

5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.
7. Install the base cover.
8. Connect the power adapter to the computer.
9. Turn on the computer.

   NOTE: For more information about performing a hard reset, go to Dell Support Site. On the menu bar at the top of the Support page, select Support > Support Library. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Unable to detect the solid state drive (SSD)

About this task

Perform the following steps if your computer is unable to detect the solid state drive on your computer:

Steps

1. Power on the computer and press the **F2** key several times until you enter the BIOS Setup.
2. Click **Advanced Setup** to turn it on.
3. Check the **Storage** setting.
4. If **Port Enablement** is OFF, change it to ON.
5. If **SATA/NVMe Operation** is Disabled, change it to **RAID ON** or **AHCI**. (If you encounter a blue screen, change to the other option.)
6. **Apply changes** and restart the computer.

Unable to detect the Trusted Platform Module (TPM)

About this task

The Trusted Platform Module (TPM) is a hardware security feature that protects sensitive data on your computer.

Perform the following steps if your computer is unable to detect the TPM module:

Steps

1. Power on the computer and press the **F2** key several times until you enter the BIOS Setup.
2. Click the **Load Defaults** button and press **OK** to continue.
3. The computer restarts. Check if the TPM message is present.
4. If the TPM message is still observed, unplug the battery for 3 minutes.
5. Disassemble the SSD and then reassemble it following the Standard Operating Procedure (SOP).
6. Replug the battery and turn on the computer to check if the TPM device is detected.

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Getting help and contacting Dell

Self-help resources

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

Table 55. Self-help resources

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

Contacting Dell

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

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

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

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Revision history

Tracks all updates that are made to the document. It typically includes the date of change, version number, and a brief description of the modification. This log helps maintain transparency, accountability, and a clear timeline of progress.

Table 56. Revision history

Revision	Date	Description
A00	03-24-2024	Original publish date.
A06	07-14-2025	Added troubleshooting topics for SSD and TPM.
A07	08-11-2025	Updated edp cable topic.