

Dell Pro 14 Plus

PB14250/PB14250 2-in-1

Owner's Manual

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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Views of Dell Pro 14 Plus

Right



Figure 1. Right view

1. Nano-SIM card slot (optional)

Insert a SIM card to connect to a mobile broadband network.

NOTE: Availability of the SIM card slot depends on the region and configuration ordered.

2. Global headset jack

Connect headphones or a headset (headphone and microphone combo).

3. USB 3.2 Gen 1 port with PowerShare

Connect devices such as external storage devices and printers. It 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.

4. Wedge-shaped lock slot

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

Left

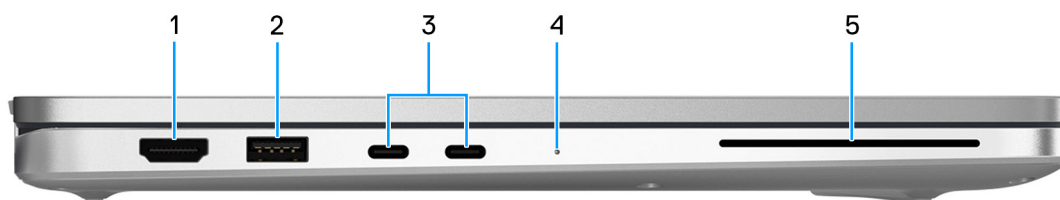


Figure 2. Left view

1. HDMI 2.1 TMDS

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

2. USB 3.2 Gen 1 port

Connect devices such as external storage devices and printers. Provides data transfer rate of up to 5 Gbps.

3. Thunderbolt 4.0 with DisplayPort Alt Mode/USB Type-C/USB4/Power Delivery

Supports USB4, DisplayPort 2.1, Thunderbolt 4 and also enables you to connect to an external display using a display adapter. Provides data transfer rates of up to 40 Gbps for USB4 and Thunderbolt 4.

NOTE: You can connect a Dell Docking Station to the Thunderbolt 4 ports. For more information, search in the Knowledge Base Resource at [Dell Support Site](#).

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, USB 2.0, and Thunderbolt 3.

NOTE: Thunderbolt 4 supports two 4K displays or one 8K display.

4. Battery-status light

Indicates the battery-charge status.

- White-Battery is charging.
- Solid yellow-Battery charge is low.
- Blinking yellow-Battery charge is critical.
- Off—Battery is fully charged.

5. Smart-card reader slot (optional)

Using smart card provides authentication in corporate networks.

Top



Figure 3. 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.

NOTE: 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.

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

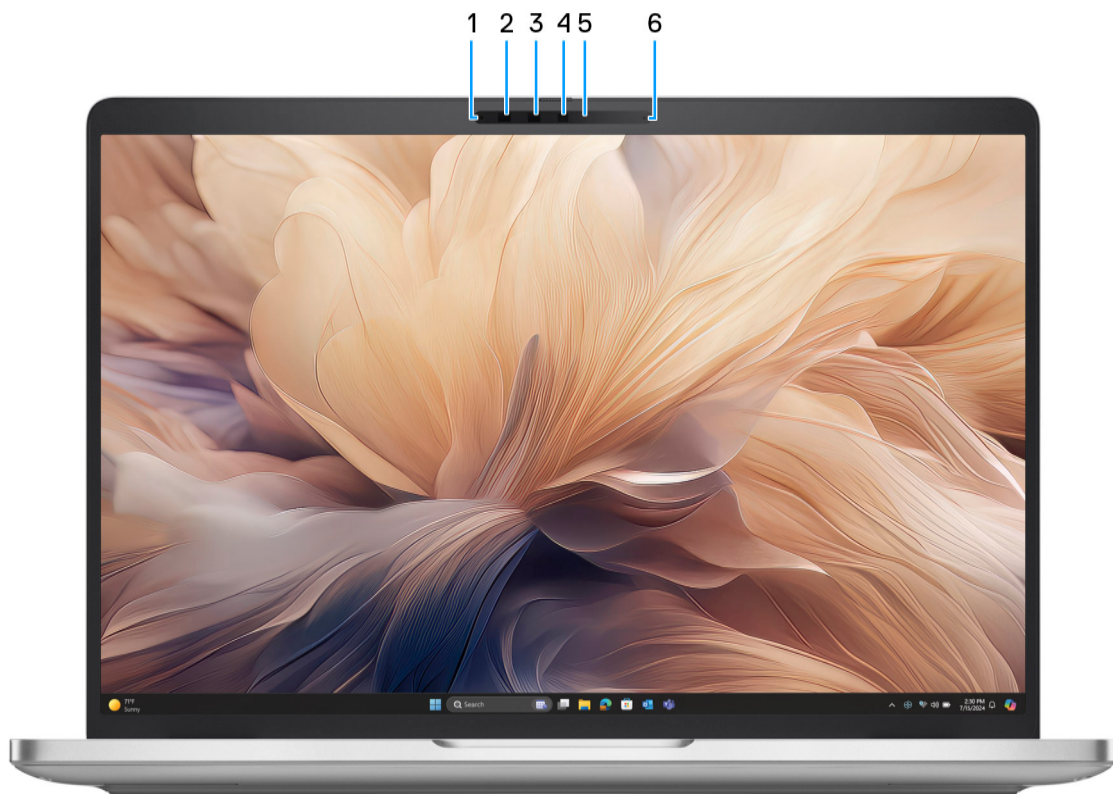


Figure 4. Front view

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. Infrared emitter (optional)

Emits infrared light, which enables the infrared camera to sense and track motion.

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.

Bottom

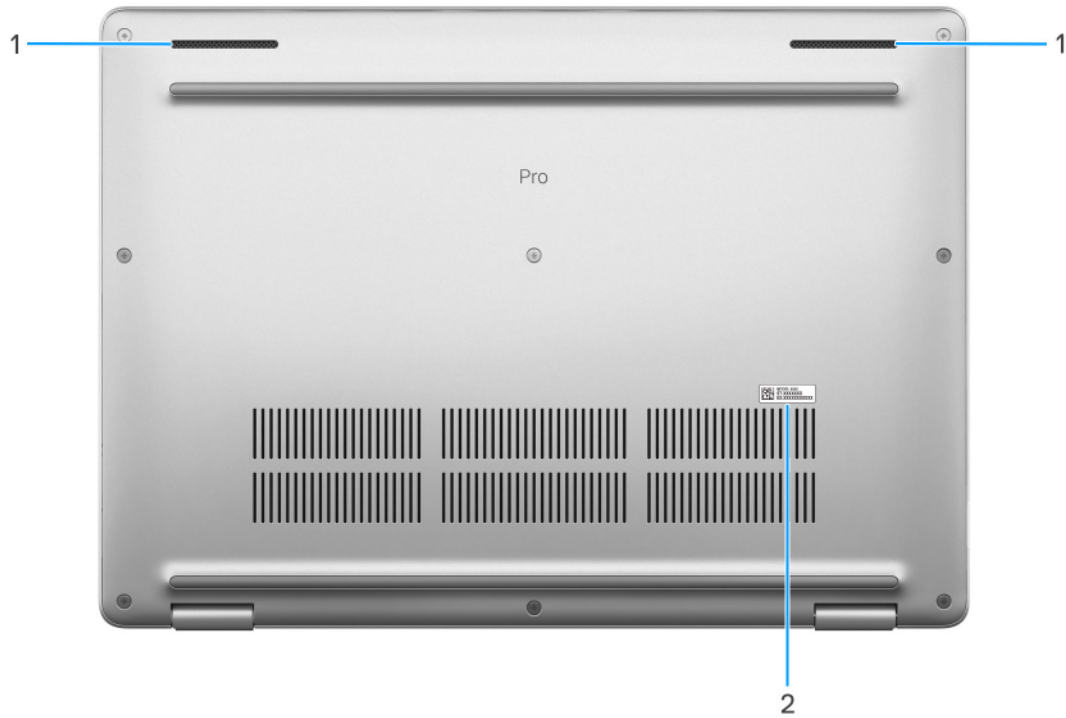


Figure 5. Bottom View

1. Speakers

Provide audio output.

2. 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.

Modes

The following modes are supported only on Dell Pro Plus 14 2-in-1 configuration.

Notebook



Figure 6. Notebook mode

Tablet



Figure 7. Tablet Mode

Stand



Figure 8. Stand mode

Tent



Figure 9. Tent mode

Battery-charge status light

The following table lists the battery-charge status light of your Dell Pro 14 Plus.

Table 1. Battery charge and status light behavior

Power source	LED behavior	System power state	Battery charge level
AC adapter	Off	S0 or S5	Fully charged
AC adapter	Solid white	S0 or S5	< Fully charged
Battery	Off	S0 or S5	11-100%
Battery	Solid amber (590+/-3 nm)	S0 or S5	< 10%

- S0 (ON): Computer is turned on.
- S4 (Hibernate): The computer consumes the least power in the Hibernate state than in the ON or OFF state. The computer is almost in the OFF state. The context data is written to a storage device, allowing you to resume from where you left when the computer is turned on.
- S5 (OFF): The computer is in a shutdown state.

Set up your Dell Pro 14 Plus

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.



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 a new account. If not connected to the Internet, create an offline account.
- On the **Support and Protection** screen, enter your contact details.

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

Table 2. Locate Dell apps

Resources	Description
	Dell Product Registration Register your computer with Dell.
	Dell Help & Support Access help and support for your computer.
	SupportAssist SupportAssist keeps your computer running at its best by optimizing settings, detecting issues, removing viruses. It also notifies when updates are available for your computer. SupportAssist proactively checks the health of your computer hardware and software. When an issue is detected, the necessary system state information is sent to Dell to begin troubleshooting. SupportAssist is preinstalled on most of the Dell devices running the Windows operating system. For more information, see Support Assist documentation at Dell Support Site . <i>NOTE:</i> In SupportAssist, click the warranty expiry date to renew or upgrade your warranty.
	Dell Command 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 .

Specifications of Dell Pro 14 Plus

Dimensions and weight

The following table lists the height, width, depth, and weight of your Dell Pro 14 Plus.

Table 3. Dimensions and weight

Description	Clamshell 400 nits non-touch	Clamshell 300 nits non-touch and 300 nits touch	2-in-1 300 nits touch
Height:			
Front height	19.78 mm (0.78 in.)	19.5 mm (0.77 in)	19.92 mm (0.78 in)
Rear height	19.77 mm (0.78 in.)	19.98 mm (0.79 in)	20.17 mm (0.79 in)
Maximum height	19.95 mm (0.79 in)	21.2 mm (0.83 in)	20.25 mm (0.80 in)
Width	224 mm (8.82 in.)	224 mm (8.82 in.)	224 mm (8.82 in.)
Depth	313.50 mm (12.34 in.)	313.50 mm (12.34 in.)	313.50 mm (12.34 in.)
Weight  NOTE: The weight of your computer depends on the configuration ordered and manufacturing variability.	1.40 kg (3.09 lb)	1.53 kg (3.37 lb)	1.55 kg (3.43 lb)

Processor

The following table lists the details of the processors that are supported in your Dell Pro 14 Plus.

Table 4. Processor

Description	Option one	Option two	Option three	Option four	Option five
Processor type	Intel Core Ultra 5 Processor 226V	Intel Core Ultra 5 Processor 236V	Intel Core Ultra 5 Processor 238V	Intel Core Ultra 7 Processor 266V	Intel Core Ultra 7 Processor 268V
Processor wattage	24 W	24 W	24 W	24 W	24 W
Processor core count	8	8	8	8	8
Processor thread count	8	8	8	8	8
Processor speed	upto 4.50 GHz	upto 4.70 GHz	upto 4.70 GHz	upto 5 GHz	upto 5 GHz
Processor cache	8 MB	8 MB	8 MB	12 MB	12 MB
Integrated graphics	Intel Arc Graphics	Intel Arc Graphics	Intel Arc Graphics	Intel Arc Graphics	Intel Arc Graphics

Chipset

The following table lists the details of the chipset that is supported in your Dell Pro 14 Plus.

Table 5. Chipset

Description	Values
Chipset	Integrated in the processor
Processor	Intel Core Ultra 5/7
DRAM bus width	64-bit
Flash EPROM	64 MB
PCIe bus	Up to Gen 5

Operating system

Your Dell Pro 14 Plus supports the following operating systems:

- Windows 11 Pro
- Windows 11 Home
- Ubuntu Linux 24.04

 **NOTE:** Windows 10 22H2 is only for custom-configured computers that are downgraded by end users from Windows 11. Support by Dell Technologies is subject to the Microsoft Windows 10 End of Support plan.

Memory

The following table lists the memory specifications of your Dell Pro 14 Plus.

Table 6. Memory specifications

Description	Values
Memory slots	Memory on Package  NOTE: The memory is integrated in the processor and is not upgradeable.
Memory type	LPDDR5x
Memory speed	8533 MT/s
Maximum memory configuration	32 GB
Minimum memory configuration	16 GB
Memory configurations supported	• 16 GB: LPDDR5X, 8533 MT/s • 32 GB: LPDDR5X, 8533 MT/s

External ports and slots

The following table lists the external ports and slots of your Dell Pro 14 Plus.

Table 7. External ports and slots

Description	Values
Network port	Not applicable
USB ports	- Two Thunderbolt4 ports with DisplayPort Alt Mode/USB Type-C/USB4/Power Delivery NOTE: You can connect a Dell Docking Station to these ports. For more information, search in the Knowledge Base Resource at Dell Support site. - One USB 3.2 Gen 1 port with PowerShare - One USB 3.2 Gen 1 port
Audio port	One Global headset jack
Video port(s)	One HDMI 2.1 TMDS
Media-card reader	One smart card reader slot (optional)
Power-adaptor port	Supported through USB-C
Security-cable slot	One wedge-shaped security slot
SIM-card slot	Nano-SIM card slot (optional)

Internal slots

The following table lists the internal slots of your Dell Pro 14 Plus.

Table 8. Internal slots

Description	Values
M.2	- One M.2 2230 or M.2 2280 solid state drive slot - One M.2 3052 for WWAN slot (optional) NOTE: To learn more about the features of different types of M.2 cards, search in the Knowledge Base Resource at Dell Support Site.

Wireless module

The following table lists the Wireless Local Area Network (WLAN) module that is supported on your Dell Pro 14 Plus.

Table 9. Wireless module specifications

Description	Values
Model number	Intel Wi-Fi 7 BE201
Transfer rate	Up to 5760 Mbps

Table 9. Wireless module specifications (continued)

Description	Values
Frequency bands supported	2.40 GHz/5 GHz/6 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 7 (WiFi 802.11be)
Encryption	• 64-bit/128-bit WEP • AES-CCMP • TKIP
Bluetooth wireless card	Bluetooth 5.4

WWAN module

The following table lists the Wireless Wide Area Network (WWAN) module that is supported in your Dell Pro 14 Plus.

 **NOTE:** The WWAN module is available only on certain configurations and in certain regions.

 **NOTE:** Availability of the eSIM feature on this module depends your region.

 **NOTE:** For instructions on how to setup SIM or eSIM connections on your computer, see the *SIM/eSIM Setup Guide for Windows* available with your product documentation at [Dell Support Site](#).

Table 10. WWAN module specifications

Description	Values
Model number	DW5934e Qualcomm Snapdragon X72 Global 5G Modem
Form factor	M.2 3052 Key-B
Host interface	PCIe Gen3
Network standard	NR FR1(Sub6) FDD/TDD, LTE FDD/TDD, WCDMA/HSPA+, GPS/GLONASS/Galileo/Beidou
Transfer data rate	• 5G NR: DL 4.14Gbps/ UL 900Mbps • LTE: DL 2.0Gbps (CAT20)/ UL 211Mbps (CAT18) • UMTS: DL DC-HSPA+ Rel8:42 Mbps / UL 5.76 Mbps
Operating frequency bands	• NR(n1, n2, n3, n5, n7, n8, n12, n13, n14, 18, n20, n25, n26, n28, n29, n30, n38, n40, n41, n48, n66, n67, n70, n71, n75, n76, n77, n78, n79, n91, n92, n93, n94) • LTE (B1, B2, B3, B4, B5, B7, B8, B12, B13, B14, B17, B18, B19, B20, B25, B26, B28, B29, B30, B32, B34, B38, B39, B40, B41, B42, B43, B46, B48, B66, B67, B68, B70, B71) • WCDMA/HSPA+ (1, 2, 4, 5, 8)
Power supply	DC 3.135V to 3.63V, typical 3.3V
SIM card	Supported through external SIM slot

Table 10. WWAN module specifications (continued)

Description	Values
eSIM with dual SIM (DSSA)	Supported (The availability of eSIM functionality embedded on the module is dependent on the region and specific carrier requirements)
Antenna diversity	Supported
Radio on/off	Supported
Wake On Wireless	Supported
Temperature	• Normal operating temperature: –30°C to +70°C • Extended operating temperature: –40°C to +85°C • Storage temperature: –40°C to +85°C
Antenna connector	• WWAN Main Antenna X 1 • WWAN Diversity Antenna X 1 • 4 x 4 MIMO Antenna x 2
 NOTE: For instructions to find your computer's International Mobile Equipment Identity (IMEI) number, search in the Knowledge Base Resource at Dell Support Site .	

Audio

The following table lists the audio specifications of your Dell Pro 14 Plus.

Table 11. Audio specifications

Description	Values
Audio controller	Cirrus CS42L43
Stereo conversion	Supported
Internal audio interface	Soundwire Interface
External audio interface	GHS (Global Headset)
Number of speakers	Two
Internal-speaker amplifier	Not supported
External volume controls	Keyboard shortcut controls
Speaker output:	
Average	2 W
Peak	2.5 W
Microphone	Digital-array microphones in camera assembly

Storage

This section lists the storage options on your Dell Pro 14 Plus.

Your computer supports one of the following solid state drives

Table 12. Storage specifications

Storage type	Interface type	Capacity
M.2 2280 solid-state drive, self-encrypting, TLC	Gen 4 PCIe NVMe upto 64 Gbps	2 TB, 1 TB
M.2 2230 solid-state drive, TLC	Gen 4 PCIe NVMe upto 64 Gbps	1 TB, 512 GB, 256 GB
M.2 2230 solid-state drive, QLC	Gen 4 PCIe NVMe upto 64 Gbps	512 GB

Keyboard

The following table lists the keyboard specifications of your Dell Pro 14 Plus.

Table 13. Keyboard specifications

Description	Values
Keyboard type	- Standard non-backlit keyboard - Standard backlit keyboard
Keyboard layout	QWERTY
Number of keys	- United States and Canada: 79 keys - United Kingdom: 80 keys - Japan: 83 keys - French Canadian Quebec (ACNOR): 81 key
Keyboard size	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) 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, search in the Knowledge Base Resource at the Dell Support site.

Keyboard shortcuts of Dell Pro 14 Plus

 **NOTE:** Keyboard characters may differ depending on the keyboard language configuration. Keys that are 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 that is 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 that is 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 multimedia control, as indicated by the icon on the key. Press the function key to enable the task represented by the icon. For example, pressing F1 mutes the audio (see the table below).

However, if the function keys F1-F12 are needed for specific software applications, multimedia functionality can be disabled by pressing **Fn + Esc**. Later, multimedia 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 the BIOS setup program.

Table 14. Function key primary behavior

Function key	Primary behavior
F1	Mute or unmute audio
F2	Decrease volume
F3	Increase volume
F4	Mute or unmute microphone
F5	Change the brightness of backlit keyboard (for backlit keyboard only)
F6	Decrease display brightness
F7	Increase display brightness
F8	Switch to external display
F9	Not applicable
F10	Print screen
F11	Home
F12	End

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

Table 15. 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 + F9	Operating system and application-specific F9 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 + Copilot	Operating system Context menu behavior.
Fn + Esc	Toggle Function key lock
Fn + PgUp (cursor up)	Scroll up the document or page
Fn + PgDn (cursor down)	Scroll down the document or page

Camera

The following table lists the camera specifications of your Dell Pro 14 Plus.

Table 16. Camera specifications

Description		Values
Number of cameras		One
Camera type		There are three camera options: • RGB camera • RGB + IR camera • MIPI + IR camera
Camera location		Front camera
Camera sensor type		CMOS sensor technology
Camera resolution:		
	Still image	• 2.07 megapixels • 5.2 megapixels
	Video	• 1920 x 1080 at 30 fps • 2560 x 1440 at 30 fps
Infrared camera resolution:		
	Still image	0.23 megapixels
	Video	640 x 360 at 15 fps
Diagonal viewing angle:		
	Camera	• 80.2 degrees • 91.2 degrees
	Infrared camera	86.6 degrees

Touchpad

The following table lists the touchpad specifications of your Dell Pro 14 Plus.

Table 17. Touchpad specifications

Description		Values
Touchpad resolution:		>=300dpi
Touchpad dimensions:		
	Horizontal	125 mm (4.92 in.)
	Vertical	88 mm (3.46 in.)
Touchpad gestures		For more information about the touchpad gestures that are available on: • Windows, see the Microsoft Knowledge Base article at Microsoft Support Site. • Ubuntu, see Ubuntu Support Site.

Fingerprint reader (optional)

The following table lists the specifications of the optional fingerprint-reader of your Dell Pro 14 Plus.

Table 18. Fingerprint reader specifications

Description	Values
Sensor technology	Trans-capacitive sensing
Sensor resolution	500/363 dpi
Sensor pixel size	- X: 108 / 76 - Y: 88 / 100

Power adapter

The following table lists the power adapter specifications of your Dell Pro 14 Plus.

Table 19. Power-adapter specifications

Description	Option one	Option two	Option three
Type	60 W adapter, USB-C	65 W adapter, USB-C	100 W adapter, USB-C
Power-adapter dimensions:			
Height	22 mm (0.87 in.)	28 mm (1.1 in.)	26.5 mm (1.04 in.)
Width	55 mm (2.16 in.)	51 mm (2.01 in.)	60 mm (2.36 in.)
Depth	66 mm (2.60 in.)	112 mm (4.41 in.)	122 mm (4.80 in.)
Input voltage	100 to 240 VAC	100 to 240 VAC	100 to 240 VAC
Input frequency	50 Hz to 60 Hz	50 to 60 Hz	50 to 60 Hz
Input current (maximum)	1.70 A	1.70 A	1.70 A
Output current (continuous)	20 V/3 A (continuous) 15 V/3 A (continuous) 9.0 V/3 A (continuous) 5.0 V/3 A (continuous)	20V/3.25A (continuous) 15V/3A (continuous) 9.0V/3A (continuous) 5.0V/3A (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	20 VDC/15 VDC/9 VDC/5 VDC	20 VDC/15 VDC/9 VDC/5 VDC
Temperature range:			
Operating	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)	0°C to 35°C (32°F to 95°F)
Storage	-20°C to 70°C (-4°F to 158°F)	-40°C to 70°C (-40°F to 158°F)	-40°C to 70°C (-40°F to 158°F)
 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.			

Power adapter requirements (for computers that are shipped with 3-cell, 45 Wh battery)

This section contains the power adapter requirements for the Dell Pro 14 Plus.

 **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 Dell Pro 14 Plus

Description	Value
Power that is required from a power adapter to achieve optimal performance.	65 W
Power that is required to charge 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	 NOTE: Ensure that the computer with a 45Wh 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 pressing Enter.

Power adapter requirements (for computers that are shipped with 3-cell, 55 Wh battery)

This section contains the power adapter requirements for the Dell Pro 14 Plus.

 **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 Dell Pro 14 Plus

Description	Value
Power that is required from a power adapter to achieve optimal performance.	100 W
Power that is required to charge 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.	27 W

Table 21. Power adapter requirements for Dell Pro 14 Plus (continued)

Description	Value
 NOTE: A warning message appears informing you about the use of a lower-powered adapter and slower charging speed.	
USB Power Delivery (PD) fast charging	Supported
ExpressCharge mode	 NOTE: Ensure that the computer with a 55Wh 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 pressing Enter.

Battery

The following table lists the battery specifications of your Dell Pro 14 Plus.

Table 22. Battery specifications

Description	Option one	Option two	Option three	Option four
Battery type	3-cell, 45 Wh, ExpressCharge, ExpressCharge Boost	3-cell, 55 Wh, ExpressCharge, ExpressCharge Boost	3-cell, 45 Wh, Long Life Cycle, ExpressCharge	3-cell, 55 Wh, Long Life Cycle, ExpressCharge
Battery voltage	11.25 V	11.70 VDC	11.25 VDC	11.70 VDC
Battery weight (minimum)	0.20 Kg (0.44 lb)	0.22 kg (0.48 lb)	0.20 kg (0.44 lb)	0.22 kg (0.48 lb)
Battery dimensions:				
	Height	72.80 mm (2.83 in.)	72.80 mm (2.83 in.)	72.80 mm (2.83 in.)
	Width	254.80 mm (10.03 in.)	254.80 mm (10.03 in.)	254.80 mm (10.03 in.)
	Depth	6.3 mm (0.25 in.)	6.3 mm (0.25 in.)	6.3 mm (0.25 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 60°C (32°F to 140°F)
	Storage	-20°C to 65°C (-4°F to 149°F)	-20°C to 65°C (-4°F to 149°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	Standard charge/ Predominately AC User Charge Method:	Standard charge/ Predominately AC User Charge Method:	Standard charge/ Predominately AC User Charge Method:

Table 22. Battery specifications (continued)

Description	Option one	Option two	Option three	Option four
on using the Dell Power Manager application. For more information about Dell Power Manager, search in the Knowledge Base Resource at Dell Support Site .	0-15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 3 hours Express Charge Method : 16-45°C maximum allowable charge time from 0 to 60% RSOC is 1 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 2 hours Express Charge Boost charge Method : 16-45°C maximum allowable charge time from 0 to 35% RSOC is 20 min	0-15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 3 hours Express Charge Method : 16-45°C maximum allowable charge time from 0 to 60% RSOC is 1 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 2 hours Express Charge Boost charge Method : 16-45°C maximum allowable charge time from 0 to 35% RSOC is 20 min	0-15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 3 hours Express Charge Method : 16-45°C maximum allowable charge time from 0 to 60% RSOC is 1 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 2 hours	0-15°C maximum allowable charge time from 0 to 100% RSOC is 4 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 3 hours Express Charge Method : 16-45°C maximum allowable charge time from 0 to 60% RSOC is 1 hours 16-45°C maximum allowable charge time from 0 to 100% RSOC is 2 hours
Coin-cell battery	Not supported	Not supported	Not supported	Not supported
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. 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.				

Power requirements (for computers shipped with 3-cell, 45 Wh battery)

NOTE: The information in this section is applicable to the European Union (EU) countries.

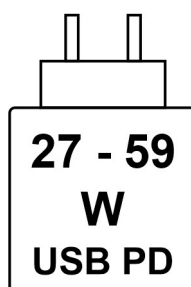


Figure 10. Pictogram for 45 Wh battery

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 59 Watts in order to achieve the maximum charging speed.

This computer supports USB Power Delivery (PD) fast charging.

Power requirements (for computers shipped with 3-cell, 55 Wh battery)

NOTE: The information in this section is applicable to the European Union (EU) countries.

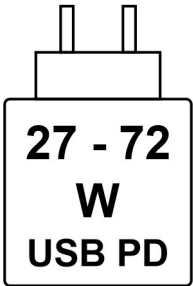


Figure 11. Pictogram for 55 Wh battery

The power that is delivered by the charger must be between a minimum of 27 Watts that is required by the radio equipment, and a maximum of 72 Watts in order to achieve the maximum charging speed.

This computer supports USB Power Delivery (PD) fast charging.

Display

The following table lists the display specifications of your Dell Pro 14 Plus.

Table 23. Display specifications

Description		Option one	Option two	Option three	Option four	Option five
Display type		14-inch Full High Definition (FHD+)	14-inch Full High Definition (FHD+)	14-inch (QHD+)	14-inch 2-in-1 Full High Definition (FHD+)	14-inch Full High Definition (FHD+)
Display-panel technology		IPS	IPS	IPS	IPS	IPS
Display-panel dimensions (active area):						
	Height	188.5 mm (7.42 in.)	188.5 mm (7.42 in.)	188.5 mm (7.42 in.)	188.5 mm (7.42 in.)	188.5 mm (7.42 in.)
	Width	301.59 mm (11.87 in.)	301.59 mm (11.87 in.)	301.59 mm (11.87 in.)	301.59 mm (11.87 in.)	301.59 mm (11.87 in.)
	Diagonal	355.6 mm (14 in.)	355.6 mm (14 in.)	355.6 mm (14 in.)	355.6 mm (14 in.)	355.6 mm (14 in.)
Display-panel native resolution		1920 x 1200	1920 x 1200	2560 x 1600	1920 x 1200	1920 x 1200
Luminance (typical)		300 nits	300 nits	300 nits	300 nits	400 nits
Megapixels		2.3	2.3	4.1	2.3	2.3

Table 23. Display specifications (continued)

Description	Option one	Option two	Option three	Option four	Option five
Color gamut	45% NTSC	100% sRGB	100% sRGB	100% sRGB	100% sRGB
Pixels Per Inch (PPI)	162 ppi	162 ppi	215.6 ppi	162	162
Contrast ratio (typical)	600:1	600:01	1000:1	1000:1	1000:1
Response time (maximum)	35 ms	35 ms	35 ms	35 ms	35 ms
Refresh rate	60 Hz	60 Hz	90 Hz	60 Hz	60 Hz
Horizontal view angle	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 88 degrees(min)	+/- 88 degrees(min)
Vertical view angle	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 80 degrees(min)	+/- 88 degrees(min)	+/- 88 degrees(min)
Pixel pitch	0.157 mm	0.157 mm	0.157 mm	0.157 mm	0.157
Power consumption (maximum)	3.68 W	4.4 W	4.4 W	3.1 W	2.5 W
Anti-glare vs glossy finish	Anti-glare	Anti-glare	Anti-glare	Anti-reflection	Anti-glare
Touch options	No	Yes	No	Yes	No

GPU—Integrated

The following table lists the specifications of the integrated Graphics Processing Unit (GPU) supported by your Dell Pro 14 Plus.

Table 24. GPU—Integrated

Controller	Memory size	Processor
Intel Arc Graphics	Shared system memory	Intel Core Ultra 5/Ultra 7

Hardware security

The following table lists the hardware security of your Dell Pro 14 Plus.

Table 25. Hardware security

Hardware security
Noble Lock
Trusted Platform Module (TPM) 2.0 discrete
FIPS 140-2 certification for TPM
TCG Certification for TPM (Trusted Computing Group)
Touch fingerprint reader in the power button available with ControlVault 3+
Contacted Smart Card with ControlVault 3+
Contactless Smart Card and NFC with ControlVault 3+

Table 25. Hardware security (continued)

Hardware security
SED SSD NVMe, SSD and HDD (Opal and non-Opal) per SDL
Chassis Intrusion Detection
BIOS - TPM clear and/or system boot lock after chassis intrusion detection

Operating and storage environment

This table lists the operating and storage specifications of your Dell Pro 14 Plus.

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

Table 26. Computer environment

Description	Operating	Storage
Temperature range	0°C to 35°C (32°F to 95°F)	-40°C to 65°C (-40°F to 149°F)
Relative humidity (maximum)	10% to 90% (non-condensing)	0% to 95% (non-condensing)
Vibration (maximum)*	0.66 GRMS	1.30 GRMS
Shock (maximum)	110 G†	160 G†
Altitude range	-15.2 m to 3048 m (4.64 ft to 5518.4 ft)	-15.2 m to 10668 m (4.64 ft to 19234.4 ft)
 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.

Dell Optimizer

Dell Optimizer is an AI-based software application that allows you to customize your computer settings for power and battery, and more.

For Dell Pro 14 Plus with Dell Optimizer, you can:

- Extend the battery life of your computer with Intelligent Battery Extender and Dynamic Charge.
- Tune the performance, power consumption, cooling, and fan noise with selectable thermal modes.
- Access and secure your computer depending on your physical presence.
- Download and redeem the apps that are purchased with your computer.

For more information about configuring and using these features, search for *Dell Optimizer* at the [Dell Support Site](#).

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. See the safety instructions that are shipped with the product or at [Dell Regulatory Compliance Home Page](#).

 **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity which could harm 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

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 outlets.
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, proceed to 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 process 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.

Service mode

Service Mode allows users to immediately cut off power from the computer and conduct repairs without disconnecting the battery cable from the system board:

1. Shut down the computer and disconnect the AC adapter.
2. Press and hold the **** key on the keyboard and then press the power button. The computer boots up.



Figure 12. Logo screen

3. When the Owner Tag information appears on the screen for models that are configured with owner tag, press any key to proceed.

 **NOTE:** The Service Mode procedure will automatically skip this step if the Owner Tag of the computer is not set up in advance by the manufacturer.

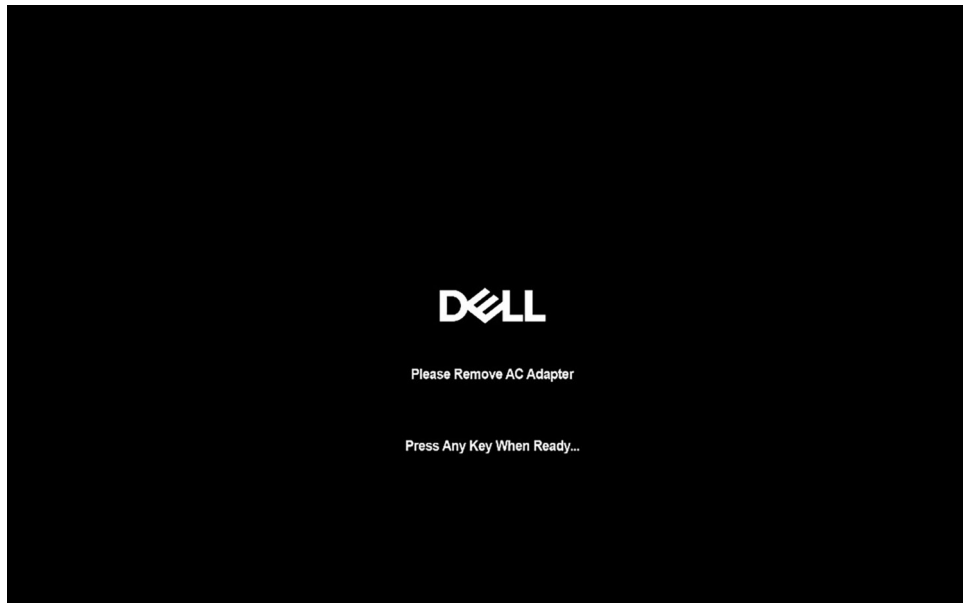


Figure 13. Booting screen

4. Ensure that the AC adapter has been disconnected and press any key to proceed.



Figure 14. Booting screen

5. 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.

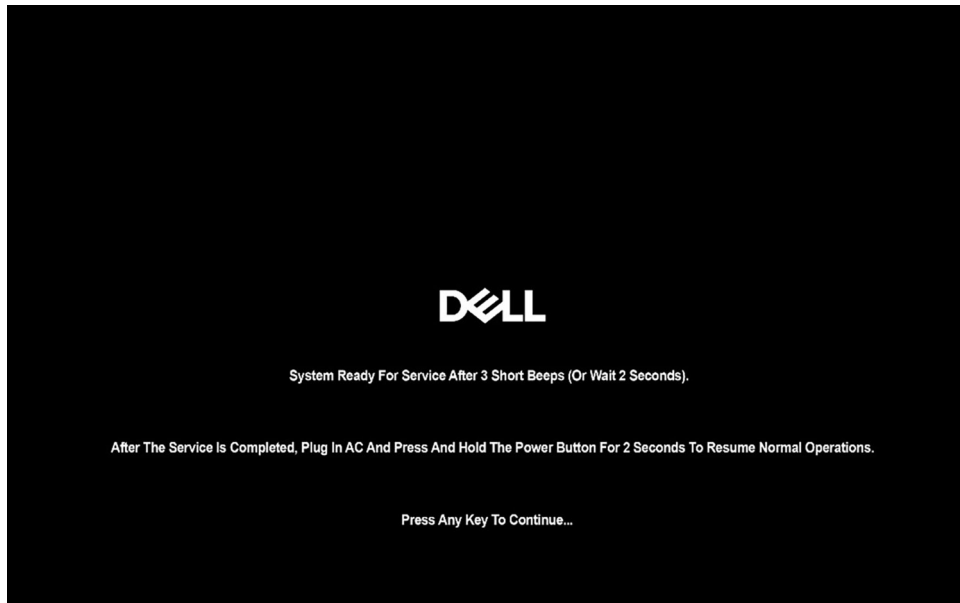


Figure 15. Booting screen

Once the computer shuts down, you can perform replacement procedures.

To exit **Service Mode**, connect the AC adapter and press the power button to power on the computer. The computer boots up and returns to normal functioning mode.

Safety precautions

This section details the primary steps to be followed before performing any disassembly instructions.

Observe the following safety precautions before you perform 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 any to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Wear shoes with nonconductive rubber soles to reduce the chance of getting electrocuted.
- Unplugging, pressing, and holding the power button for 15 seconds should discharge residual power in the system board.

Standby power

Dell products with standby power must be unplugged before you open the back cover. Systems that are equipped with standby power are powered while turned off. The internal power enables the computer to be remotely turned on (Wake-on-LAN) and suspended into a sleep mode and has other advanced power management features.

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. 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 deploying the ESD Field Service kit, assess the situation at the customer location. 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** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the anti-static mat is not required, or connect to the anti-static mat to protect hardware that is temporarily 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 kit, it is a best practice to regularly test the strap prior to each service, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. To perform the test, plug the bonding-wire of the wrist-strap into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.

 **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

 **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 progress, and the system 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 systems 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
- Flat head slotted screwdriver (<4mm)
- 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 27. Screw list

Component	Screw type	Quantity	Screw image
Base cover	Captive	8	
Battery	Captive	4	
WWAN shielding cover	M2x4	3	
Solid state drive shielding cover	M2x4	2	
Speakers	M1.6x1.5	6	
Fan	M2x4	2	
Heatsink	Captive	4	
Display cable bracket	M2x3	2	
Display assembly	M2.5x4	4	
	M2x3	1	
Display panel	M1.6x1.4	4	
Display hinge cap and hinge assembly	M2x3	2	
	M2.5x3.5	4	
MIPI camera	M1.6x1.4	2	

Table 27. Screw list (continued)

Component	Screw type	Quantity	Screw image
Power button	M1.6x1.7	2	
Smartcard reader	M2x2	4	
USH daughterboard	M1.6x1.5	2	
WLAN bracket	M2x3	1	
System board	M2x3	4	
	M2x4	• 3  NOTE: Applicable for computers shipped with a WWAN card. • 2  NOTE: Applicable for computers shipped without a WWAN card.	
I/O board	M2x3	5	
USB C connector module	M2x5	3	
Keyboard assembly	M1.6x1.7	20	

Major components of Dell Pro 14 Plus

The following image shows the major components of Dell Pro 14 Plus.

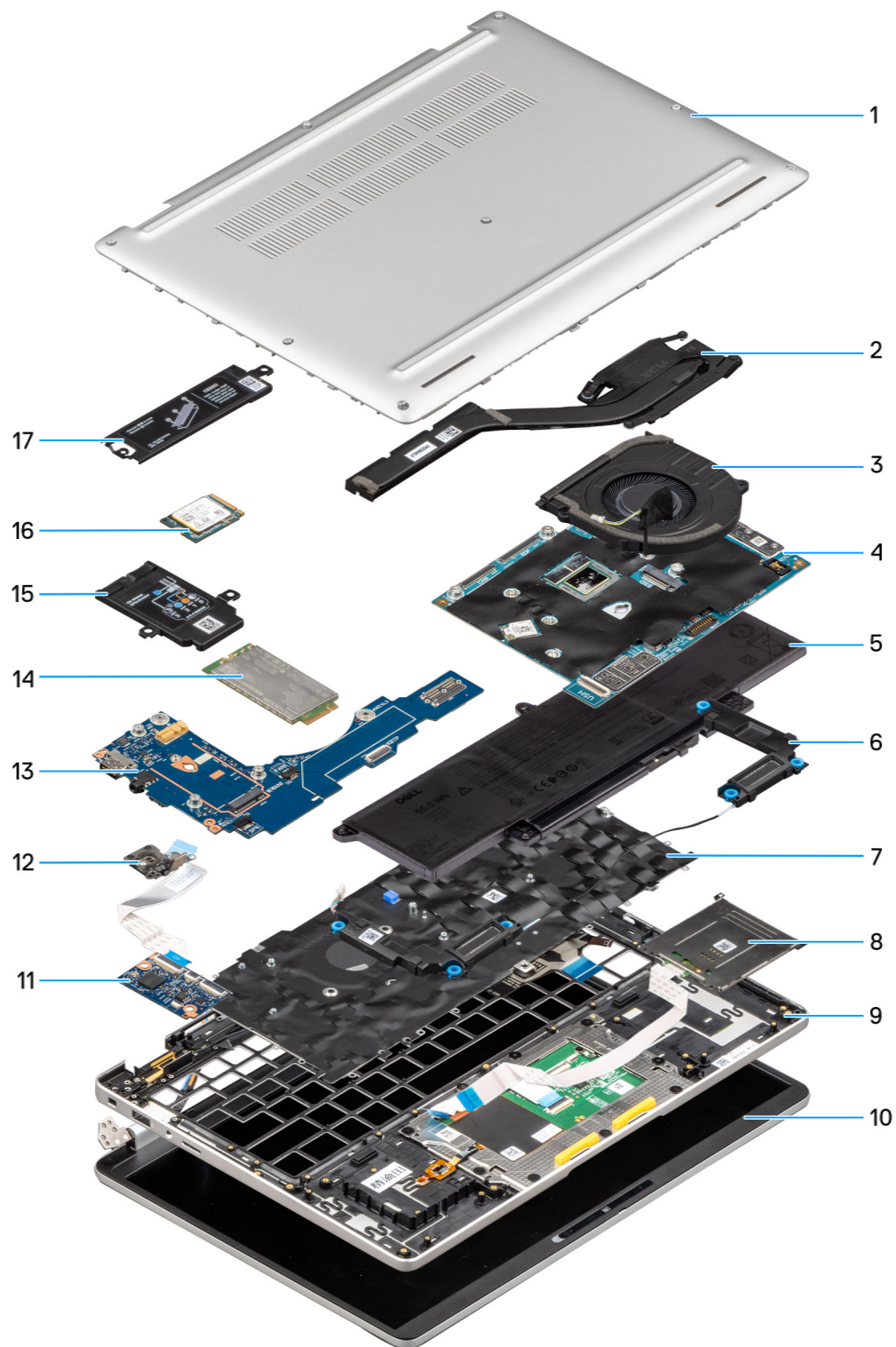


Figure 16. Explode view

1. Base cover
2. Heatsink
3. Fan
4. System board
5. Battery
6. Speakers
7. Keyboard assembly

8. Smart-card reader
9. Palmrest assembly
10. Display
11. USB board
12. Power button with optional fingerprint reader
13. I/O daughter board
14. WWAN card
15. WWAN-card shielding cover
16. Solid-state drive
17. Solid-state drive shielding cover

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

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.

SIM card tray

Removing the SIM-card tray

Prerequisites

 **NOTE:** Removing the SIM card when the computer is turned on can cause data loss or damage to the card. Ensure that your computer is turned off or the network connections are disabled.

1. Follow the procedure in [Before working inside your computer](#).

 **CAUTION:** Removing the SIM card when the computer is turned on can cause data loss or damage to the card. Ensure that your computer is turned off or the network connections are disabled.

About this task

The following image indicates the location of the SIM-card tray and provides a visual representation of the removal procedure.

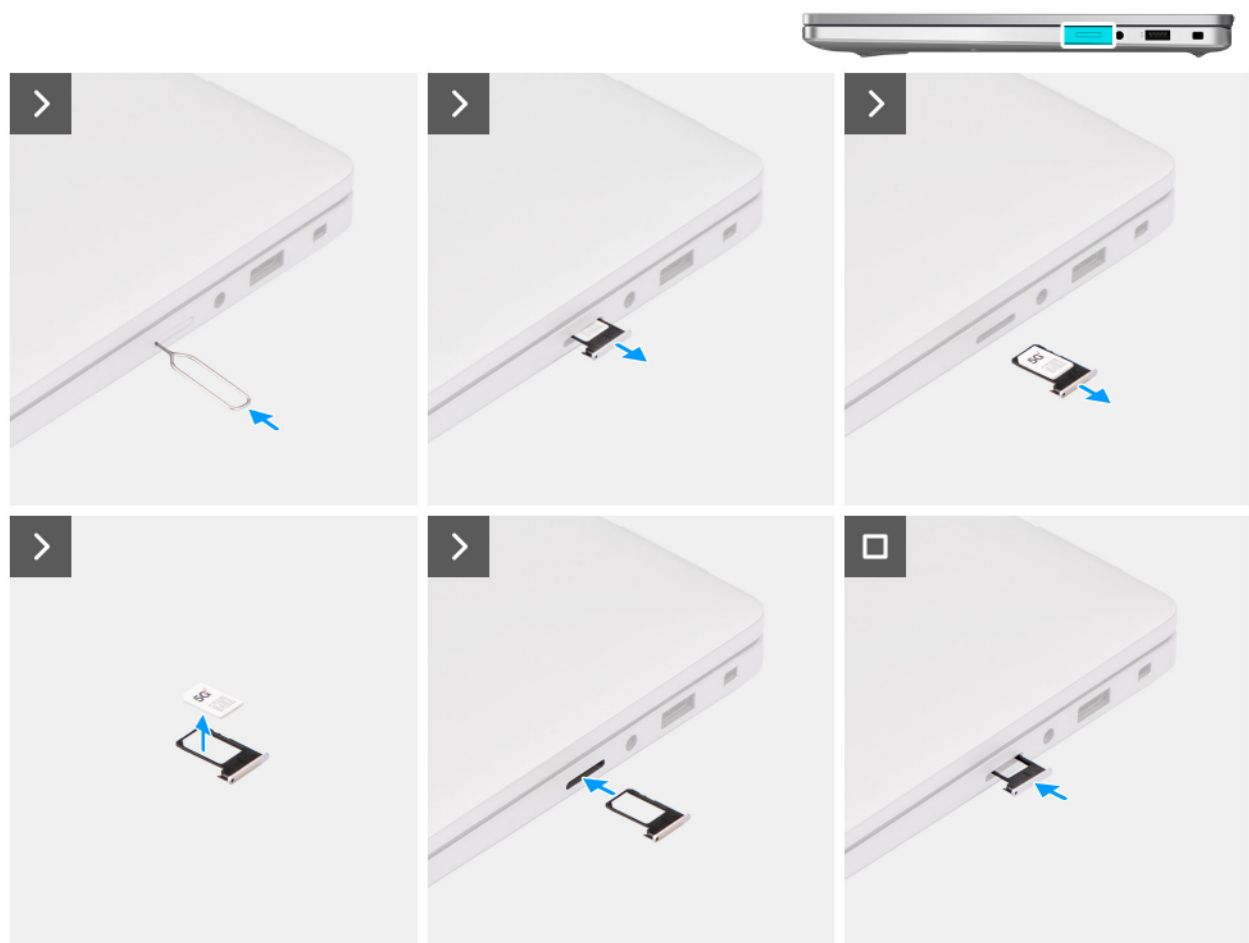


Figure 17. Removing the SIM-card tray

Steps

1. Insert a pin into the release hole to release the SIM-card tray.
2. Push the pin to disengage the lock, and eject the SIM-card tray.
3. Slide the SIM-card tray out of the slot on the computer.
4. Remove the SIM card from the SIM-card tray.
5. Slide and push the SIM-card tray back into the slot.

Installing the SIM-card tray

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 SIM-card tray and provides a visual representation of the installation procedure.

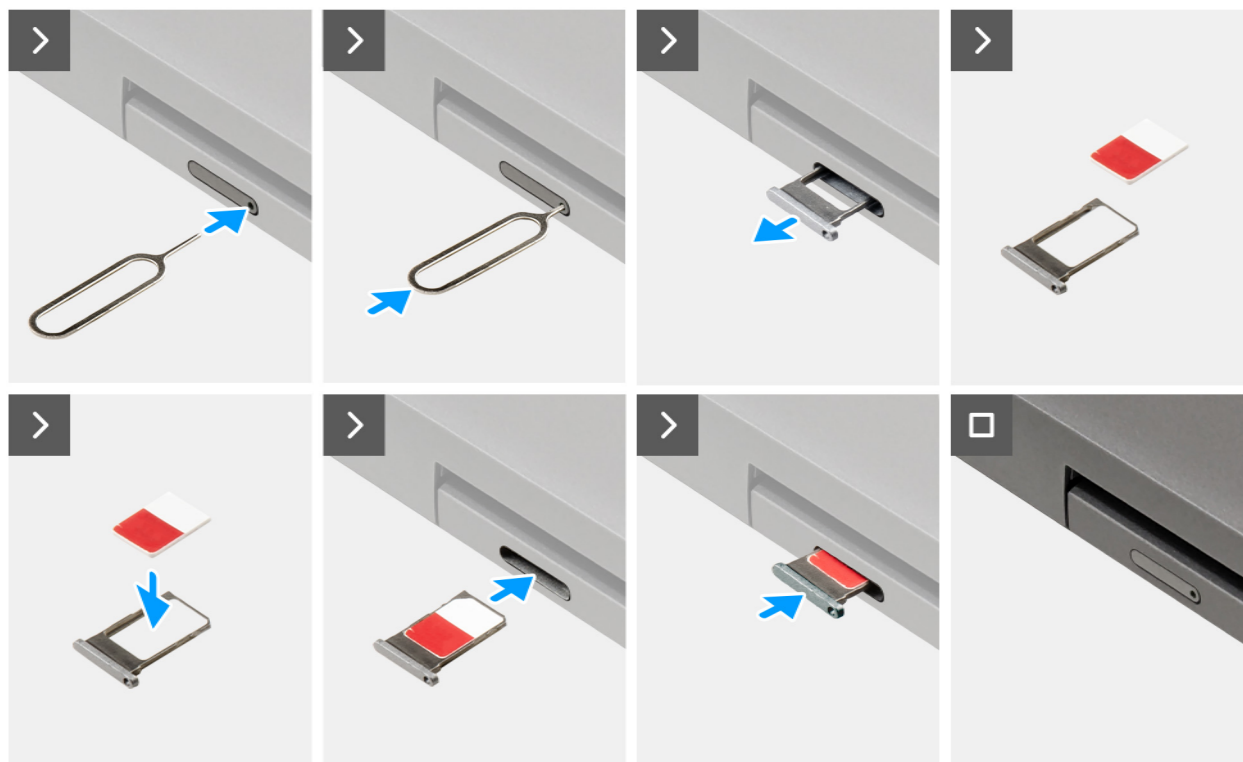


Figure 18. Installing the SIM-card tray

Steps

1. Insert a pin into the release hole to release the SIM-card tray.
2. Push the pin to disengage the lock, and eject the SIM-card tray.
3. Slide the SIM-card tray out of the slot on the computer.
4. Align and place the SIM card in the dedicated slot on the SIM-card tray, with the metallic contact of the SIM card facing up.
5. Align the SIM-card tray with the slot on the computer and carefully slide it in.
6. Slide the SIM-card tray into the slot, until it clicks into place.

Next steps

1. Follow the procedure in [after working inside your computer](#).

Base cover

Removing the base cover

Prerequisites

1. Follow the procedure in [before working inside your computer](#).

 **NOTE:** Ensure that your computer is in Service Mode. For more information, see [before working inside your computer](#).

 **CAUTION:** If the computer does not turn on, does not enter Service Mode, or does not support Service mode, disconnect the battery cable.

2. Remove the [sim-card tray](#), if applicable.

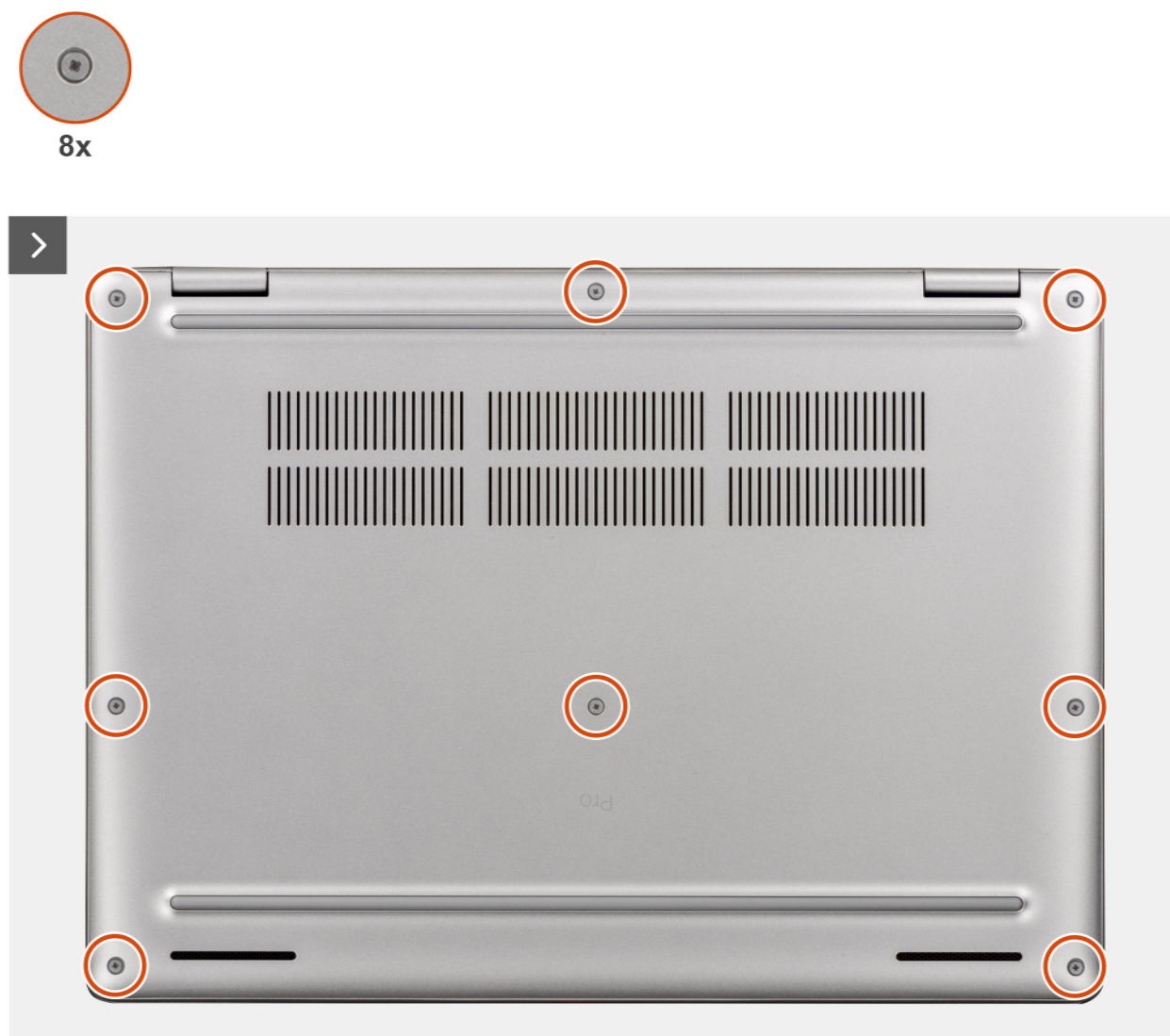


Figure 19. Removing the base cover

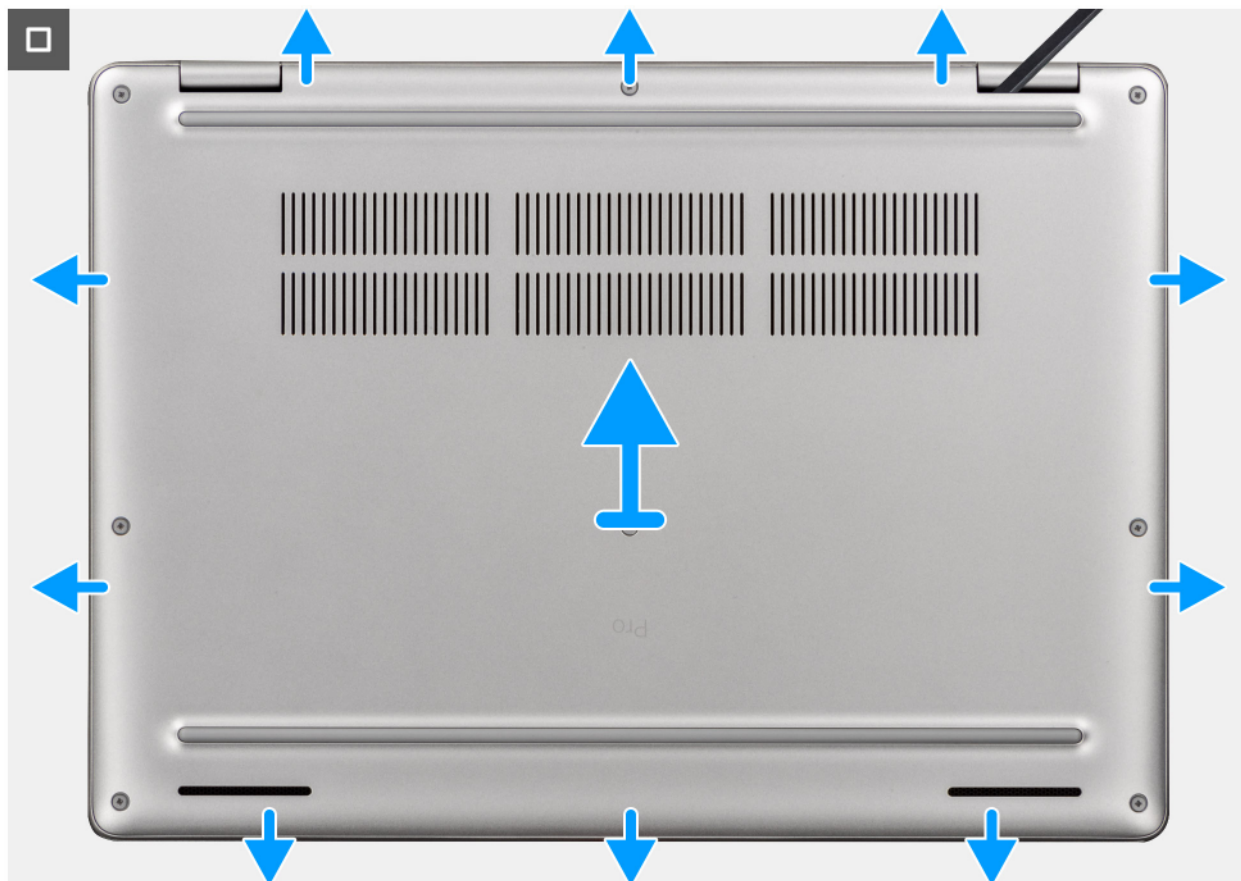


Figure 20. Removing the base cover

Steps

1. Loosen the eight captive screws that secure the base cover in place.
2. Using a plastic scribe, pry open the base cover from the recesses that are located in the U-shaped indents at the top edge of the base cover near the hinges.
NOTE: To remove the base cover, pry it open from the U-shaped indents at its top edge near the display hinges.
3. Lift the base cover off the keyboard and palm-rest assembly.
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 the below steps.
4. Disconnect the battery cable from the system board using the pull tab.
5. Press and hold the power button for five seconds to ground the computer and drain the flea power.



Figure 21. Disconnecting the battery cable

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.

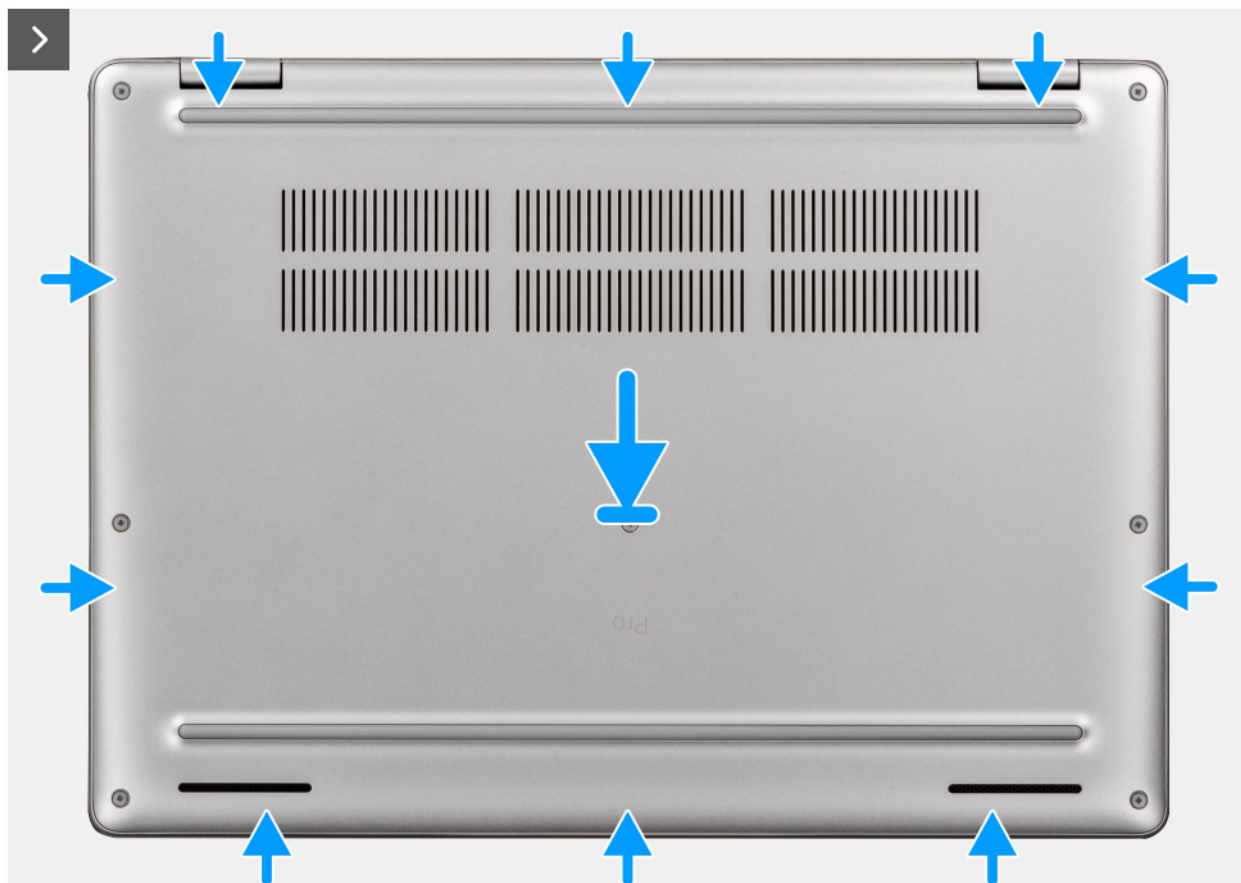


Figure 22. Installing the base cover



Figure 23. Installing the base cover

NOTE: If you have disconnected the battery cable, ensure to connect the battery cable. To connect the battery cable, follow step 1 and step 2 in the procedure.

Steps

1. Connect the battery cable to the battery-cable connector (BATT1) on the system board if the computer is not in service mode.
2. Align the screw holes on the base cover with the screw holes on the keyboard assembly, and then snap the base cover into place.
3. Tighten the eight captive screws to secure the base cover in place.

Next steps

1. Follow the procedure in [after working inside your computer](#).

NOTE: Ensure that your computer is in Service Mode. For more information, see [before working inside your computer](#).

2. Install the [SIM-card tray](#), if applicable.

Battery

Rechargeable Li-ion battery precautions

CAUTION:

- 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 this product.
- If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a rechargeable Li-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See [Contact Support at Dell Support Site](#).
- 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

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).

About this task

 **CAUTION:** Removing the battery resets the BIOS setup settings to default. It is recommended that you note the BIOS setup settings before removing the battery.

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

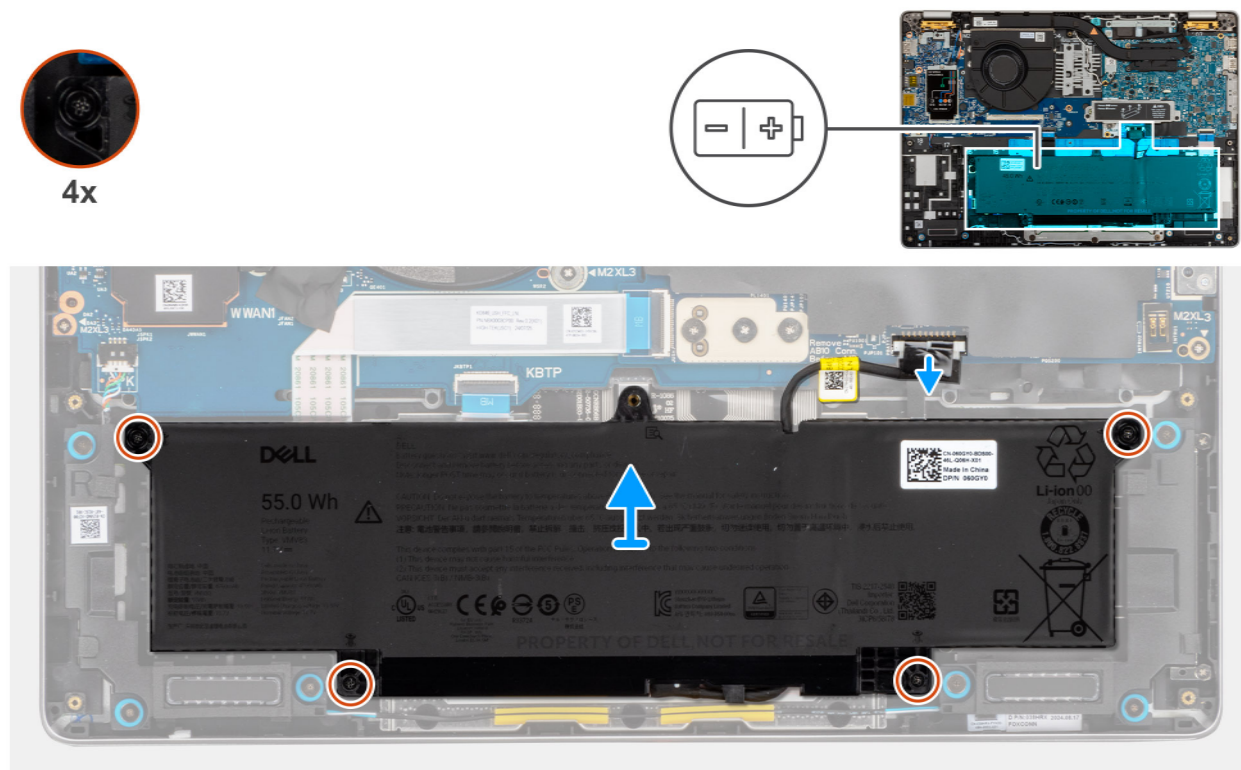


Figure 24. Removing the battery

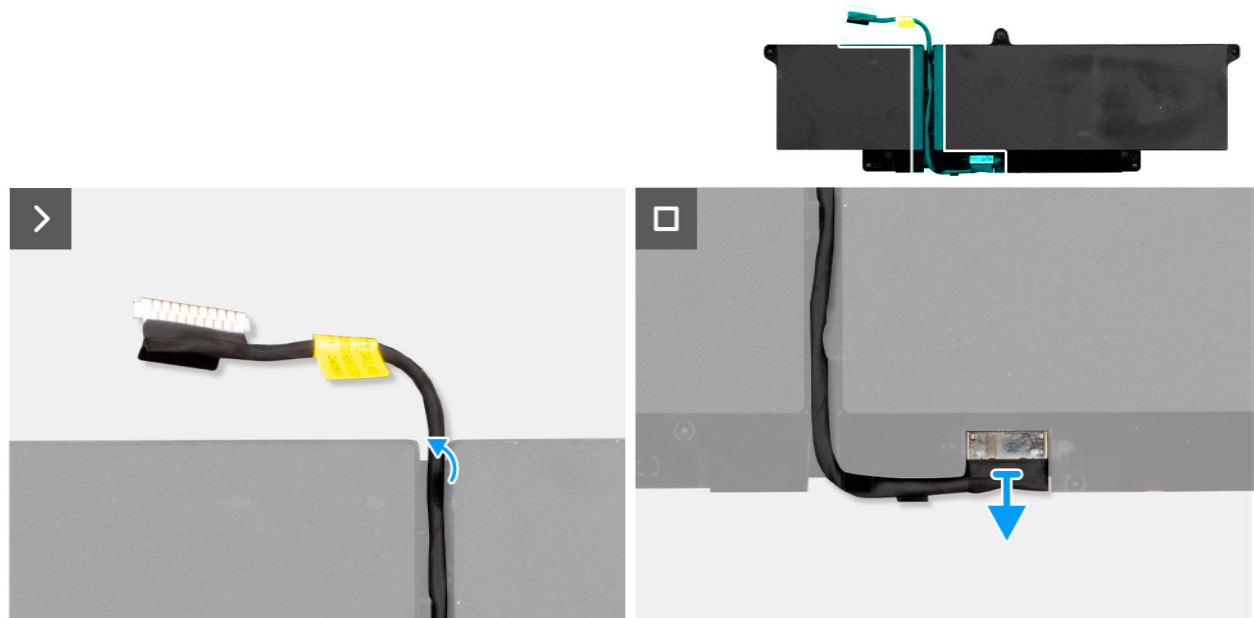


Figure 25. Removing the battery cable

Steps

1. Disconnect the battery cable from the battery cable connector (BATT1) on the system board (if not disconnected earlier).
2. Loosen the four captive screws that secure the battery in place.
3. Lift the battery off the palm-rest assembly.
4. Remove the battery cable from the routing guides on the battery.

5. Turn the battery over and disconnect the battery cable from the battery.
6. Remove the battery cable from the battery.

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.

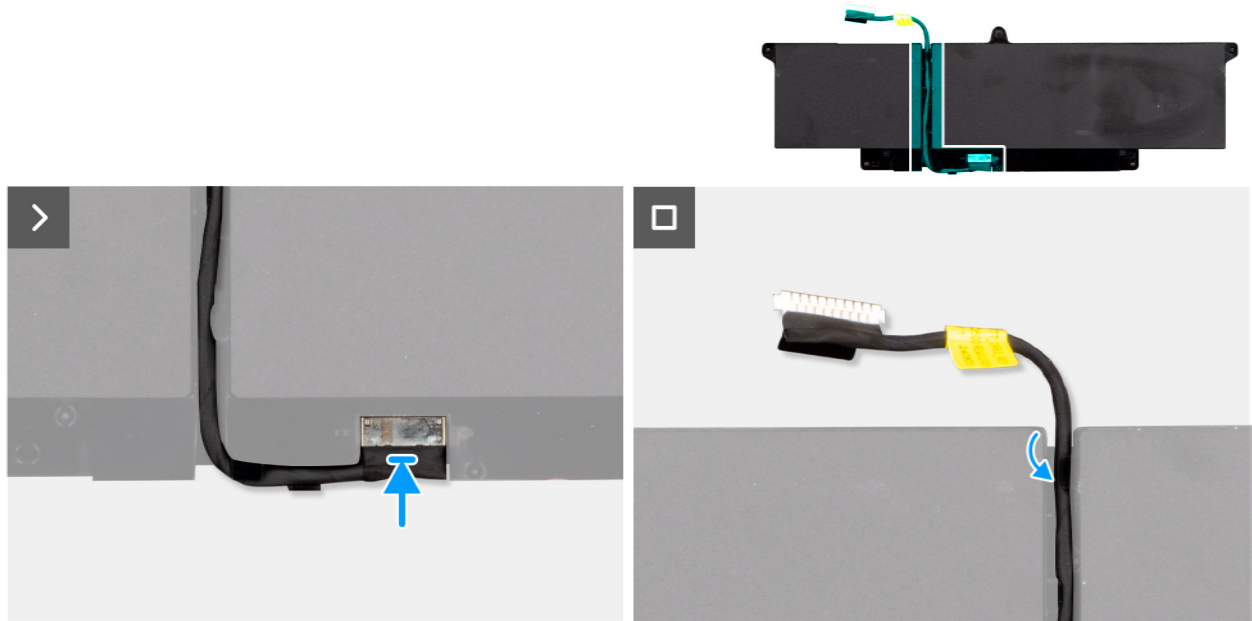


Figure 26. Replacing the battery cable

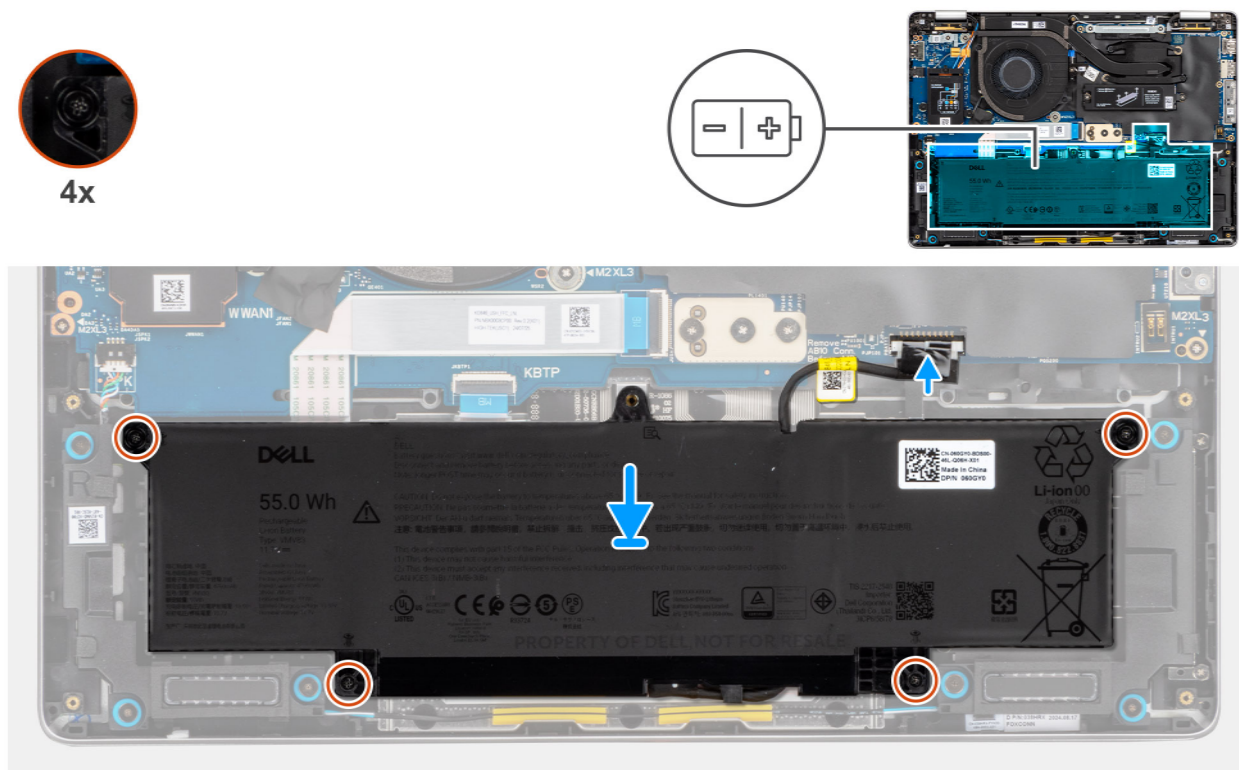


Figure 27. Installing the battery

Steps

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

NOTE: When reinstalling the battery cable, ensure that the cable is properly routed under the securing tabs.

3. Using the alignment posts, place the battery on the palm-rest assembly.
4. Tighten the four captive screws that secure the battery in place.
5. Connect the battery cable to the connector on the system board.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. Follow the procedure in [after working inside your computer](#).

Wireless Wide Area Network (WWAN) card

Removing the WWAN card

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

NOTE: The 5G WWAN card is available only on certain configurations. It is connected to the computer with four antenna cables.

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.

3. Remove the [base cover](#).

About this task

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

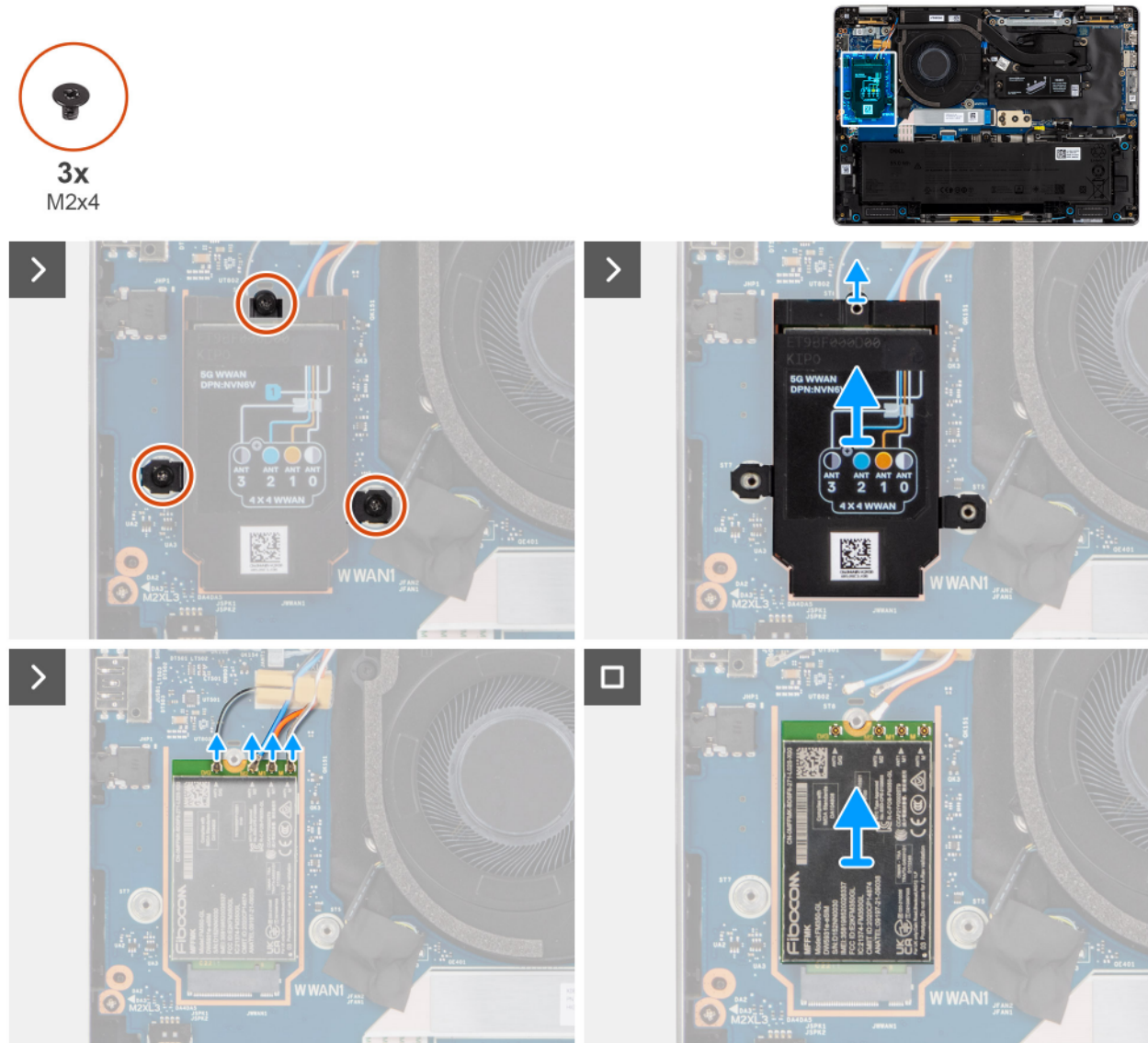


Figure 28. Removing the WWAN card

Steps

1. Remove the three screws (M2x3) securing the WWAN shielding cover in place.
2. Remove the WWAN shielding cover from the computer.
3. Disconnect the gray, blue, orange, and white cable from the respective connectors on the WWAN card.
4. Remove the WWAN card from the slot.

NOTE: If you are replacing the 5G WWAN card, ensure that the thermal pad is in place.

NOTE: If you are replacing the system board, ensure to peel the thermal pad from the old system board to the new system board.

Installing the WWAN card

About this task

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

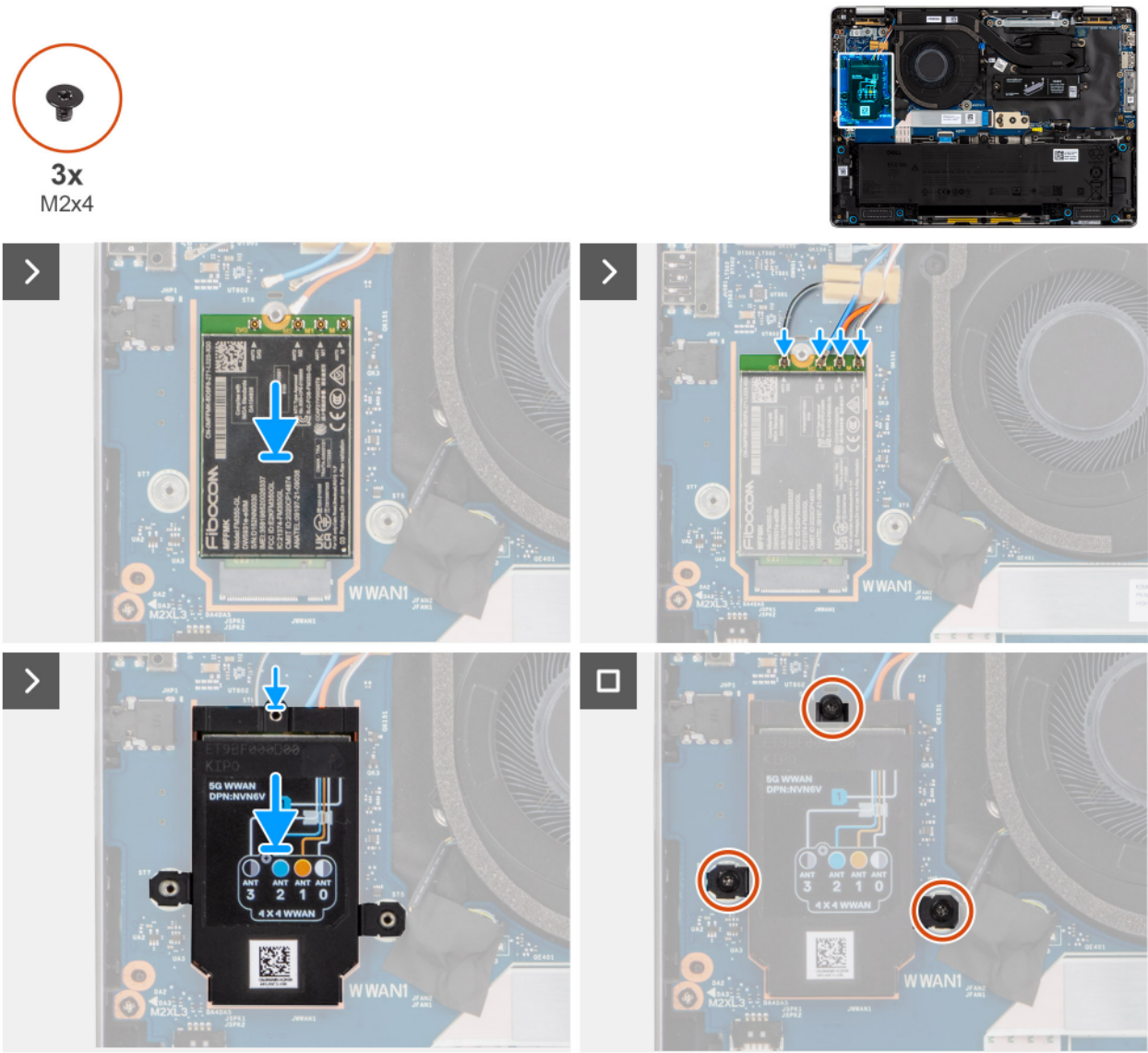


Figure 29. Installing the WWAN card

Steps

1. Insert the 5G WWAN card at an angle into the 5G WWAN-card slot on the I/O board.
 - NOTE:** If you are replacing the 5G WWAN card, ensure that the thermal pad is in place.
 - NOTE:** If you are replacing the system board, ensure to peel the thermal pad from the old system board to the new system board.
 - NOTE:** If the thermal pad is damaged, peel the thermal pad from the system board and replace it with a new thermal pad. The thermal pad must be purchased separately.
2. Connect the antenna cables to the WWAN card.

The following table provides the antenna-cable color scheme for the 5G WWAN card that is supported on your computer.

Table 28. Antenna-cable color scheme for 5G WWAN cards

Connectors on the WWAN card	Antenna-cable color	Silkscreen marking	
D/G	Black with a thin white stripe	ANT3 D/G	△ (white triangle)
M2	Blue	ANT2 M2	△ (white triangle)
M1	Orange	ANT1 M1	△ (white triangle)
M	White with a thin gray stripe	ANT0 M	△ (white triangle)

3. Place the WWAN shielding cover over the WWAN card and align the screw holes.
4. Replace the three screws (M2x3) to secure the WWAN shielding cover in place.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if required.
3. Follow the procedure in [after working inside your computer](#).

Solid State Drive (SSD)

Removing the M.2 2230 solid state drive

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [sim-card tray](#), if required.
3. Remove the [base cover](#).

About this task

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

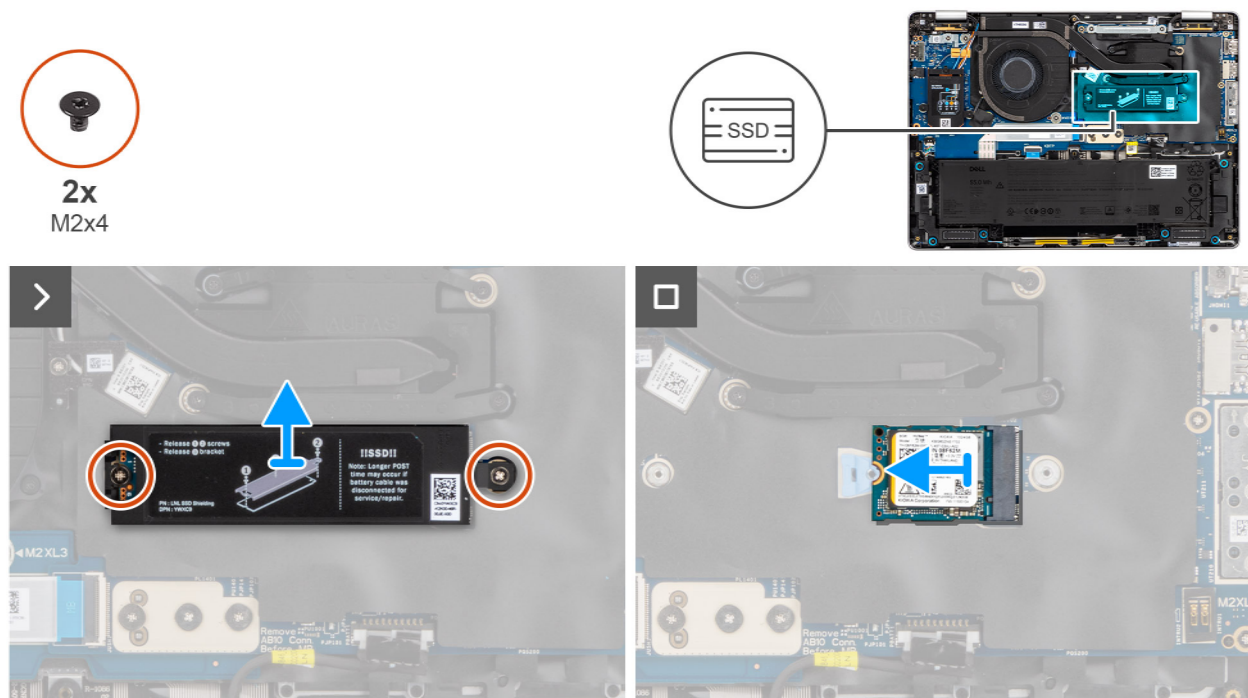


Figure 30. Removing the M.2 2230 SSD

Steps

1. Remove the two screws (M2x3) securing the SSD shielding cover in place.
2. Remove the SSD shielding cover from the computer.
 - NOTE:** If the thermal pads get separated from the shielding cover or gets adhered to the SSD while replacing the SSD, the technicians must readhere the thermal pad to the SSD cover before reinstalling it to the computer.
3. Remove the screw (M2x4) securing the M.2 2230 SSD in place.
4. Remove the M.2 SSD from the computer.
5. Remove the M.2 2230 SSD mounting bracket from the computer.
 - NOTE:** For models shipped with M.2 2230 SSD, ensure that the SSD screw holder is transferred when the system board is replaced.

Installing the M.2 2230 solid-state drive

About this task

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

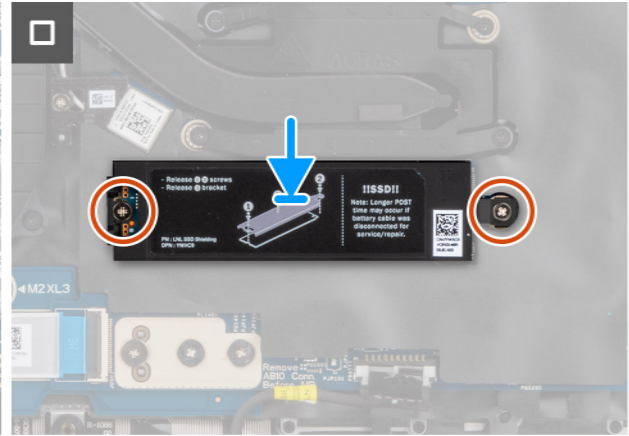
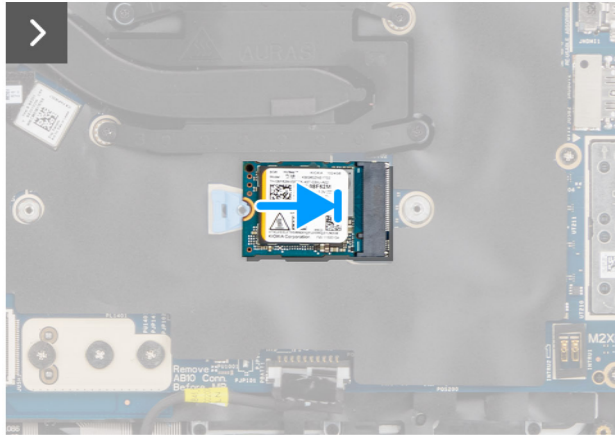
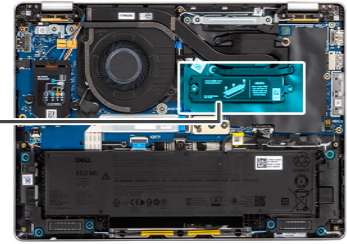


Figure 31. Installing the M.2 2230 SSD

Steps

1. Place the M.2 2230 SSD mounting bracket in space.

NOTE: For models shipped with M.2 2230 SSD, ensure that the SSD screw holder is transferred when the system board is replaced.

2. Align the notch on the M.2 2230 SSD with the tab on the M.2 2230 SSD slot.
3. Replace the screw (M2x4) that secure the M2.2230 SSD in place.
4. Place the SSD shielding cover over the M.2 2230 SSD and replace the two screws (M2x3) to secure it in place.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. Follow the procedure in [after working inside your computer](#).

Removing the M.2 2280 solid state drive

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

Prerequisites

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).

About this task

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



2x
M2x4

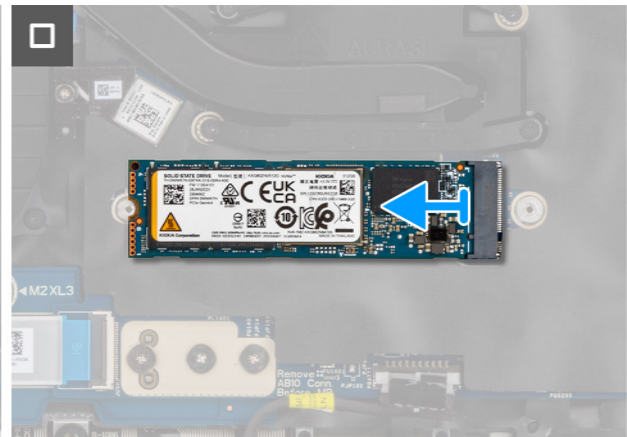
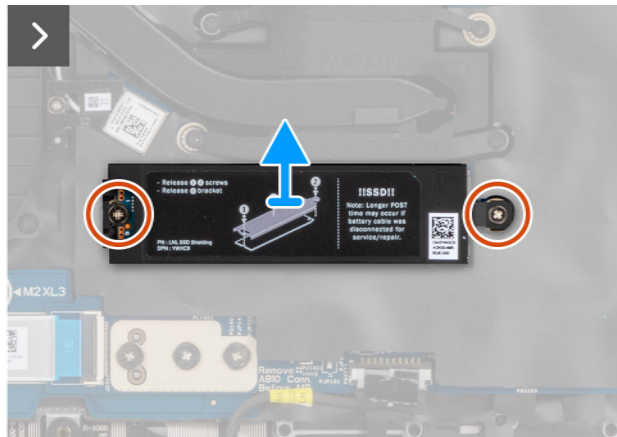
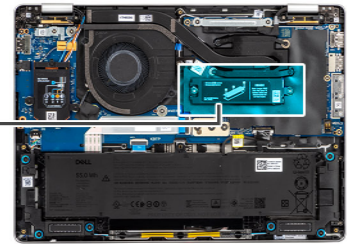


Figure 32. Removing the M.2 2280 SSD

Steps

1. Remove the two screws (M2x3) securing the SSD shielding cover in place.
2. Remove the SSD shielding cover from the palm-rest assembly.
i **NOTE:** If the thermal pads get separated from the shielding cover or gets adhered to the SSD while replacing the SSD, the technicians must readhere the thermal pad to the SSD cover before reinstalling it to the computer.
3. Remove the screw (M2x4) securing the M.2 2280 SSD in place.
4. Remove the M.2 SSD from the computer.

Installing the M.2 2280 solid state drive

About this task

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

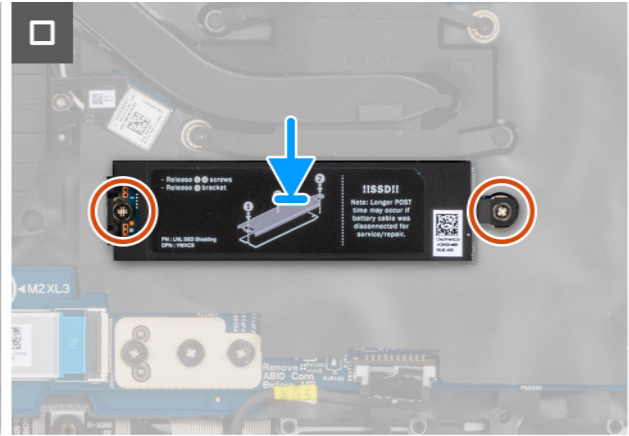
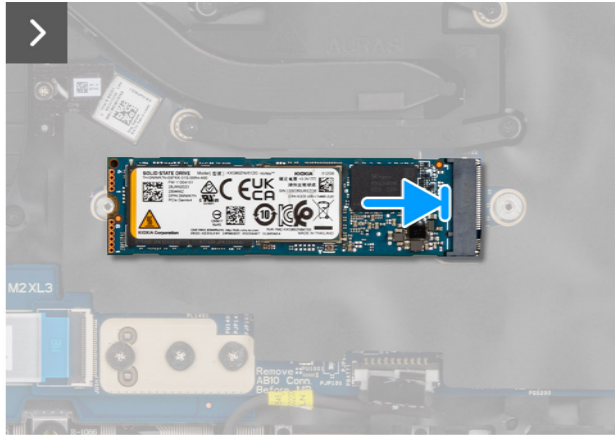
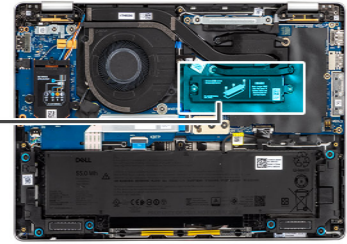


Figure 33. Installing the M.2 2280 SSD

Steps

1. Align the notch on the M.2 2280 SSD with the tab on the M.2 2280 SSD slot.
2. Place the SSD shielding cover over the M.2 2280 SSD and replace the two screws (M2x3) to secure it in place.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. 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 [sim-card tray](#), if applicable.
3. Remove the [base cover](#).

About this task

The following image indicates the location of the main speakers and provides a visual representation of the removal procedure.

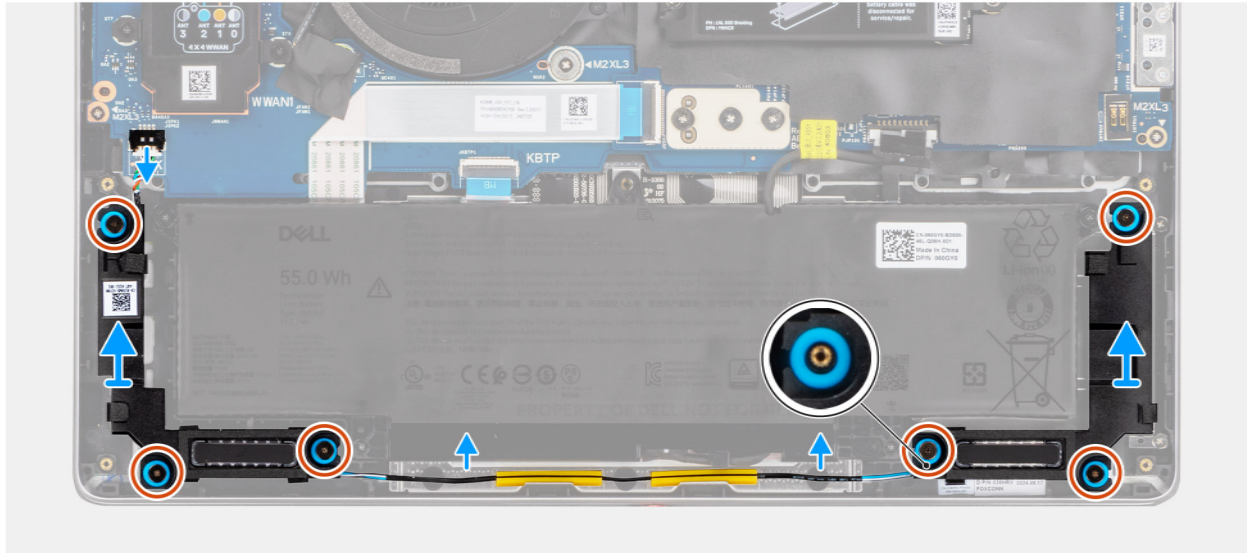
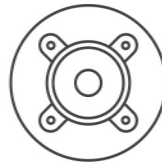


Figure 34. Removing the speakers

Steps

1. Disconnect the speaker cable from the I/O board.
2. Unroute the speaker cables from the routing guides on the bottom side of the palm-rest.
3. Remove the six screws (M1.6x1.5) that secure the speakers in place.
4. Release the speakers from the rubber grommets and lift the speakers off the computer.

Installing the speakers

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 speakers and provides a visual representation of the installation procedure.

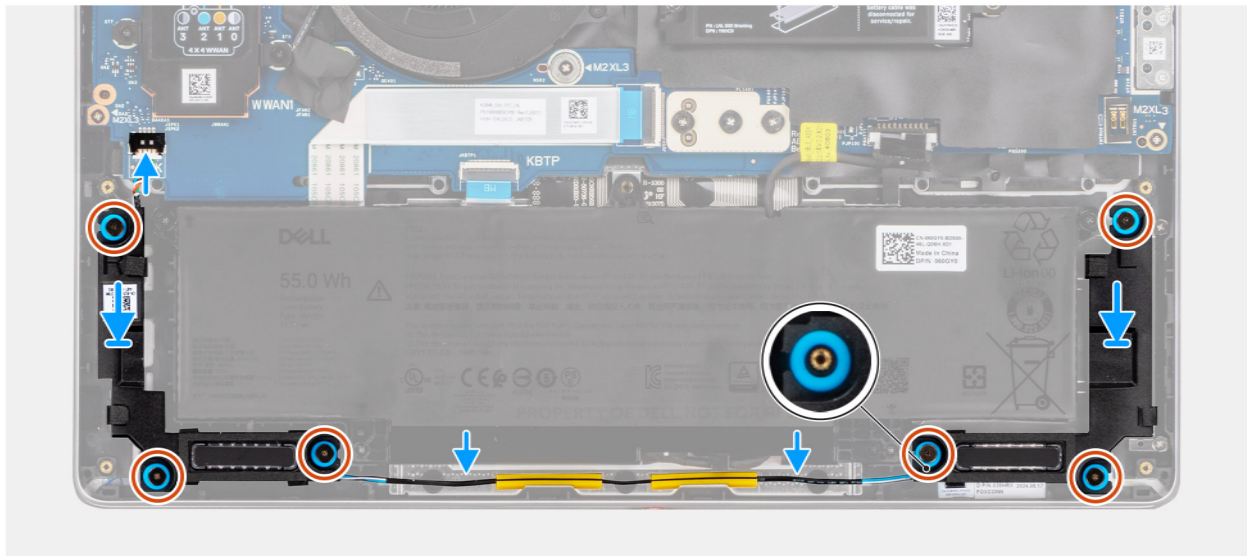
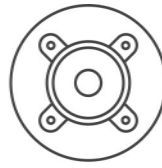


Figure 35. Installing the speakers

Steps

1. Using the alignment posts and rubber grommets, place the speakers into the slots on the palm-rest and keyboard assembly.
NOTE: To properly position the speakers, secure the rubber grommets into the hooks.
2. Replace the six screws (M1.6x1.5) that secure the speakers in place.
3. Route the speaker cable along the bottom side of the palm-rest and keyboard assembly and secure the speaker cable into the routing guides on the palm-rest and keyboard assembly.
4. Connect the speaker cable to the connector on the I/O board.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. 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 [sim-card tray](#), if applicable.
3. Remove the [base cover](#).

About this task

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

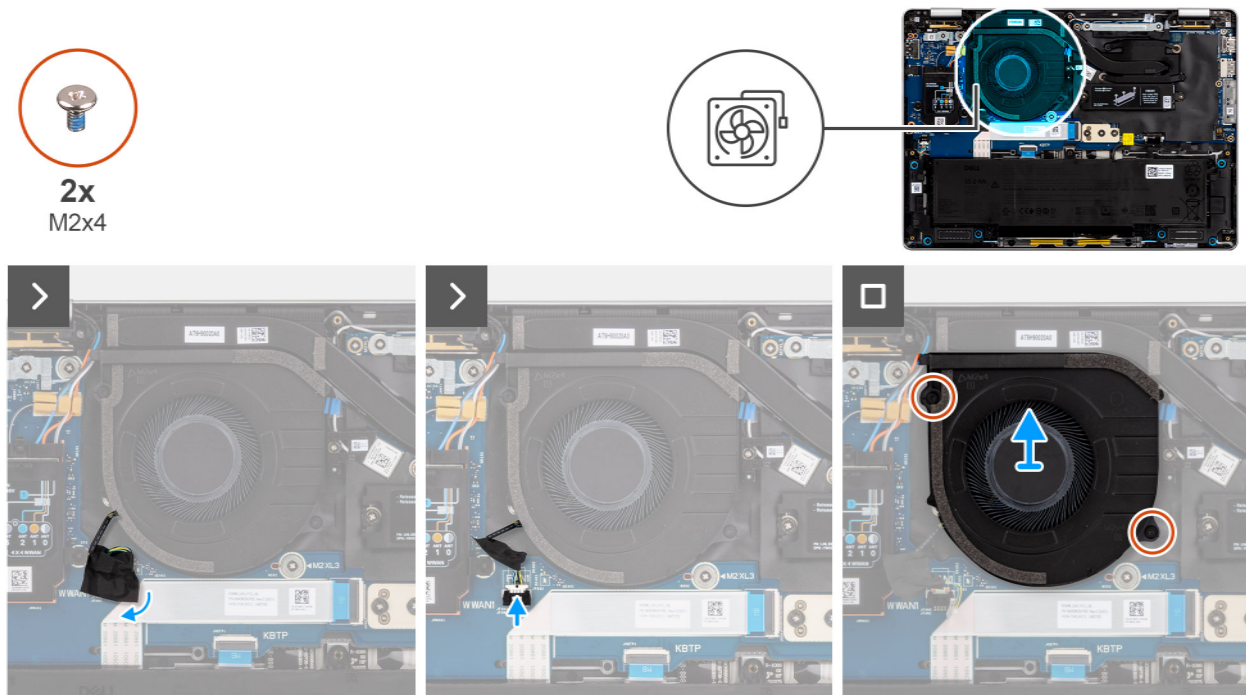


Figure 36. Removing the fan

Steps

1. Peel the tape that secures the fan cable connector to the I/O board.
2. Disconnect the fan cable from the I/O board.
3. Remove the two screws (M2x3) that secure the fan to the palm-rest assembly.
4. Lift and remove the fan from the palm-rest assembly.

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 fan and provides a visual representation of the installation procedure.

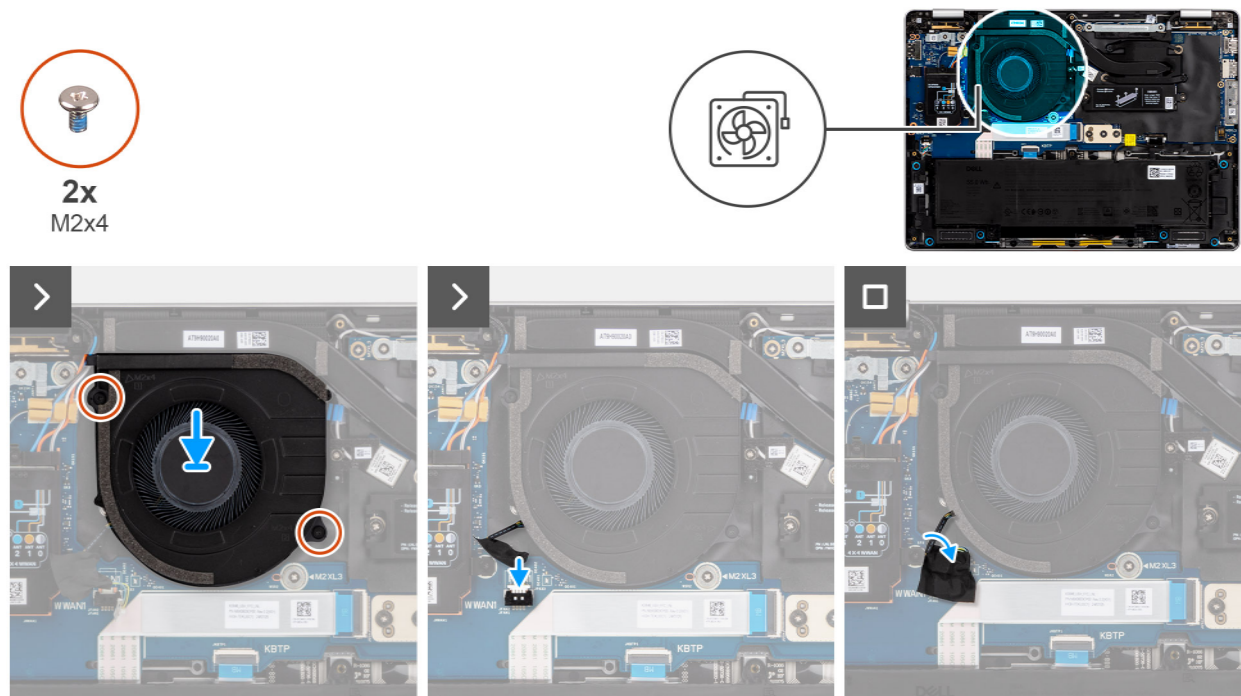


Figure 37. Installing the fan

Steps

1. Place the fan on the palm-rest assembly.
2. Align the screw holes on the fan to the screw holes on the palm-rest assembly.
3. Replace the two screws (M2x3) that secure the fan to the palm-rest assembly.
4. Connect the fan cable to the fan-cable connector on the I/O board.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. Follow the procedure in [after working inside your computer](#).

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 this set of repairs, if needed, to be conducted by trained technical repair specialists.

 **CAUTION:** As a reminder, 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.

Display assembly

Removing the display assembly

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).

 **NOTE:** This procedure applies for models that are shipped without a camera or models that are shipped with an RGB or IR camera.

About this task

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

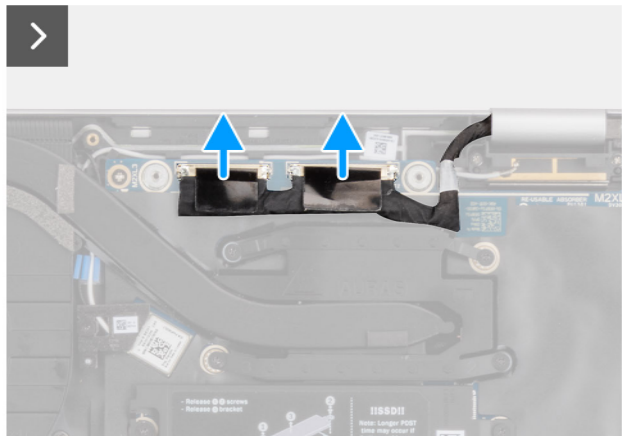
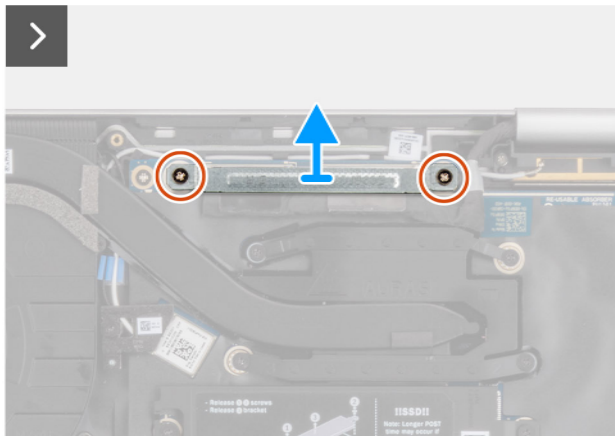
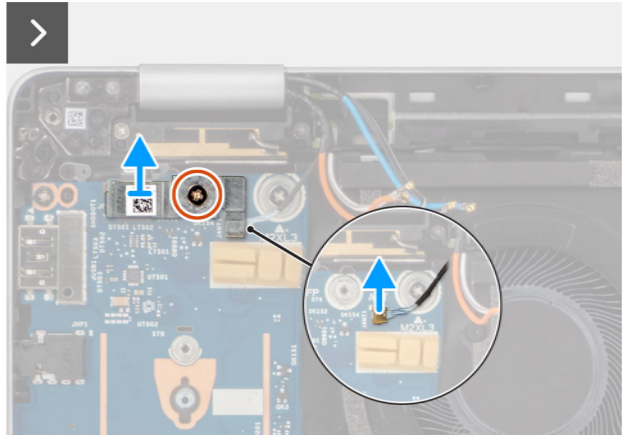
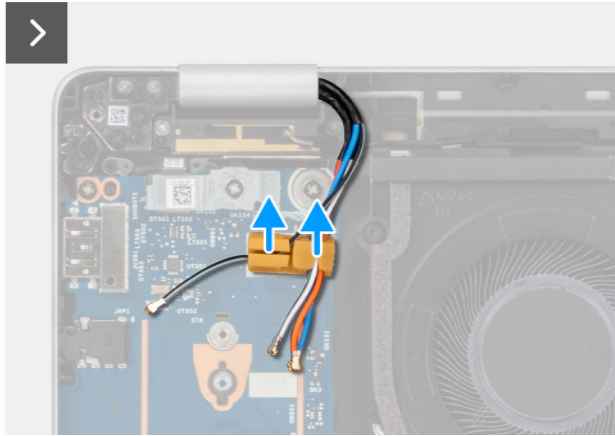


Figure 38. Removing the display assembly

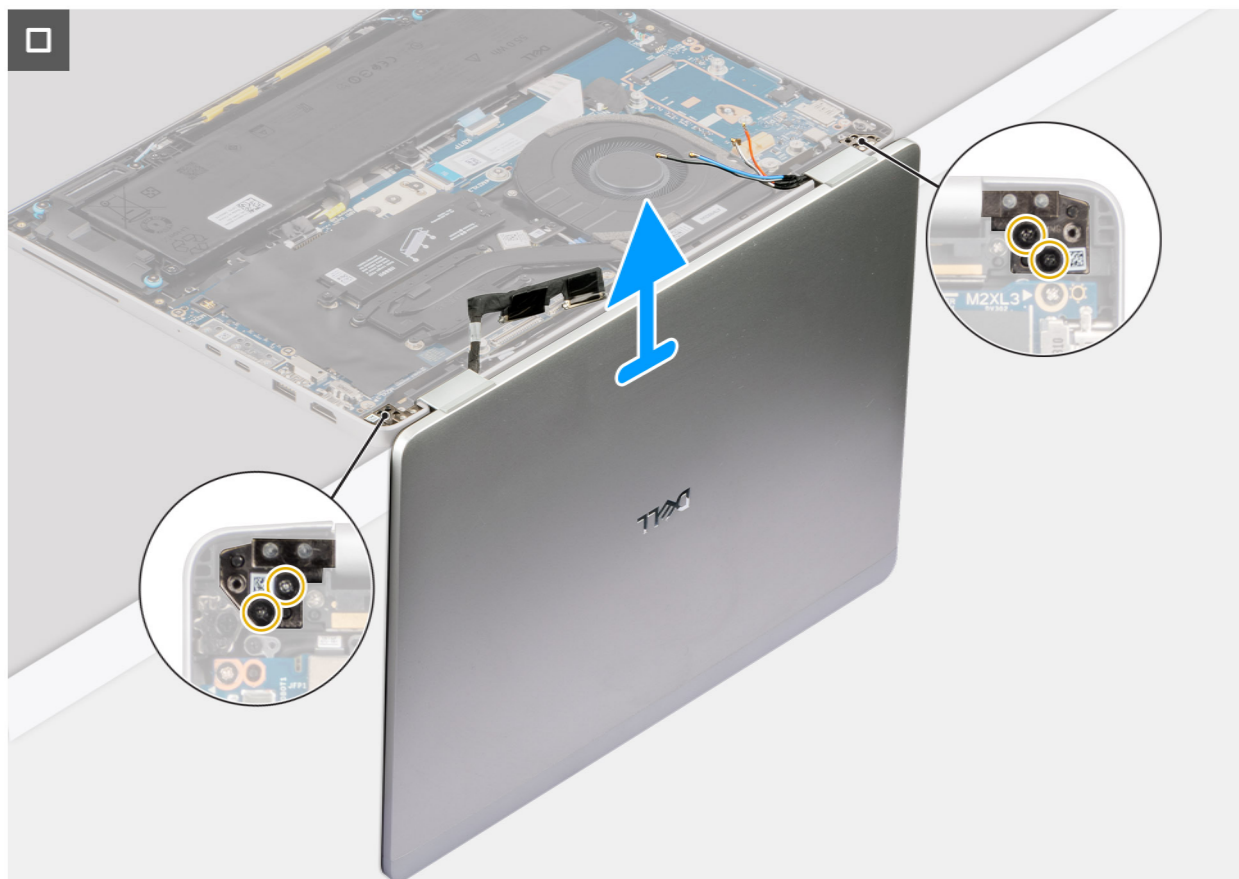


Figure 39. Placing the laptop at angle

Steps

1. Release the WWAN antenna cables out of the cable holder.
2. Remove the screw (M2x3) that secures the power-button bracket in place.
3. Lift the power-button bracket off the computer and disconnect the power-button cable from the system board.
4. Remove the two screws (M2x3) that secure the camera and display-cable bracket in place.
5. Open the flap and disconnect the camera cable and display cable from the connectors on the system board.
6. Open the display assembly to a 90-degree angle, flip the computer. Place the computer on the edge of a clean and flat surface so the display assembly extends below the edge of the surface.
7. Remove the four screws (M2.5x4) that secure the display assembly to the computer.
8. Carefully remove the display assembly from the palm-rest assembly.
9. Place the display assembly on a clean, flat surface.

Installing the display assembly

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

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 assembly and provide a visual representation of the installation procedure.

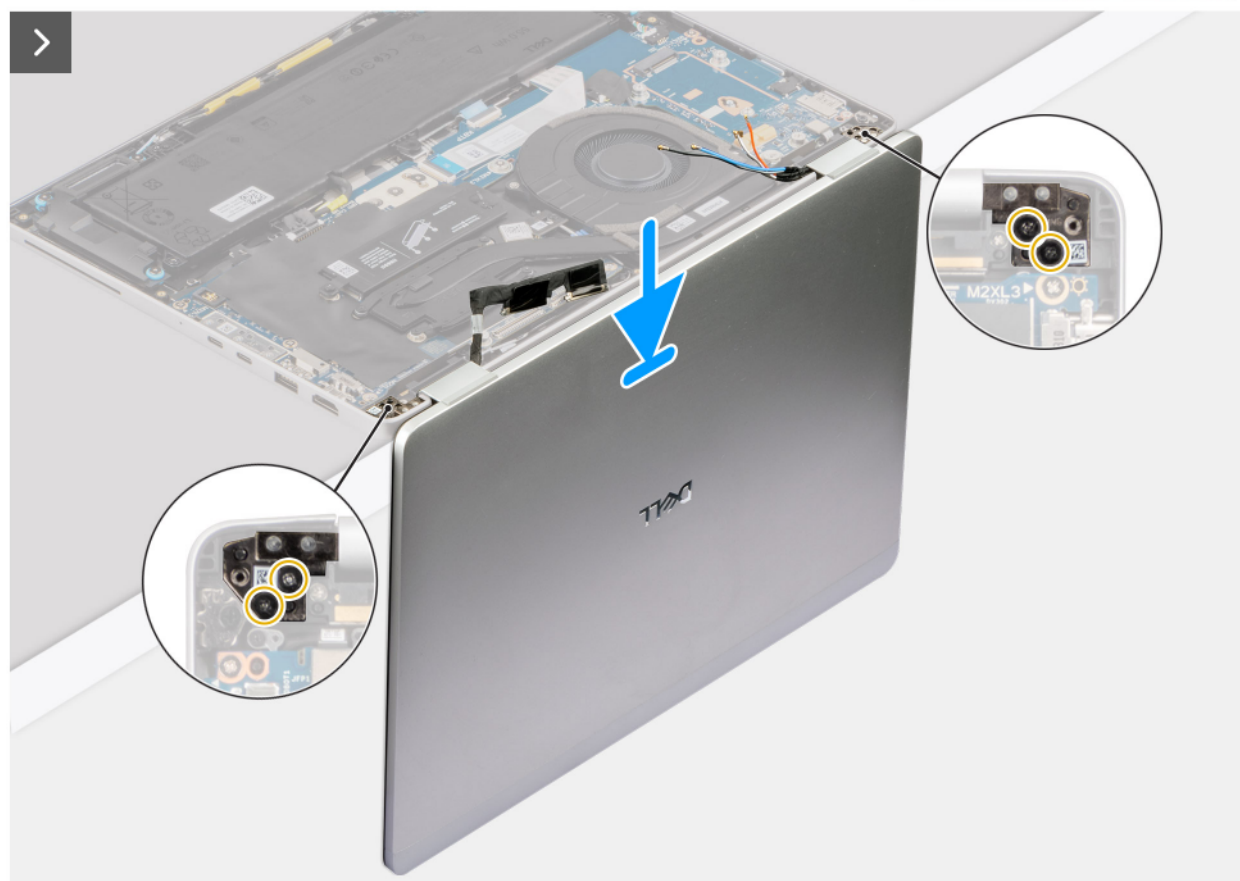
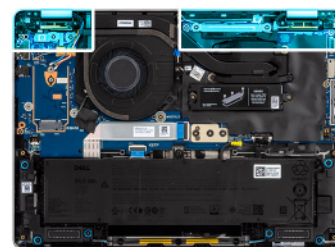


Figure 40. Aligning the display assembly with the palm-rest assembly

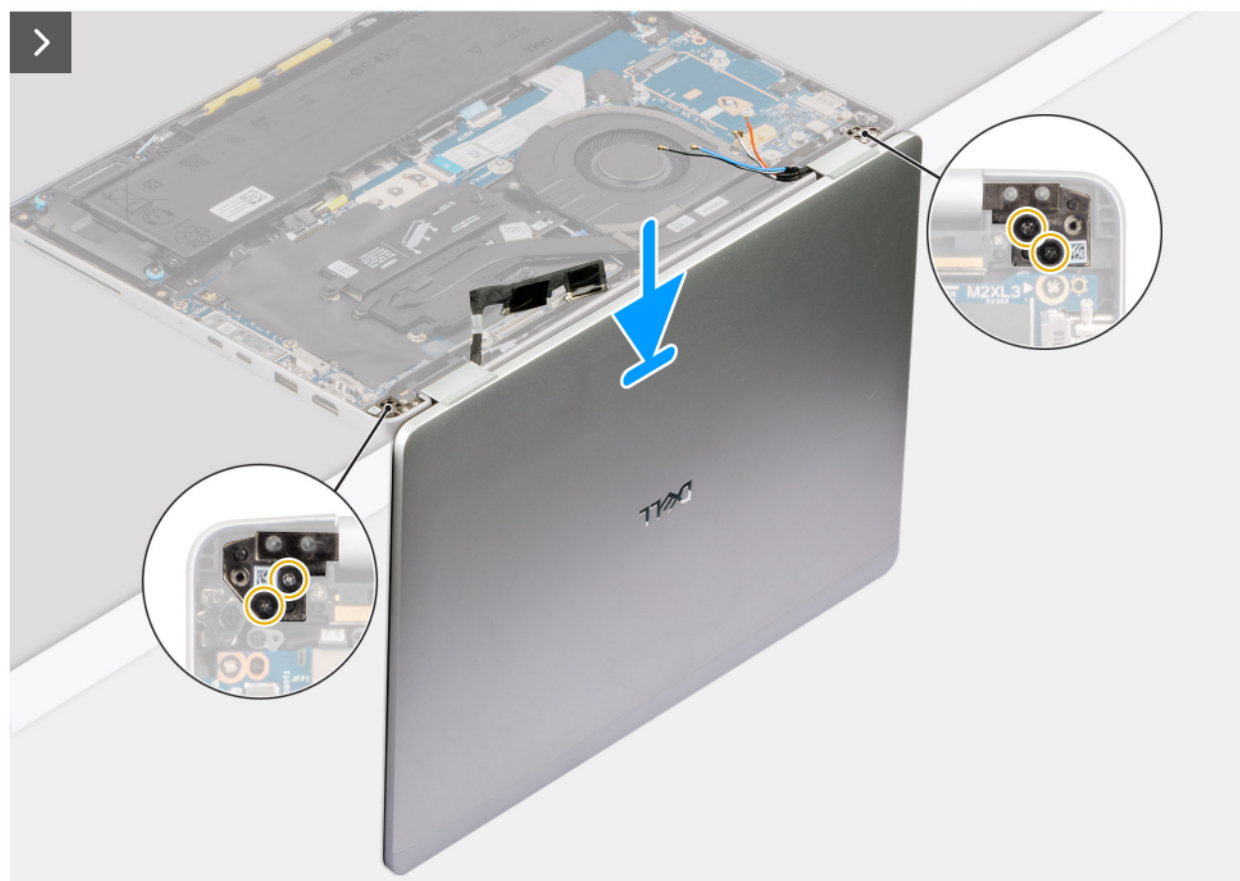
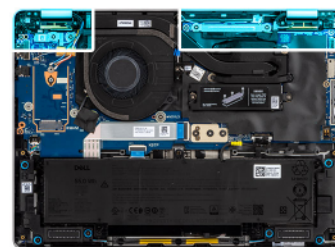


Figure 41. Aligning the display assembly with the palm-rest assembly (2-in-1)

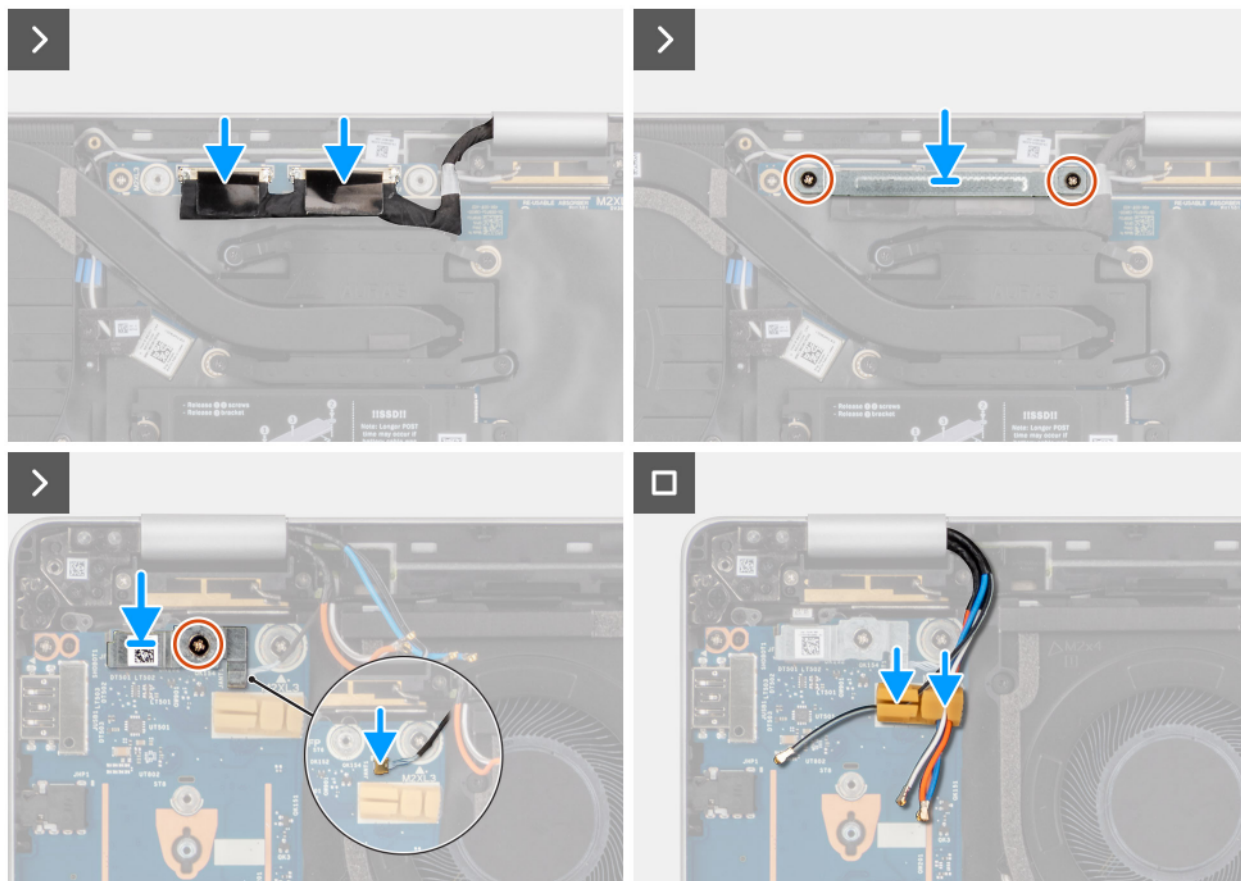


Figure 42. Aligning the display assembly with the palm-rest assembly (2-in-1)

Steps

1. Place the palm-rest assembly facing upwards on a flat table and place the display assembly at a 90-degree angle.
2. Align the holes on the hinges with the screw holes on the palm-rest assembly and replace the four screws (M2.5x4) that secure it in place.
3. Connect the display cable and the camera cable to the connector on the system board.
4. Place the camera and display-cable bracket over the cables and replace the two screws (M2x3) to secure it in place.
5. Connect the power-button cable to the connector on the I/O daughter board.
6. Place the power-button bracket over the power button and replace the screw (M2x3) to secure it in place.
7. Route the power-button cable and WWAN antenna cables through the cable holder.

Next steps

1. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

2. Install the [base cover](#).
3. Install the [SIM card tray](#), if required.
4. Follow the procedure in [after working inside your computer](#).

Display bezel

Removing the display bezel

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

5. Remove the [display assembly](#).

About this task

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



Figure 43. Prying the plastic bezel

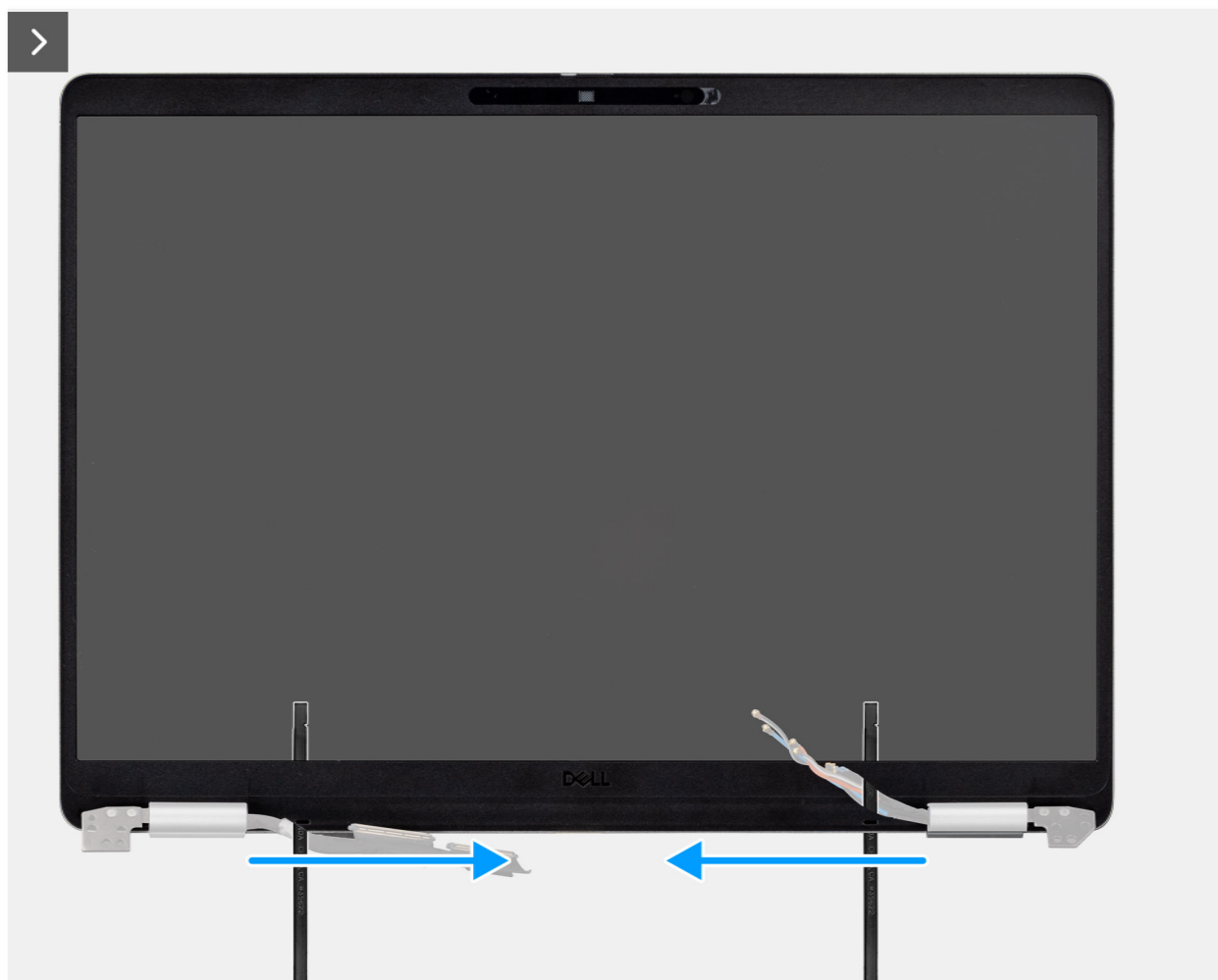


Figure 44. Prying the bezel along the hinges

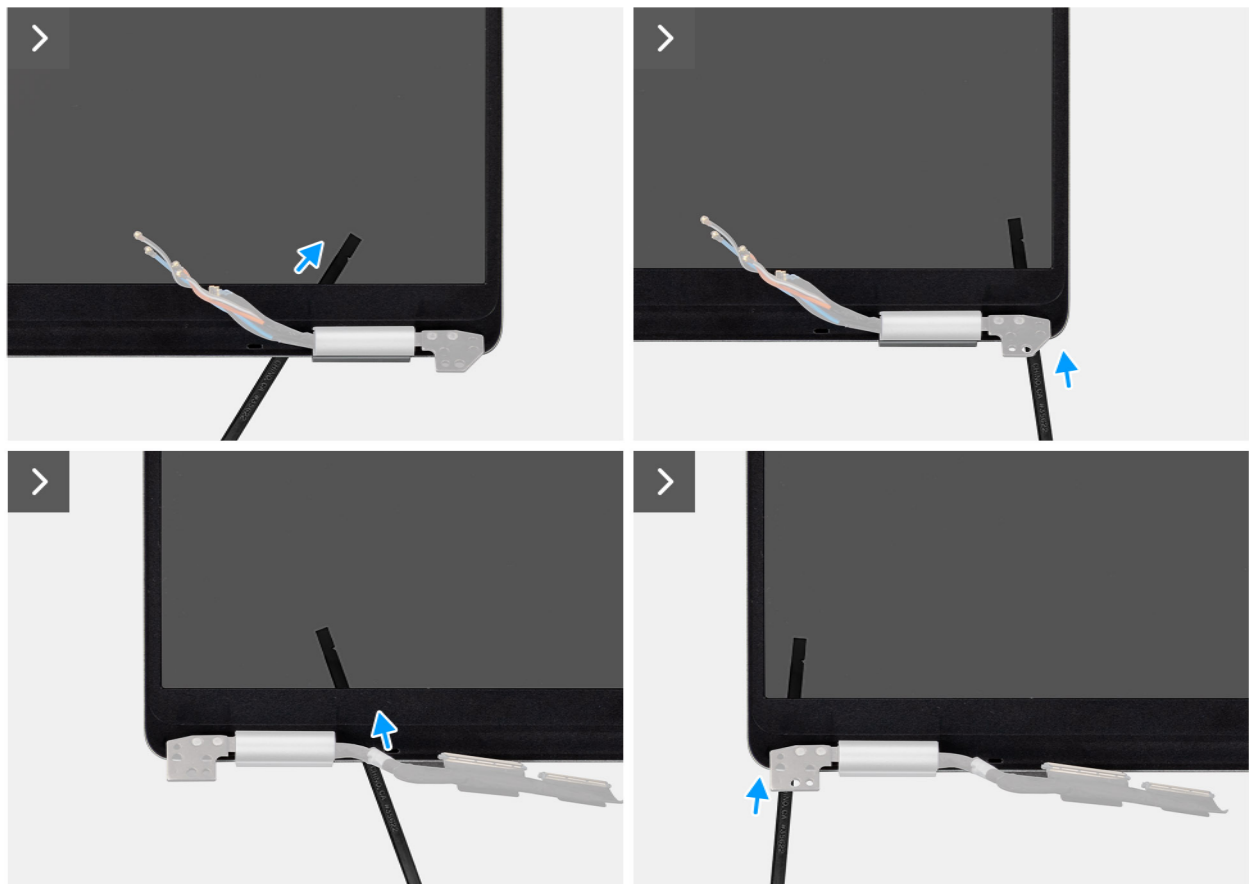


Figure 45. Prying the bezel along the hinges

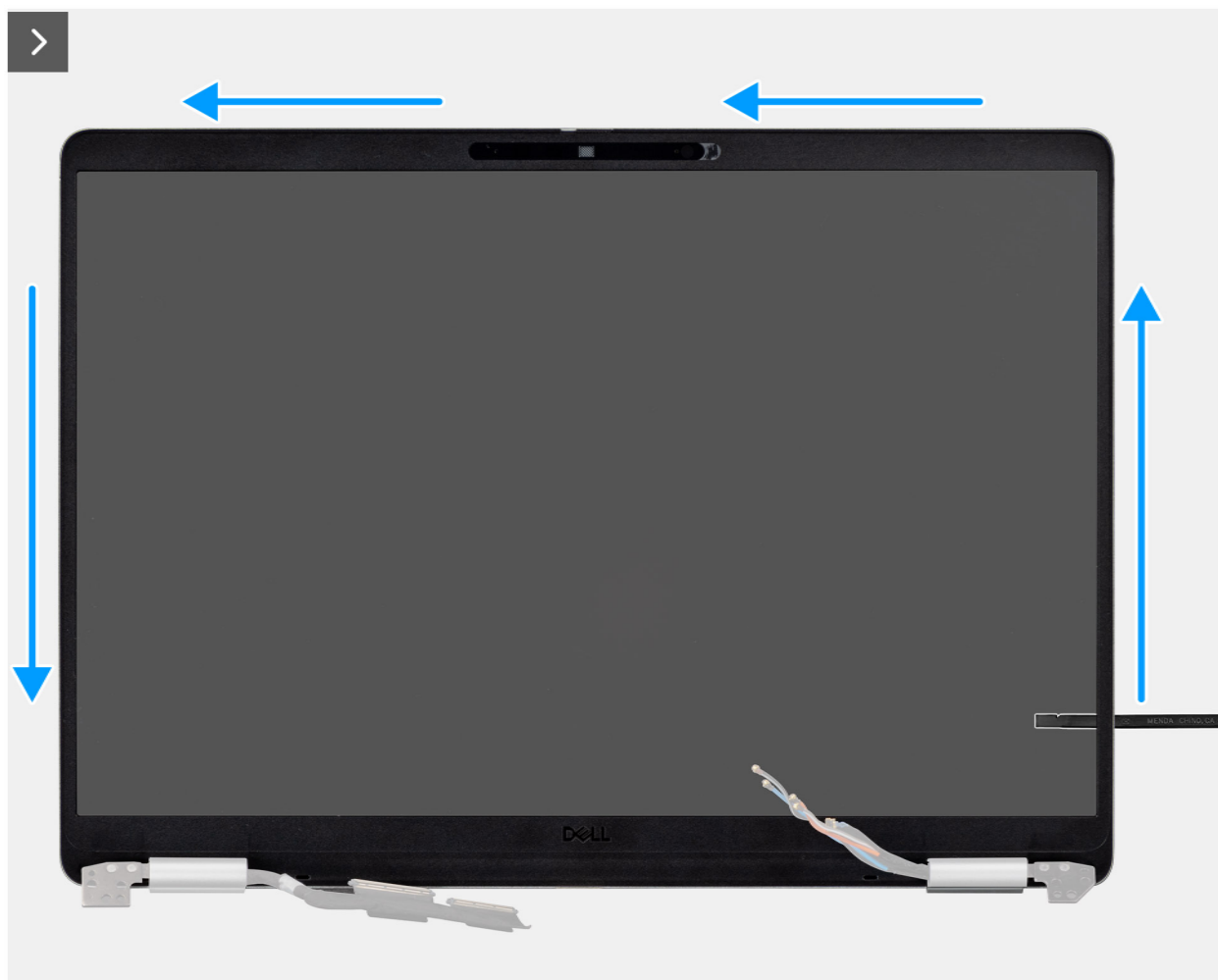


Figure 46. Prying the bezel along the sides

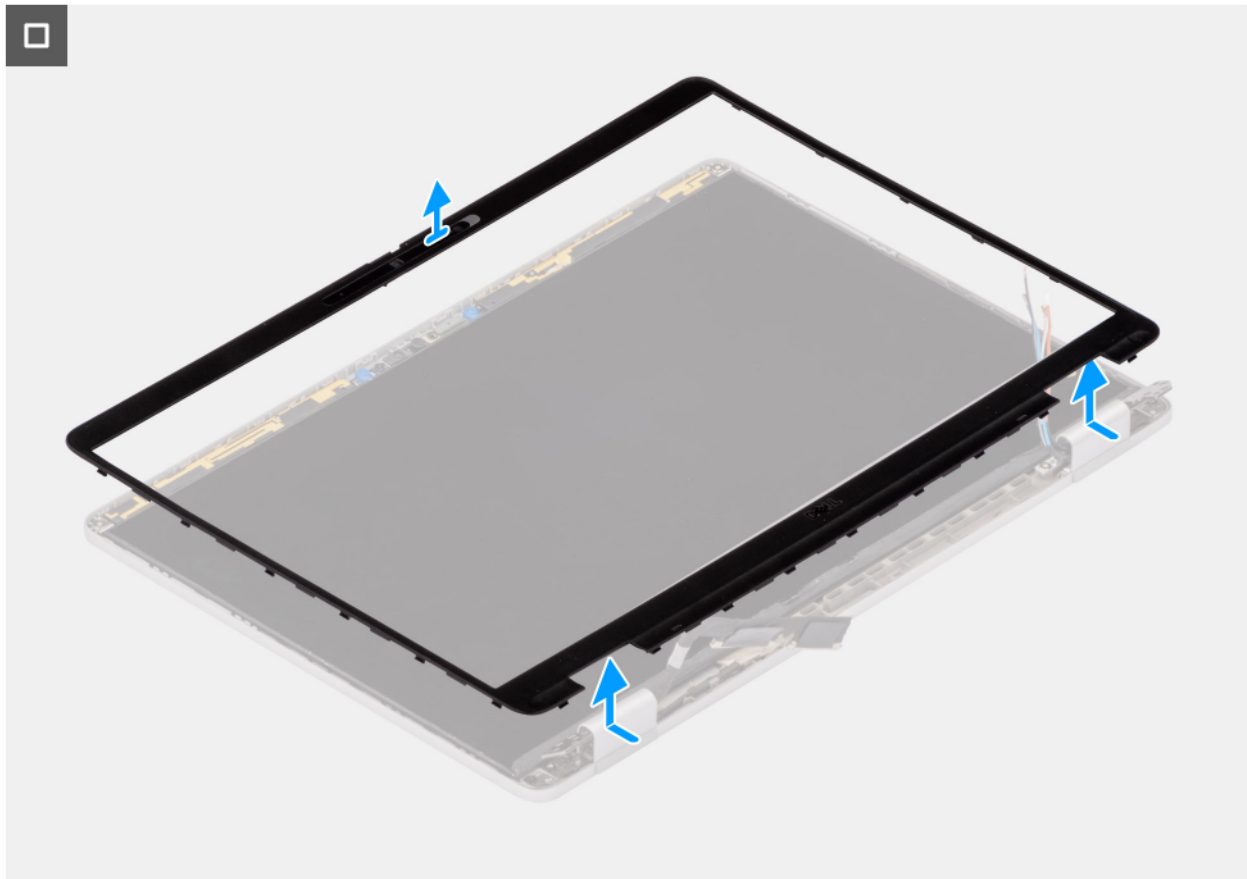


Figure 47. Removing the display bezel

Steps

1. Insert a flat-head slotted screwdriver (maximum width: 4 mm) into the slots on the display bezel near the hinges, and gently apply pressure to release the bezel at both ends, creating a gap.

NOTE: Do not use the flat head screwdriver to pry up the rest of the bezel. Instead, use the flat end of a plastic scribe to continue prying along the bezel.

CAUTION: When inserting the scribe into the bezel, keep it parallel to the display. Pressing it downward can damage the display.

2. Insert the flat end of the scribe into the gap created under the display bezel.
3. Keeping the scribe parallel to the display, carefully slide it along the bottom edge of the bezel to release the latches on the lower side.
4. Insert the scribe diagonally into the hinge section to carefully pry up the portion of the bezel above the hinge.

CAUTION: Do not lift the scribe vertically as it damages the screen. Slide the scribe horizontally to disengage the adhesive and pry the bezel upwards.

5. Insert the scribe into the corner of the display bezel near the hinge. Keeping the scribe parallel to the display, carefully slide the scribe along the edges from one corner to the other (right to left or left to right).
6. Lift the display bezel from the display assembly.

Installing the display bezel

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

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 bezel and provide a visual representation of the installation procedure.

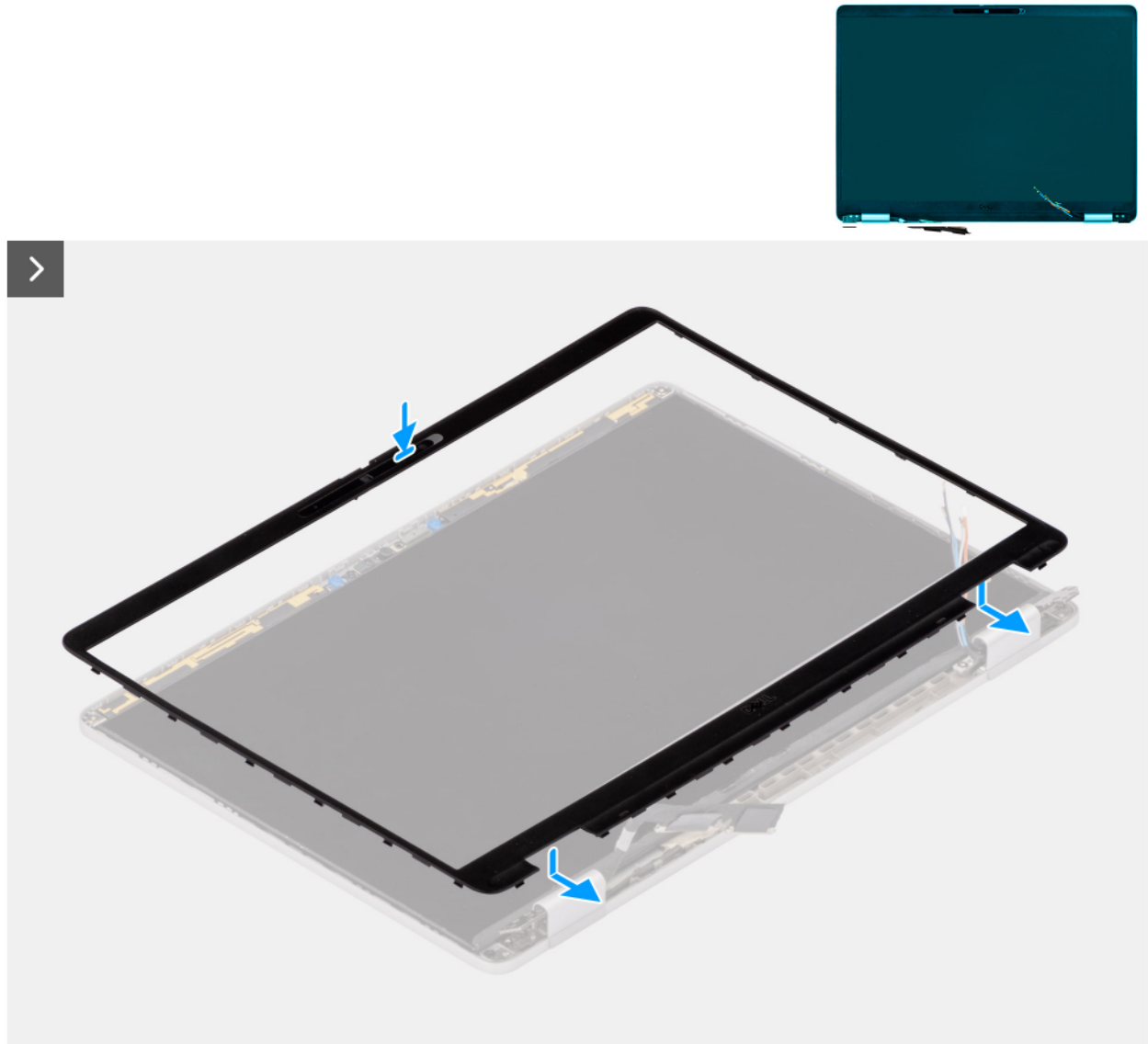


Figure 48. Installing the display bezel

Steps

1. Align and place the display bezel on the display assembly.
2. Gently press along the edges of the display bezel to secure it with the clips on the display assembly.

Next steps

1. Install the [display assembly](#).
2. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

3. Install the [base cover](#).
4. Install the [SIM card tray](#), if applicable.

5. Follow the procedure in [after working inside your computer](#).

Display panel

Removing the display panel

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if required.
3. Remove the [base cover](#).
4. Remove the [display assembly](#).
5. Remove the [display bezel](#).

About this task

 **NOTE:** This procedure applies for only models that are shipped with an RGB or IR camera.

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



4x
M1.6x1.4

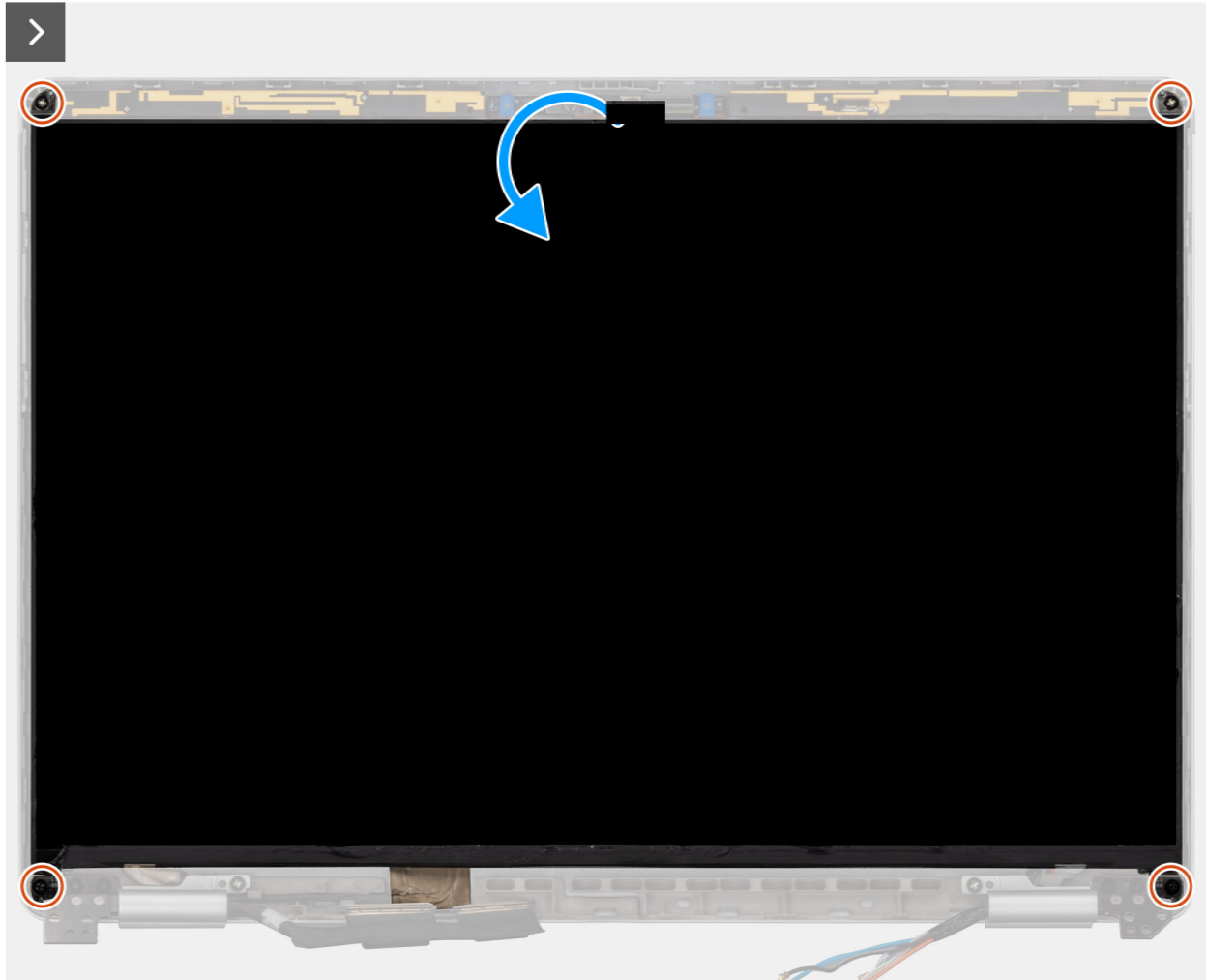


Figure 49. Removing the display panel



Figure 50. Removing the display cable from back cover

Steps

1. Remove the four screws (M1.6x1.4) that secure the left display hinge cap and hinge assembly in place.
2. Gently flip the display panel and peel the tape securing the display cable to the back cover of the display assembly.
3. Disconnect the display cable from the connector on the back cover.



Figure 51. Display panel with brackets

NOTE: On clamshell models, the panel and its support brackets are defined as a single service part. Do not pull the two pieces of elastic tape and separate the brackets from the panel.

Installing the display panel

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

About this task

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

NOTE: This procedure applies for only models that are shipped with an RGB or IR camera.



Figure 52. Installing the display cable

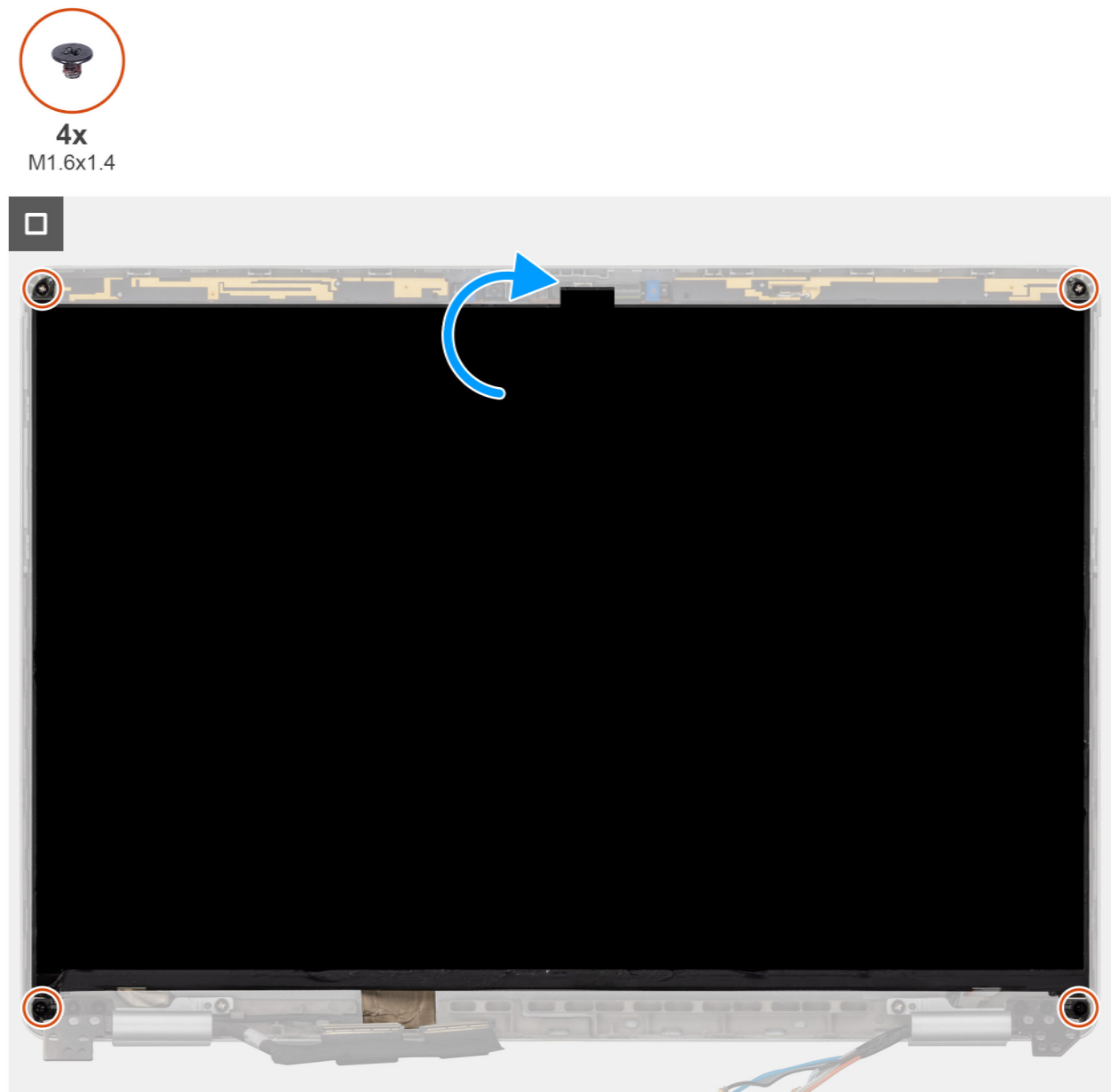


Figure 53. Installing the display panel

Steps

1. Connect the display cable to the connector on the back cover of the display assembly.
2. Peel back the tape over the display cable to secure it to the back cover.
3. Flip over the display panel and replace the four screws (M1.6x1.4) to secure it in place.

Next steps

1. Install the [display bezel](#).
2. Install the [display assembly](#).
3. Install the [base cover](#).
4. Install the [SIM card tray](#), if required.
5. Follow the procedure in [after working inside your computer](#).

Display hinges

Removing the display hinge cap and hinge assembly

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).

About this task

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

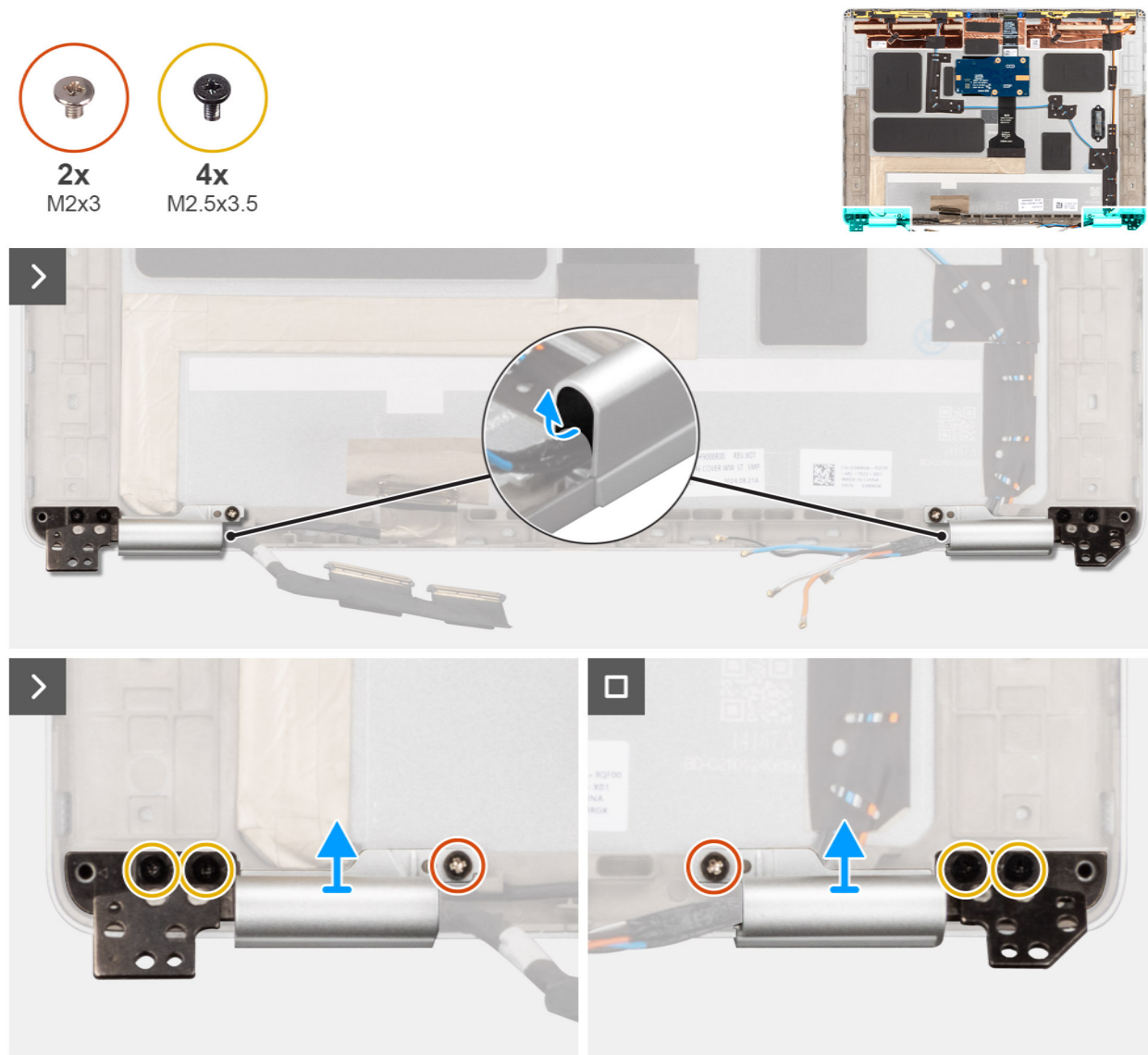


Figure 54. Removing the display hinges

Steps

1. Using a plastic scribe, pry the hinge rubber out of the left and right hinge caps.
NOTE: Do not pull the display cable, Darwin cable, or the WWAN antenna cables out of the hinge caps directly.
2. Remove the two screws (M2x3) and four screws (M2.5x3.5) that secure the display hinge cap and hinge assembly in place.
3. Press the hinge caps to remove them from the display back cover.

Installing the display hinge cap and hinge assembly

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

Prerequisites

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

About this task

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 hinges and provide a visual representation of the installation procedure.

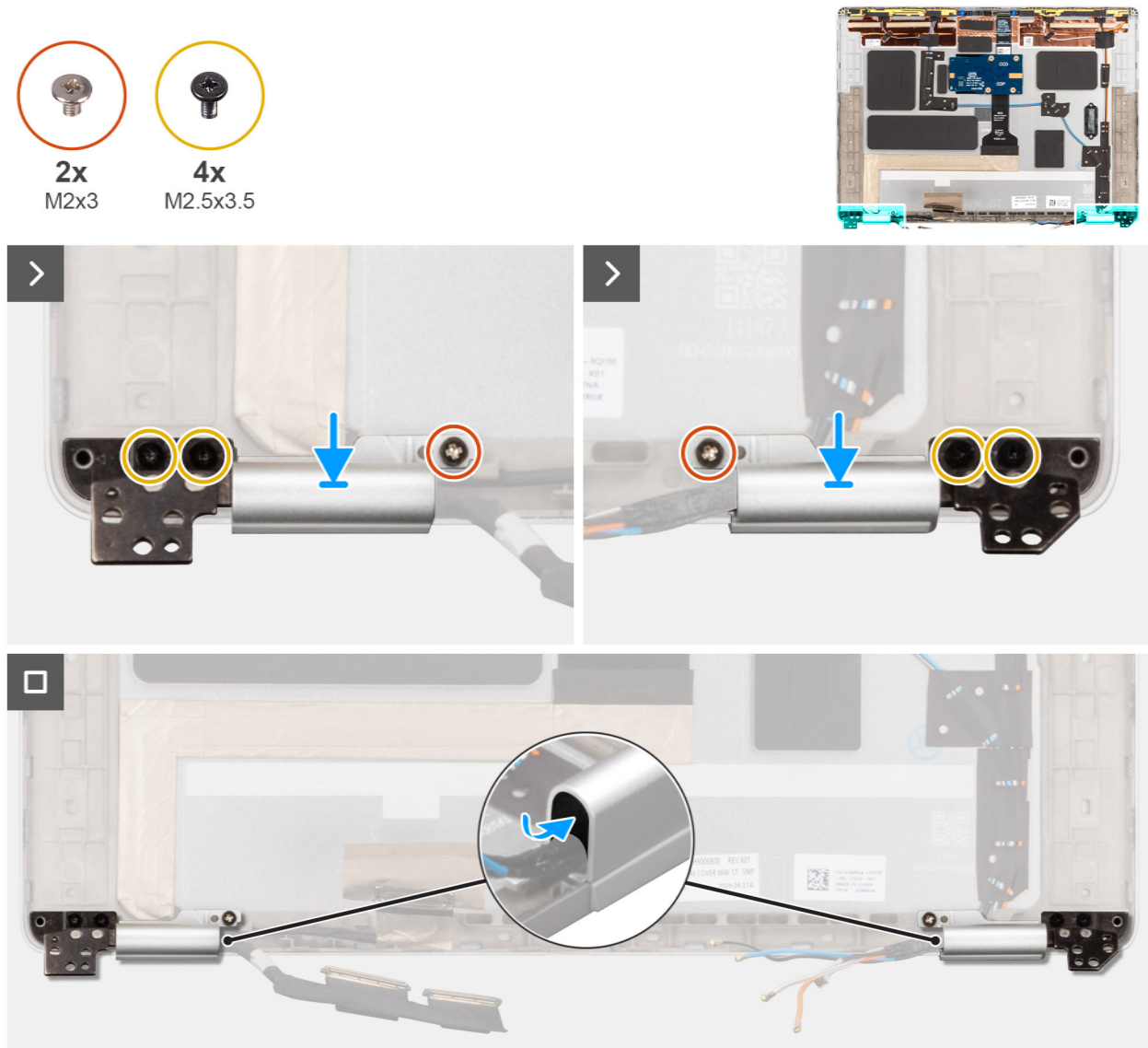


Figure 55. Installing the hinge caps

Steps

1. Replace the hinge caps over the display cable and the WLAN cables on each side of the back cover.
2. Route the display/camera cable and WWAN cable/darwin antenna cable through the respective hinge caps.
3. Replace the two screws (M2x3) and four screws (M2.5x3.5) that secure the display hinge cap and hinge assembly in place.
4. Replace the hinge rubber into the left and right hinge caps.

Next steps

1. Install the [display panel](#).
2. Install the [display bezel](#).
3. Install the [display assembly](#).
4. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

5. Install the [base cover](#).
6. Install the [SIM card tray](#), if applicable.
7. Follow the procedure in [after working inside your computer](#).

MIPI camera

Removing the MIPI camera

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).

About this task

NOTE: This procedure applies for only models that are shipped with MIPI camera.

The following image indicates the location of the MIPI camera and provides a visual representation of the removal procedure.



Figure 56. Removing the MIPI camera

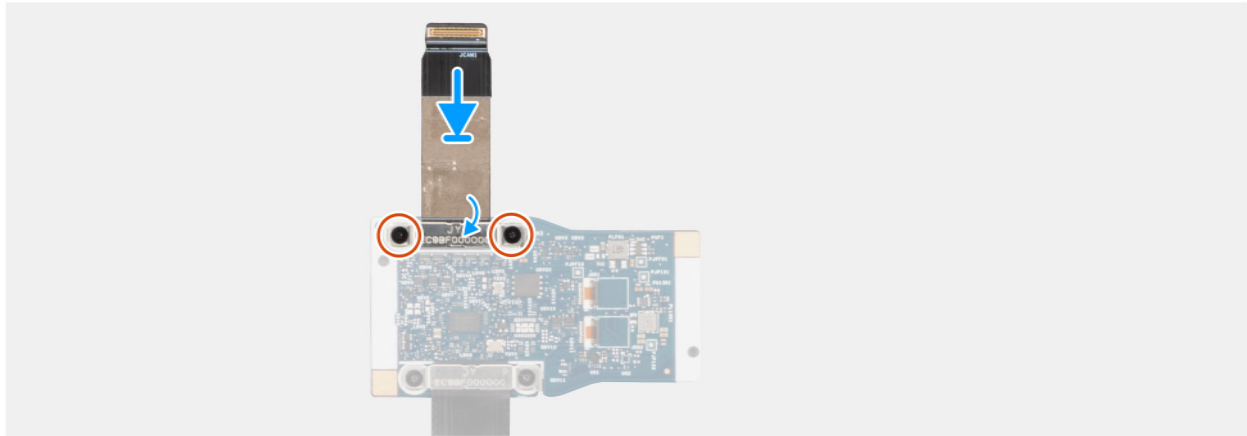


Figure 57. Removing the camera cable from middle I/O board

Steps

1. Pry the camera module off the display back cover from the prying point at the bottom edge of the camera module.
2. Remove the clip securing the MIPI camera to the daughter board cable.
3. Remove the two screws (M1.6x1.4) that secure the camera cable with the middle I/O board.
4. Lift the camera cable off the middle I/O board.

Installing the MIPI camera

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

About this task

The following image indicates the location of the MIPI camera and provides a visual representation of the installation procedure.

NOTE: This procedure applies for only models that are shipped with MIPI camera.

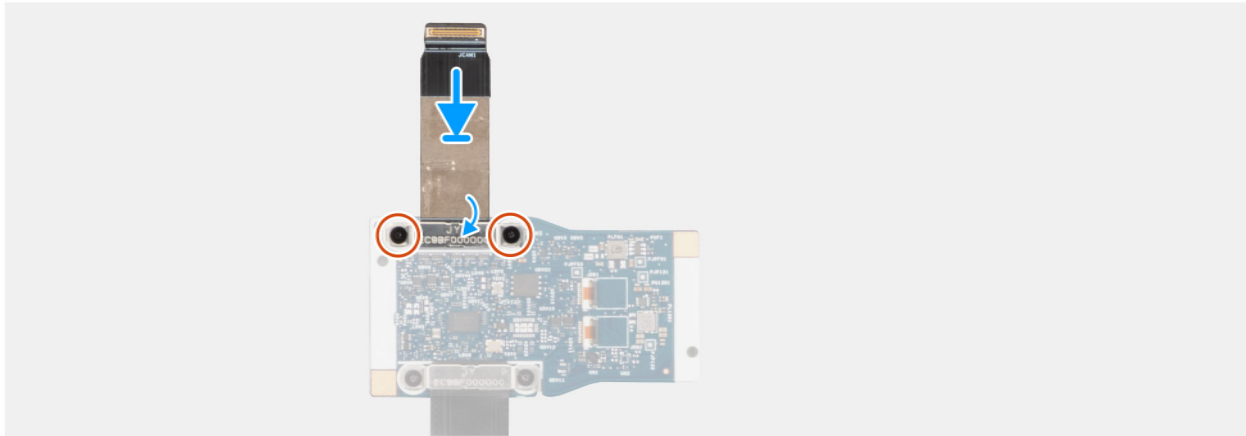


Figure 58. Installing the camera cable to middle I/O board

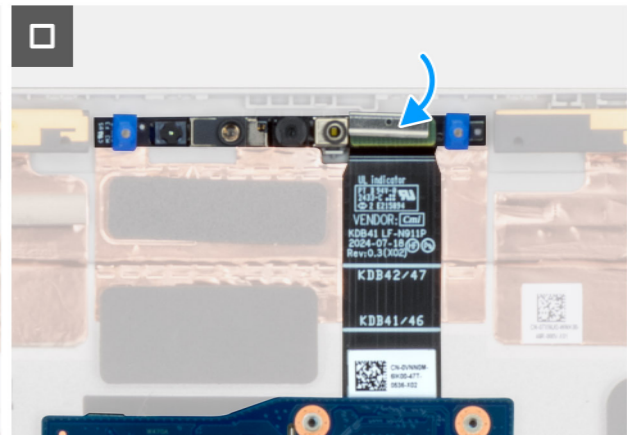
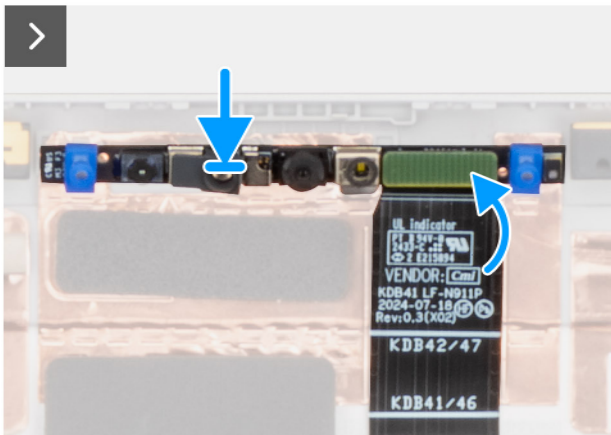
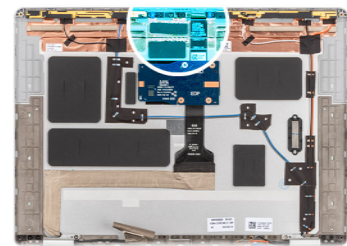


Figure 59. Installing the MIPI camera

Steps

1. Replace the two screws (M1.6x1.4) to secure the camera cable to the middle I/O board.
2. Attach the clip that secures the MIPI camera connection to the daughter board cable.
3. Replace the camera module to the display back cover starting from the prying point at the bottom edge of the camera module.

 **NOTE:** When installing the clip to secure the MIPI camera connection to the middle daughter board cable, ensure that the top side (with “**TOP**” etched on it) is facing up.

Next steps

1. Install the [display panel](#) .
2. Install the [display bezel](#).
3. Install the [display assembly](#).
4. Install the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

5. Install the [base cover](#).
6. Install the [SIM card tray](#), if applicable.
7. Follow the procedure in [after working inside your computer](#).

Camera

Removing the camera and display cable

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).
5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#) .

About this task

 **NOTE:** This procedure applies for only models that are shipped with an RGB or IR camera.

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

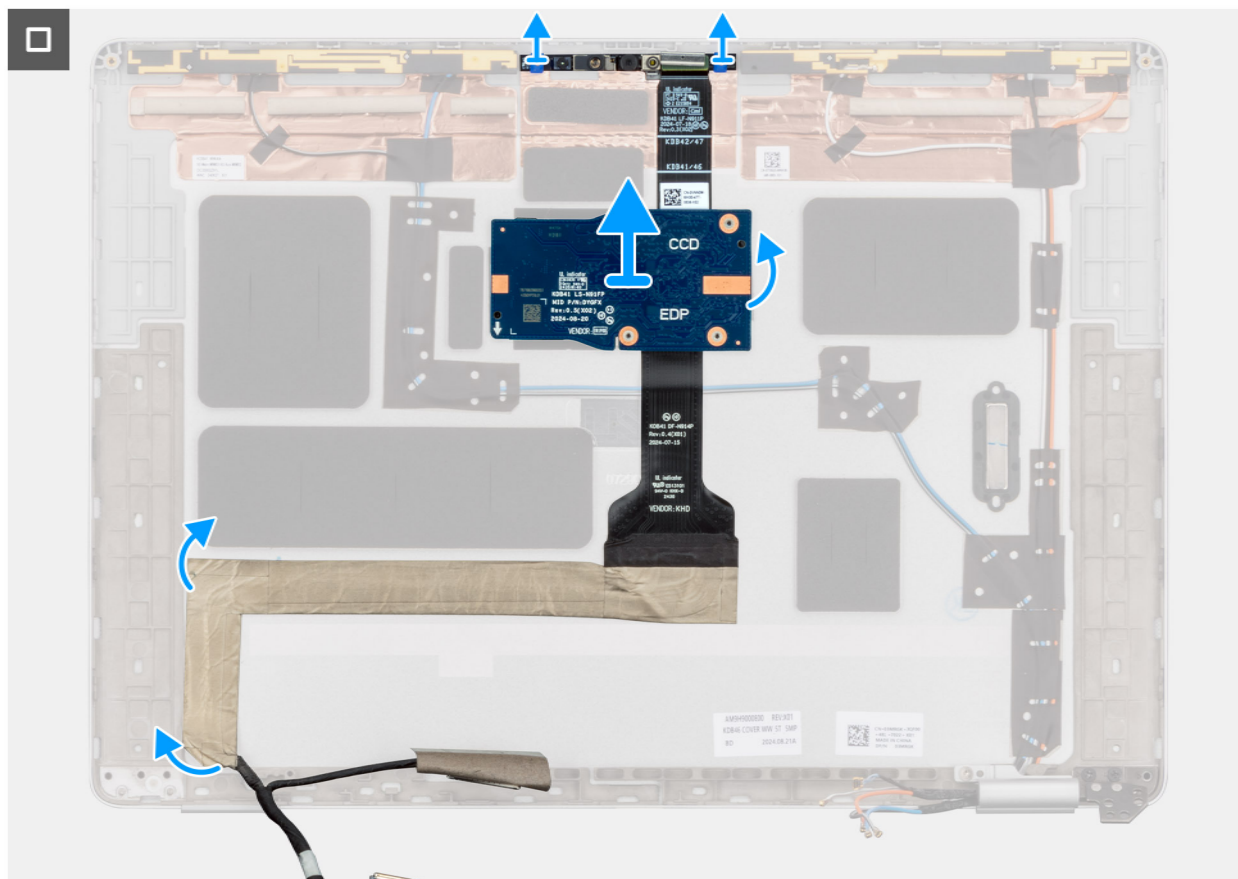


Figure 60. Removing the camera and display cable

Steps

1. Disconnect the display cable from the camera.
2. Pry the camera starting from the prying point at the bottom edge of the camera module.
NOTE: While removing the IR/RGB camera module, pry up the module from the recess at its bottom side indicated by an arrow and then slide along the bottom side to detach it from the display back cover.
3. Peel the display cable at the bottom and remove the camera and display cable from the display back cover.

Installing the camera and display cable

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

About this task

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

NOTE: This procedure applies for only models that are shipped with an RGB or IR camera.

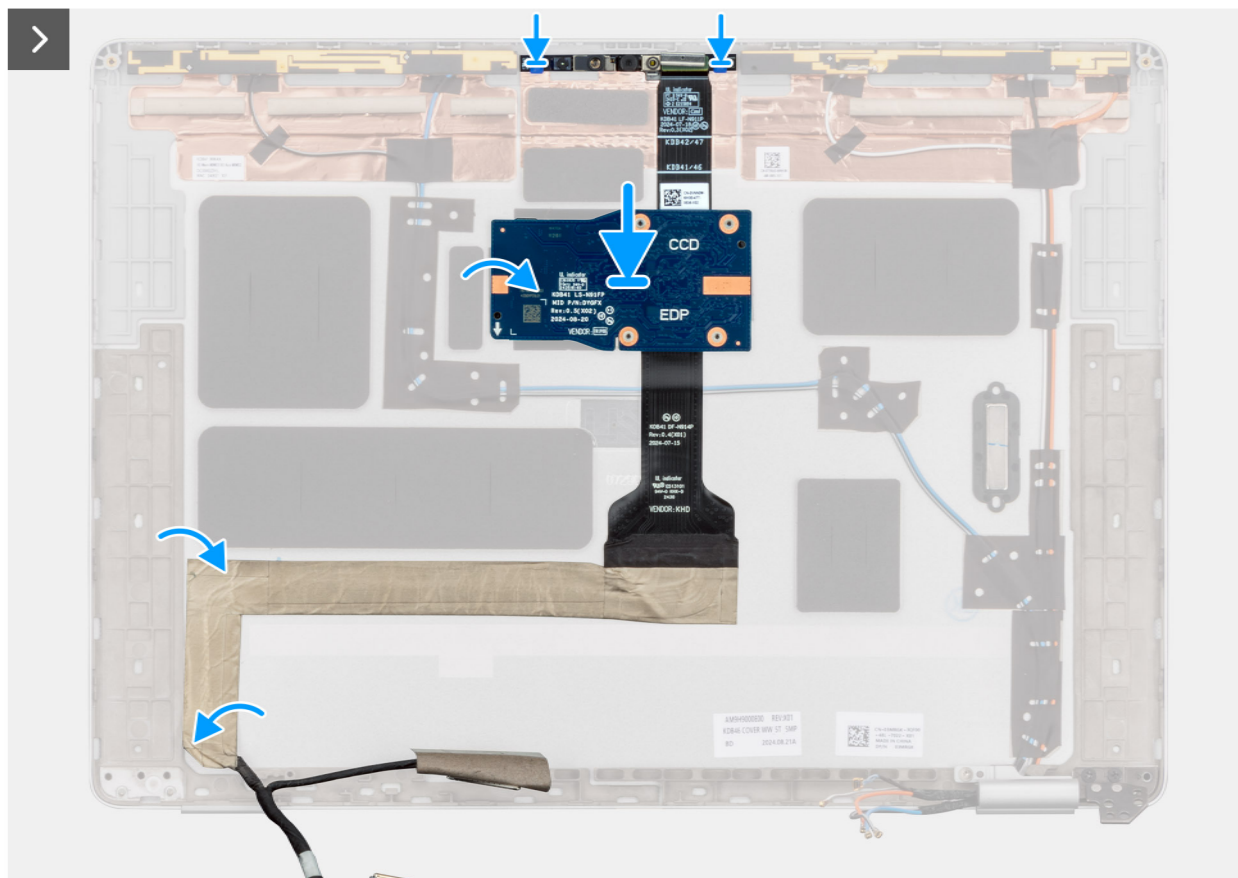
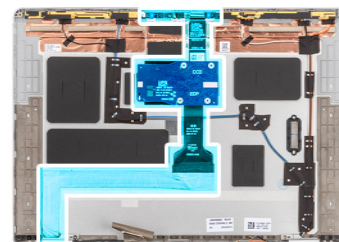


Figure 61. Installing the camera and display cable

Steps

1. Align the camera to the display back cover.
2. Connect the display cable to the camera.
3. Readhere the display cable at the bottom of the display back cover.

Next steps

1. Install the [display panel](#).
2. Install the [display bezel](#).
3. Install the [display assembly](#).
4. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

5. Install the [base cover](#).
6. Install the [SIM card tray](#), if applicable.
7. Follow the procedure in [after working inside your computer](#).

Display back cover

Removing the display back cover

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if required.
3. Remove the [base cover](#).
4. Remove the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

5. Remove the [display assembly](#).
6. Remove the [display bezel](#).
7. Remove the [display panel](#).
8. Remove the [camera cable](#) (for models shipped without camera or with RGB or IR camera).
9. Remove the [MIPI camera cable](#) (for models shipped with MIPI camera).
10. Remove the [display hinge cap and hinge assembly](#).

About this task

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

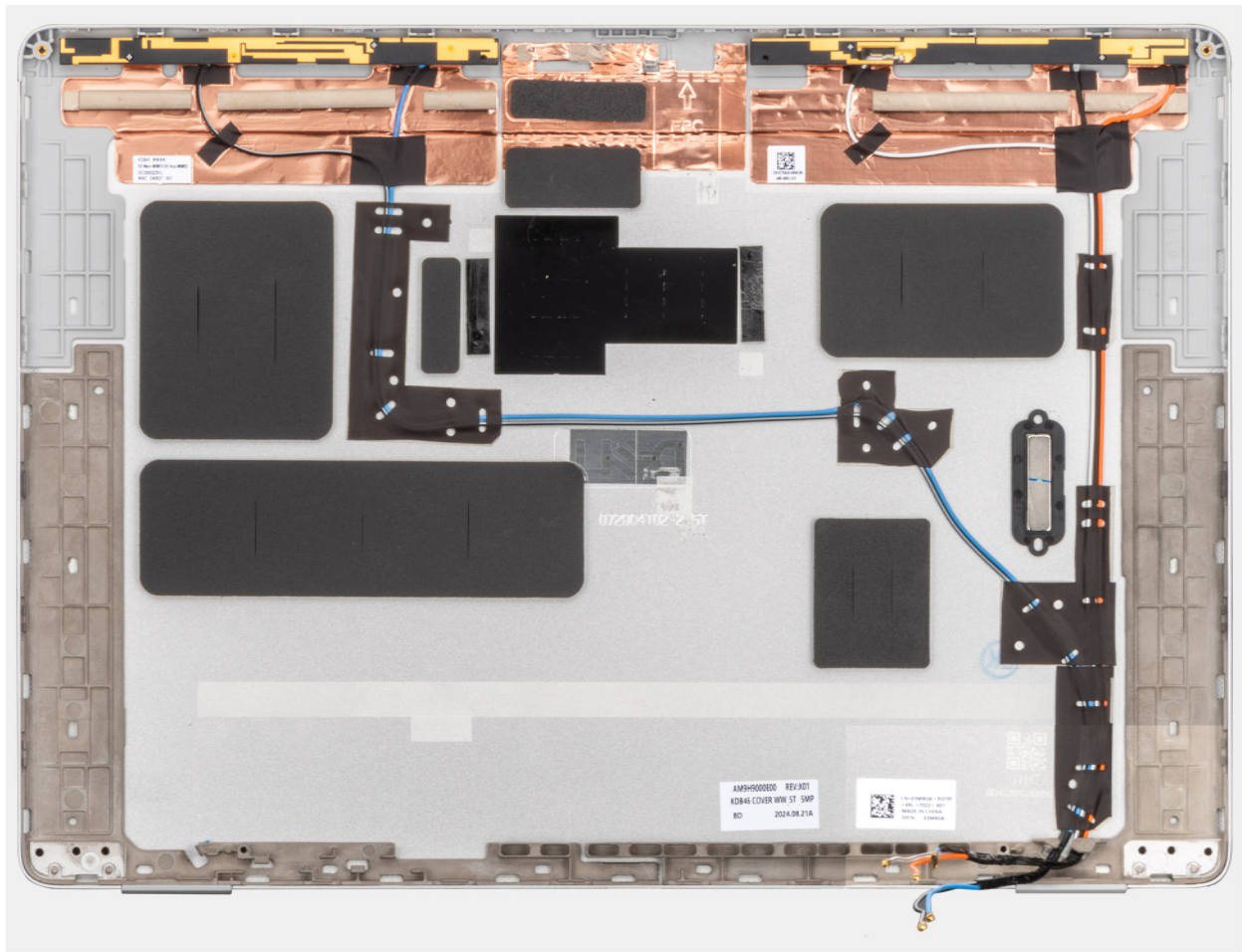


Figure 62. Removing display assembly back cover

Installing the display back cover

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

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 assembly and provide a visual representation of the installation procedure.

Next steps

1. Install the [display hinge cap and hinge assembly](#).
2. Install the [MIPI camera cable](#) (for models shipped with MIPI camera).
3. Install the [camera cable](#) (for models that are shipped without camera or with RGB or IR camera).
4. Install the [display panel](#).
5. Install the [display bezel](#).
6. Install the [display assembly](#).
7. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

8. Install the [base cover](#).

9. Install the [SIM card tray](#), if required.
10. Follow the procedure in [after working inside your computer](#) .

Smart-card reader

Removing the smart card reader

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [speakers](#).

About this task

 **NOTE:** This procedure applies only to computers shipped with a smart card reader installed.

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

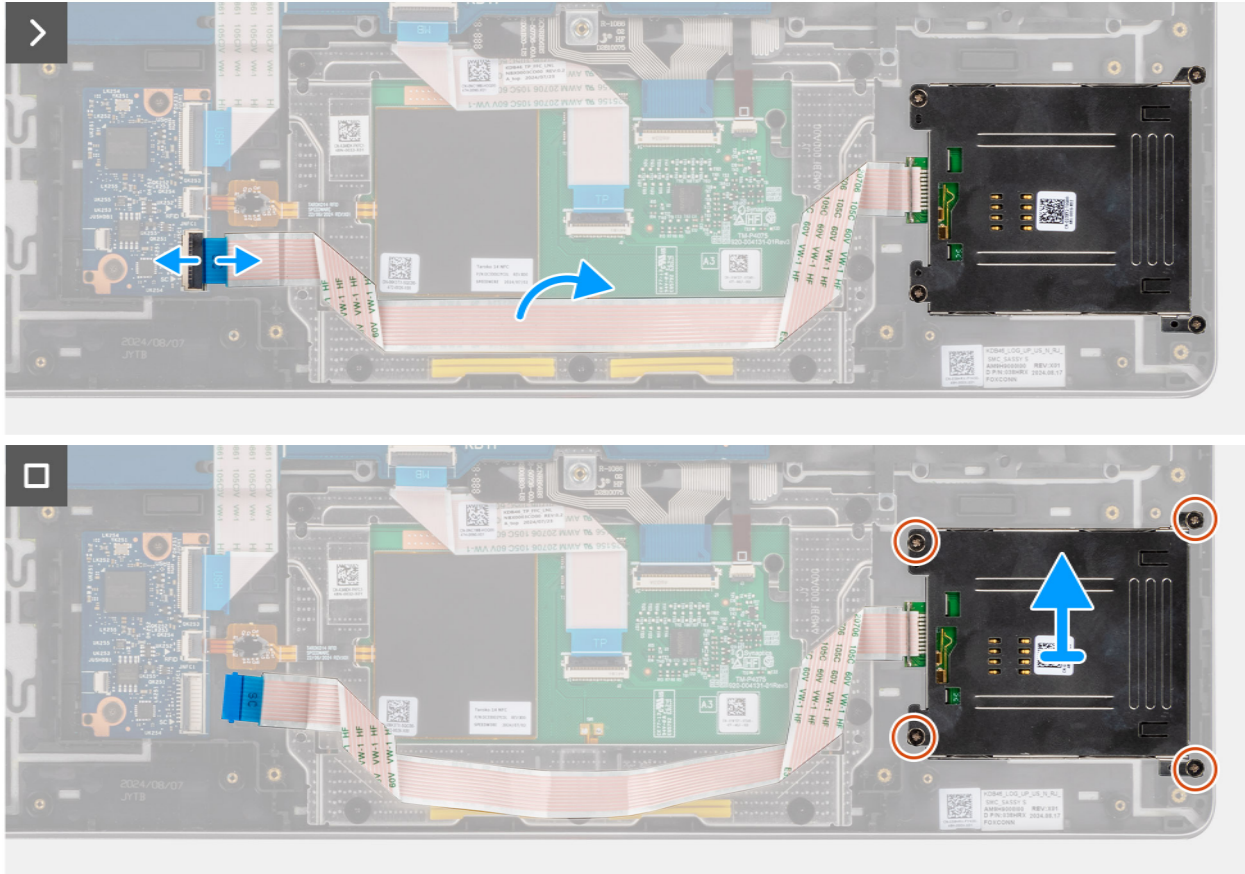


Figure 63. Removing the smart card reader

Steps

1. Open the latch and disconnect the smartcard reader flexible flat cable from the USH daughter board.
2. Peel the smartcard reader flexible flat cable.
3. Remove the four screws (M2x2) that secure the smart card reader in place.
4. Remove the smart card reader from the palm-rest assembly.

Installing the smart card reader

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

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 left speaker, push them back in before replacing the left speaker.

The following images indicate the location of the smart card reader and provide a visual representation of the installation procedure.

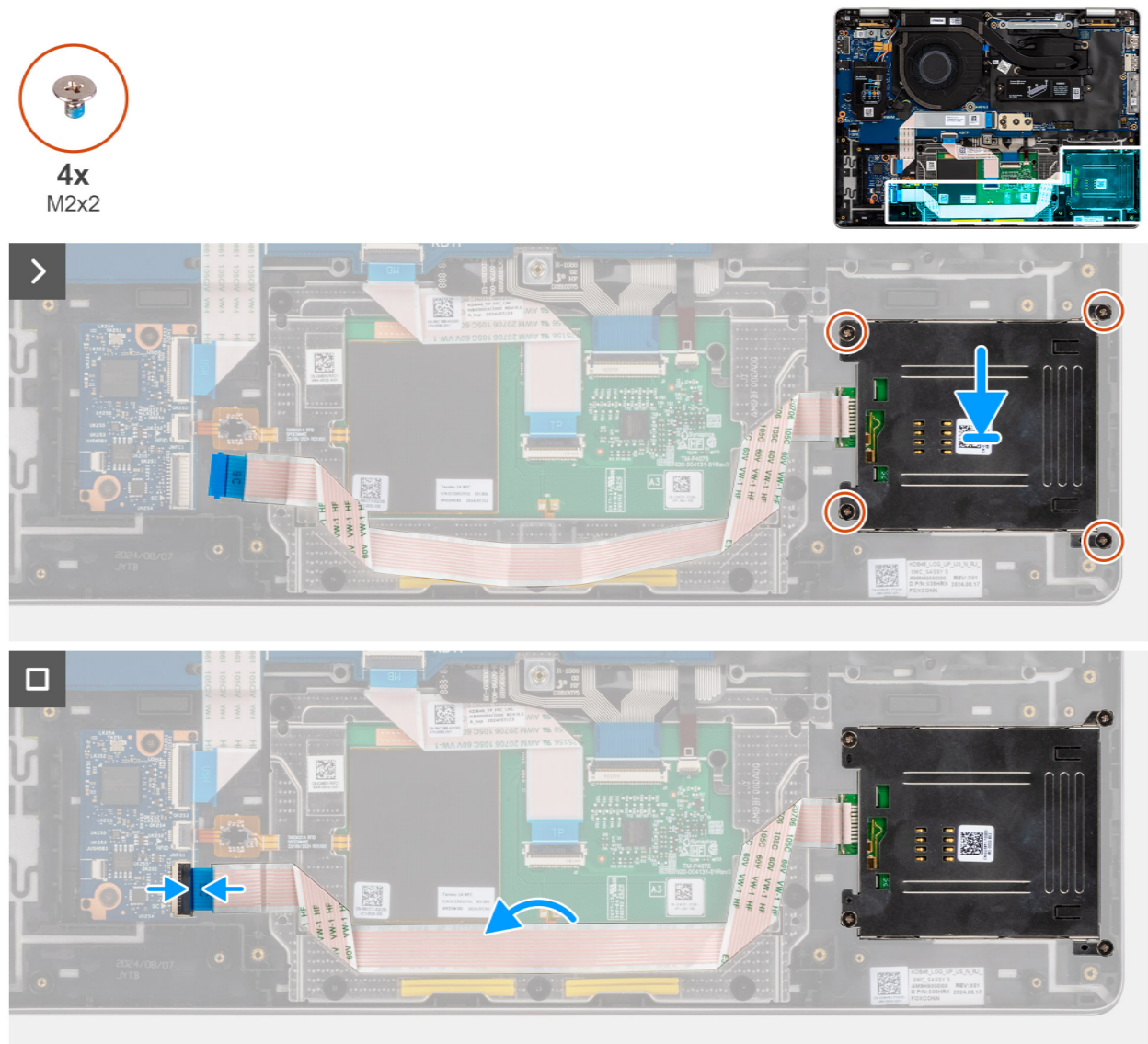


Figure 64. Installing the smartcard reader

Steps

1. Align and place the smart card reader on the palm-rest assembly.
2. Replace the four screws (M2x2) that secure the smart card reader to the palm-rest and keyboard assembly.
3. Connect the smartcard reader flexible flat cable to the system board.

Next steps

1. Install the [speakers](#).
2. Install the [battery](#).
3. Install the [base cover](#).
4. Install the [SIM card tray](#), if applicable.
5. Follow the procedure in [after working inside your computer](#).

USH daughter board

Removing the USH Daughter Board

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [battery](#).

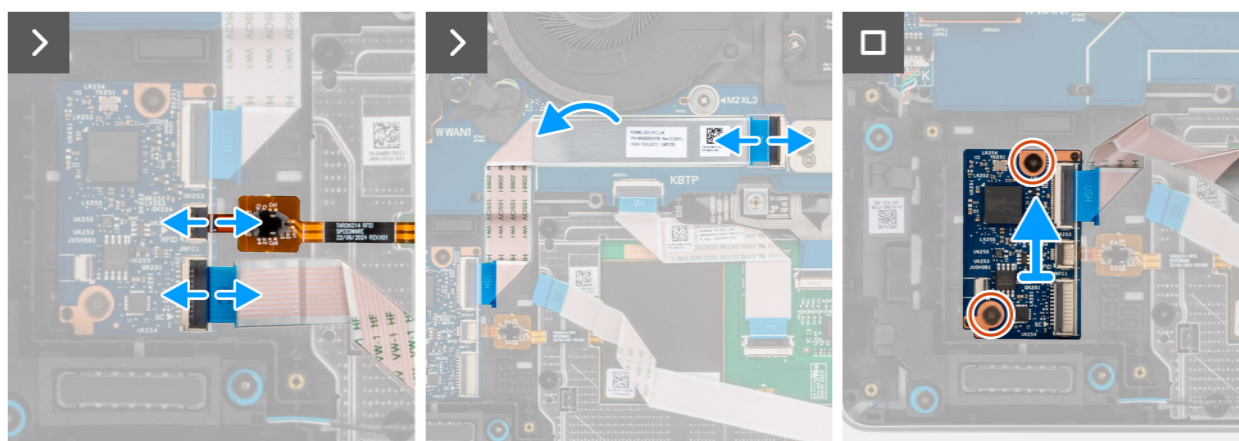
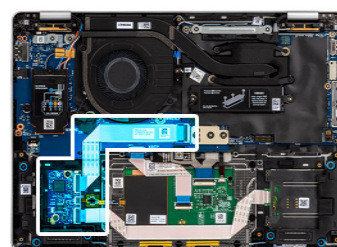


Figure 65. Removing the USH daughter board

Steps

1. Lift the latch and disconnect the smartcard reader flexible flat cable from the connector on the USH daughter board.
2. Lift the latch and disconnect USH daughter board flexible flat cable from the system board.
3. Peel back the USH daughter board flexible flat cable from the I/O daughter board.
4. Remove the two screws (M1.6x1.5) that secure the USH daughter board in place.
5. Lift the USH daughter board off the chassis.

Installing the USH Daughter Board

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



2x
M1.6x1.5

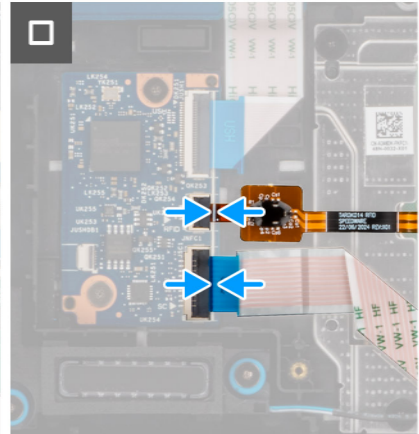
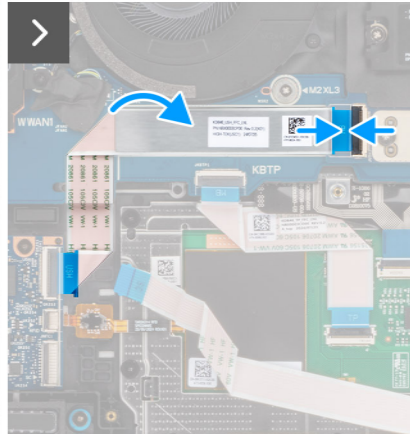
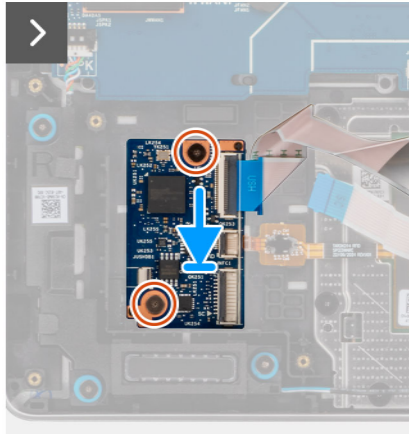
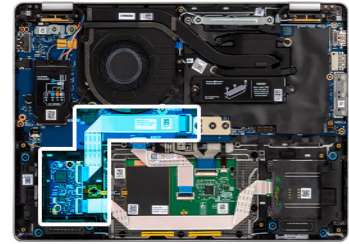


Figure 66. Installing the USH daughter board

Steps

1. Place the USH daughter board on the chassis.
2. Replace the two screws (M1.6x1.5) that secure the USH daughter board in place.
3. Connect the USH daughter board flexible flat cable to the connector on the USH daughter board. Adhere the USH daughter board flexible flat cable to the I/O daughter board.
4. Connect the smart card reader flexible flat cable to the connector on the USH daughter board.

Next steps

1. Install the [battery](#).
2. Install the [base cover](#).
3. Install the [SIM card tray](#), if applicable.
4. Follow the procedure in [after working inside your computer](#).

Heatsink

Removing the heat-sink

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. 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.

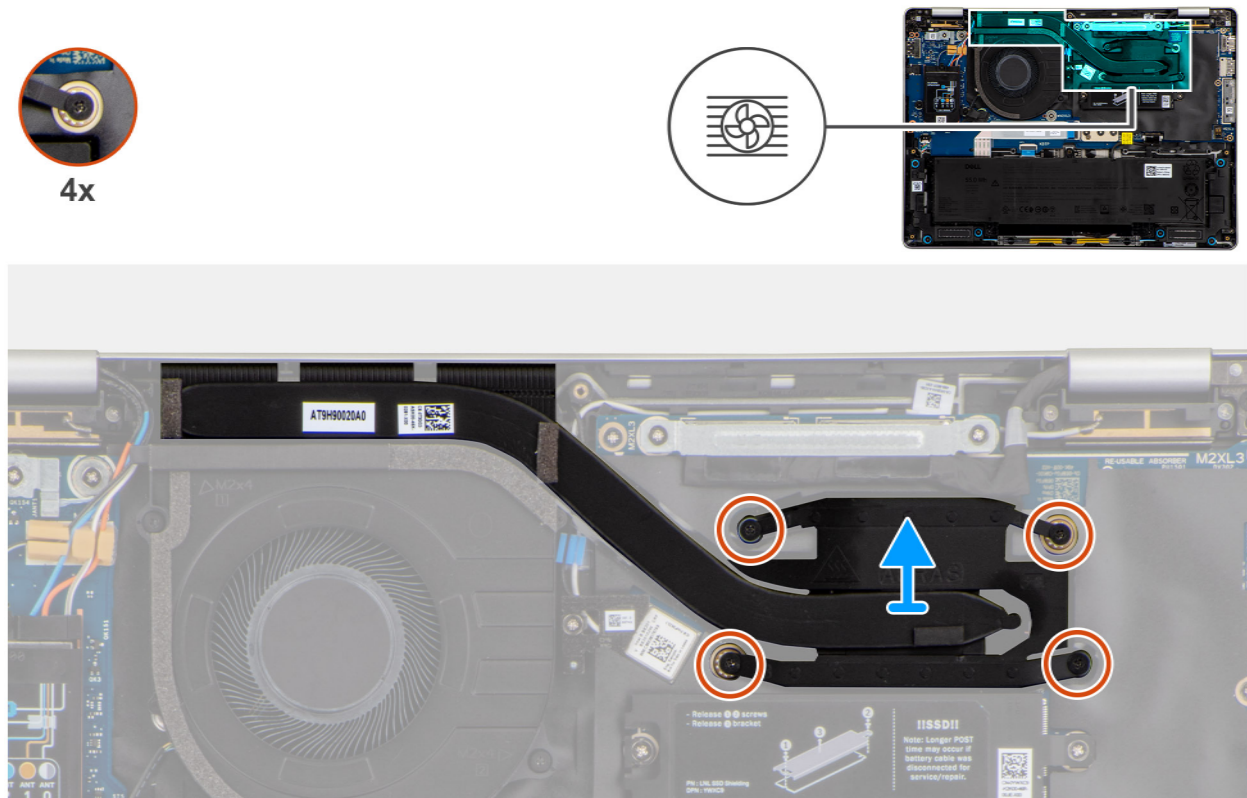


Figure 67. Removing the heat-sink

Steps

1. Loosen the four captive screws in descending order (4>3>2>1) that secure the heat-sink in place.
2. Lift the heat-sink off the system board.

Installing the heat-sink

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

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.

CAUTION: Incorrect alignment of the heat-sink can damage the system board and processor.

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

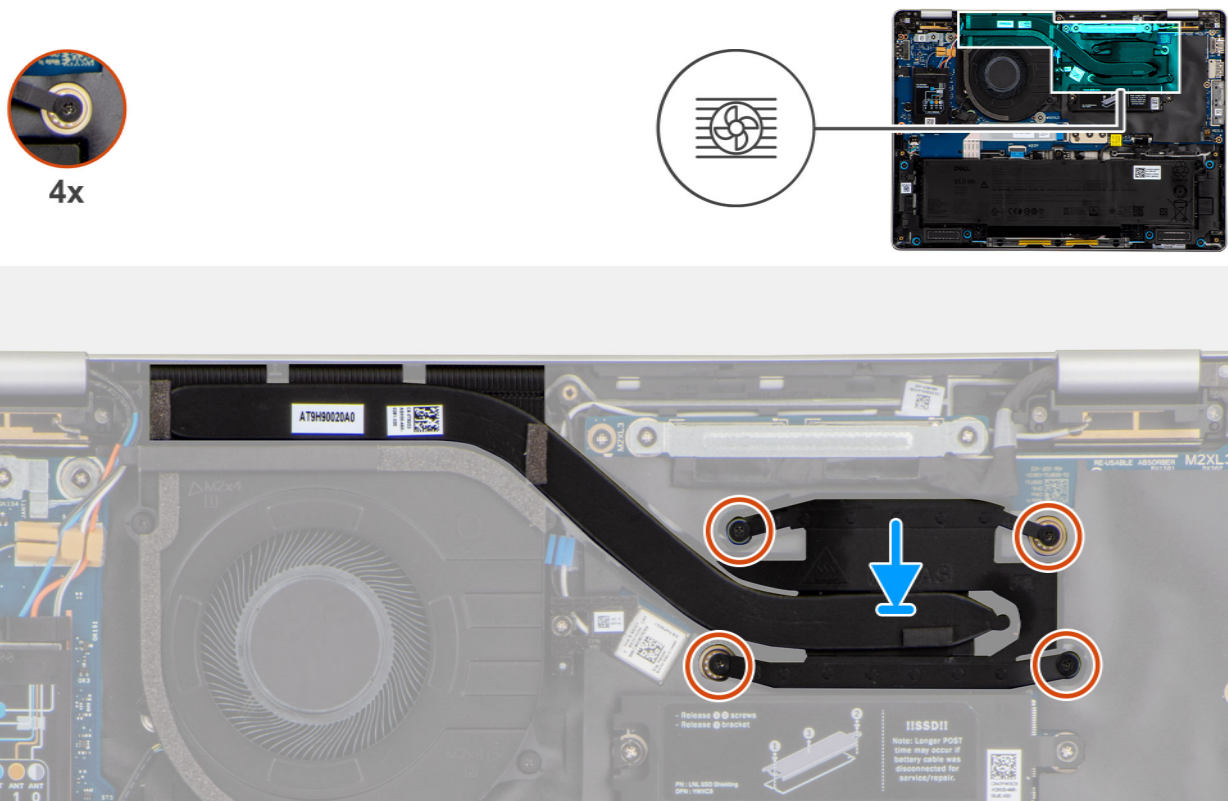


Figure 68. Installing the heat-sink

Steps

1. Place the heat-sink on the system board.
2. Align the screw holes on the heat-sink with the screw holes on the system board.
3. Tighten the four captive screws (4>3>2>1) that secure the heat-sink to the system board.

Next steps

1. Install the [base cover](#).
2. Install the [SIM card tray](#), if applicable.
3. Follow the procedure in [after working inside your computer](#).

System board

Removing the system Board

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

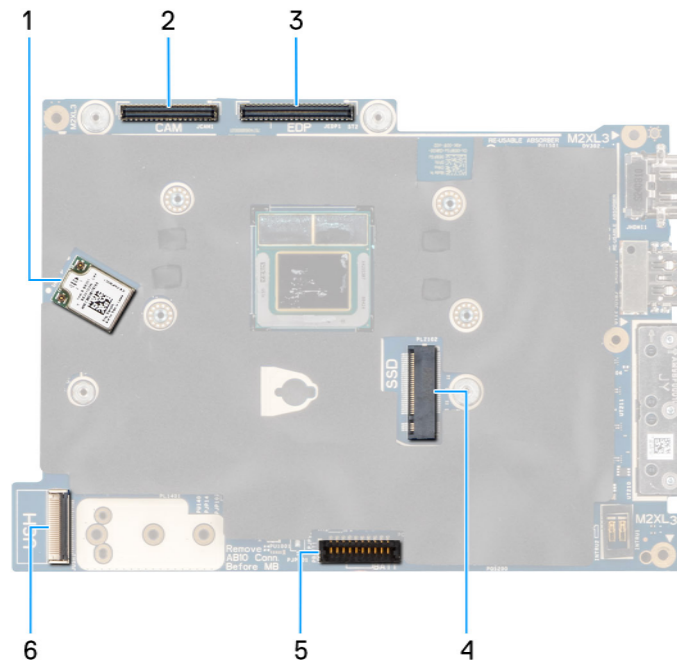


Figure 69. System board callout

1. WLAN card
2. Camera cable connector
3. Display cable connector
4. Solid state drive slot
5. Battery cable connector
6. USB cable connector

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
5. Remove the [WWAN card](#).
6. Remove the [heat sink](#).



Figure 70. Removing the system board

Steps

1. Remove the screw (M2x3) that secures the WLAN bracket in place.
2. Remove the WLAN bracket from the computer.
3. Disconnect the WLAN antenna cables from the WLAN module on the system board.
4. Remove the two screws (M2x3) screws securing the display bracket in place.
5. Remove the display bracket from the computer.
6. Disconnect the display connector, camera connector, battery cable, and USH board FFC (for models shipped with a USH daughter board) from the system board.
7. Remove the four screws (M2x3) and three screws (M2x4) securing the system board in place.
8. Remove the system board from the computer.

NOTE: The USB-C connector module is part of the replacement system board but is also a service part that can be replaced independently. See the USB-C Connector Module section for more information.

Installing the system board

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

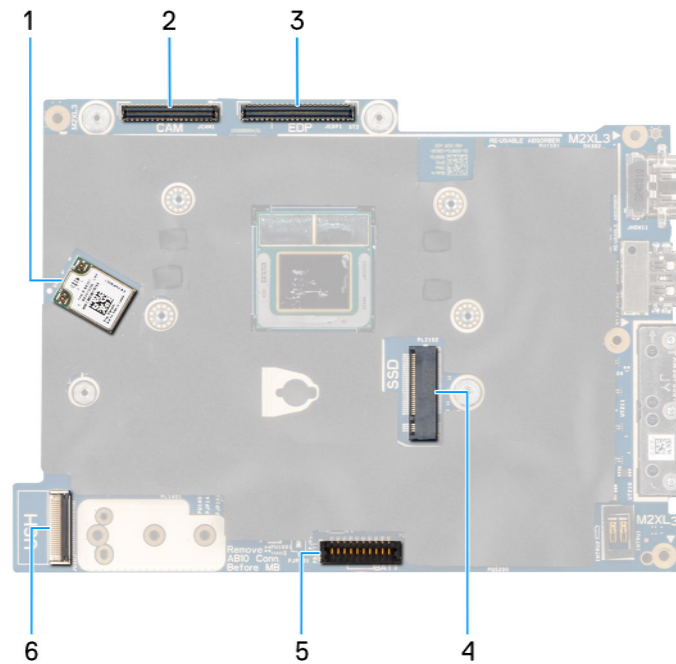


Figure 71. Sytem board callout

1. WLAN card
2. Camera cable connector
3. Display cable connector
4. Solid state drive slot
5. Battery cable connector
6. USH cable connector

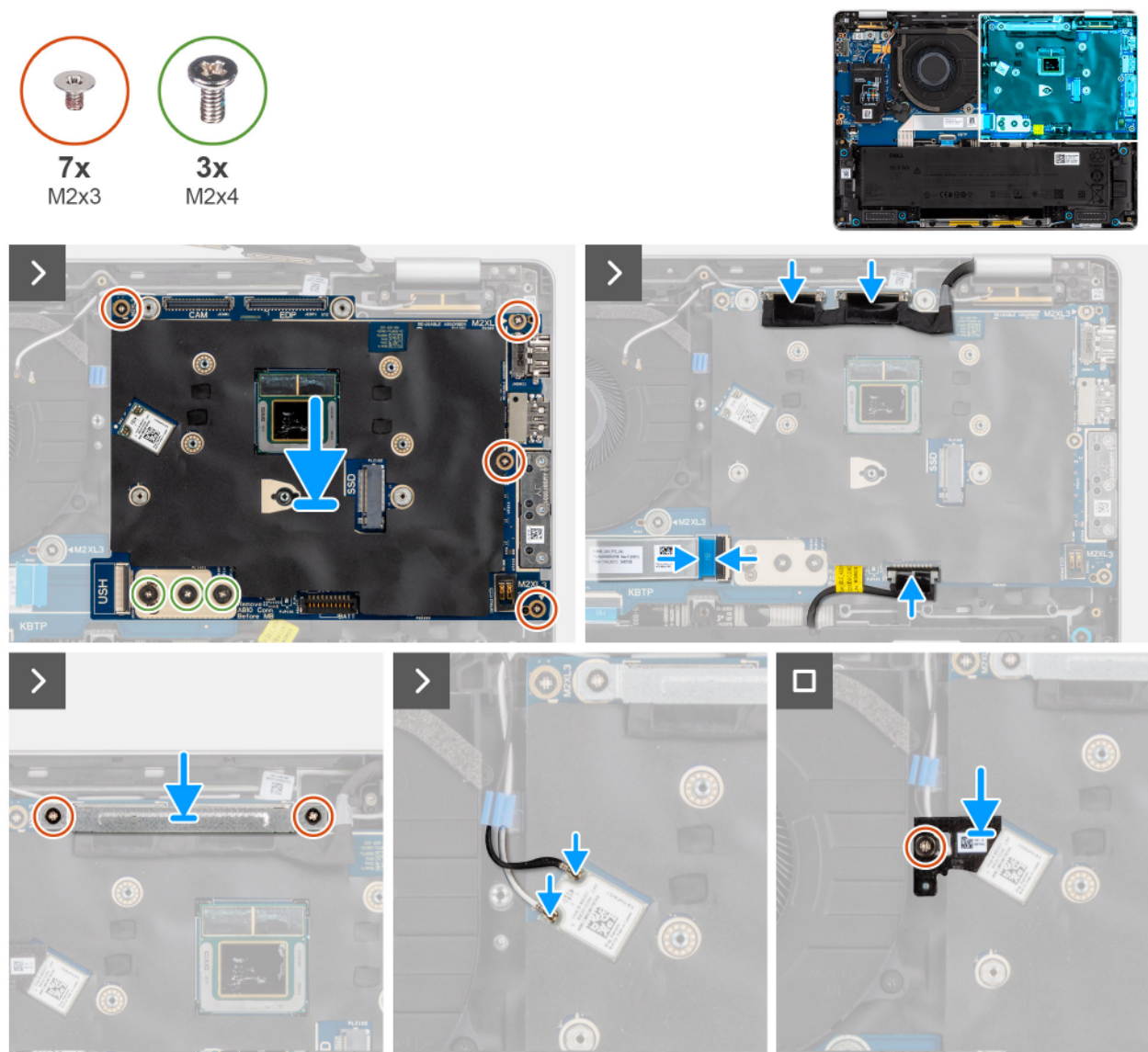


Figure 72. Installing the system board

Steps

1. Place the system board in place and align the screw holes on the system board with the screw holes on the chassis.
NOTE: When installing the system board, follow the number markings on the board-to-board connector bracket to install the two screws (M2x4) in the sequence of 1 > 2 > 3.
2. Replace the four screws (M2x3) and two screws (M2x4) to secure the system board in place.
3. Connect the display connector, camera connector, battery cable, and USH daughter board FFC (for models shipped with a USH daughter board) to the system board.
4. Place the display bracket in place and replace the two screws (M2x3) to secure the display bracket in place.
5. Connect the WLAN antenna cables to the WLAN module on the system board.
6. Place the WLAN bracket over the WLAN antenna cable and replace the screw (M2x3) to secure it in place.

Next steps

1. Install the [heat sink](#).
2. Install the [WWAN card](#).
3. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
4. Install the [base cover](#).
5. Install the [SIM card tray](#), if applicable.

6. Follow the procedure in [after working inside your computer](#).

USB-C connector module

Removing the USB-C connector module

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
5. Remove the [WWAN card](#).
6. Remove the [heat sink](#).
7. Remove the [system board](#).

About this task

The following images indicate the location of the USB-C connector module and provide a visual representation of the removal procedure.

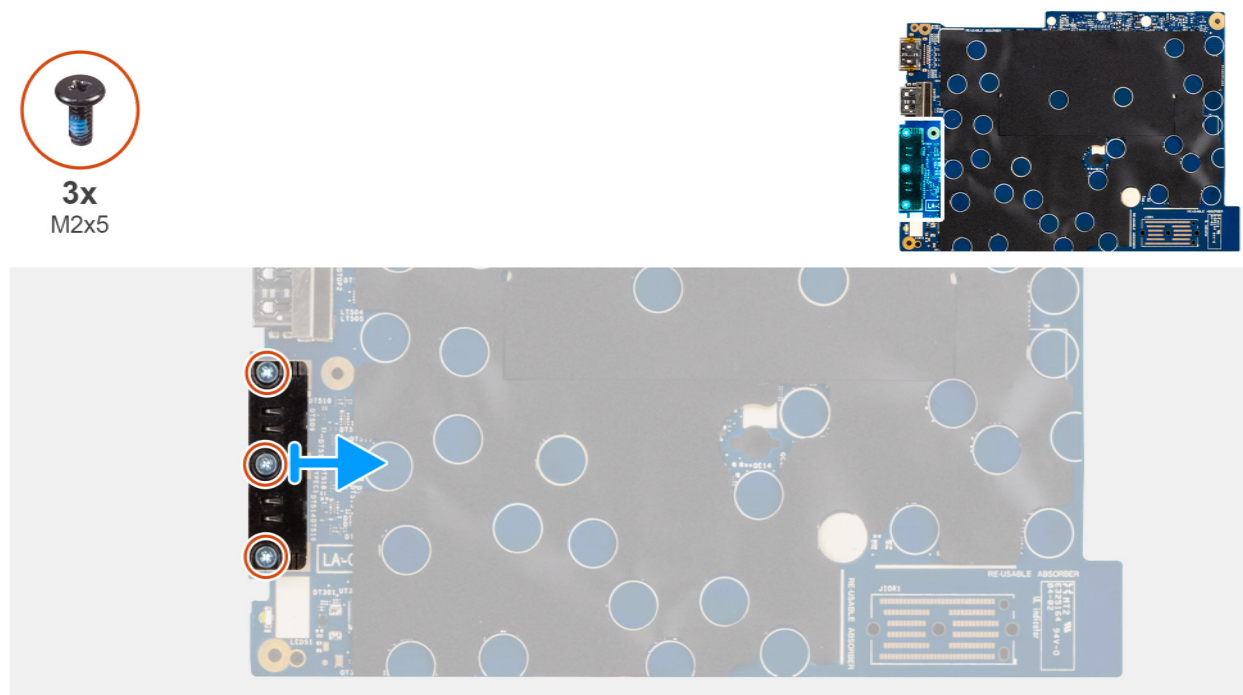


Figure 73. Removing the USB Connector Module

Steps

1. Remove the three screws (M2x5) that secures the USB-C connector module to the bottom side of the system board.
2. Remove the USB-C connector module from the system board.

 **NOTE:** The USB-C bracket is part of the system-board assembly. Do not remove the bracket from the system board.

Installing the USB-C connector module

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

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 USB-C connector module and provide a visual representation of the installation procedure.

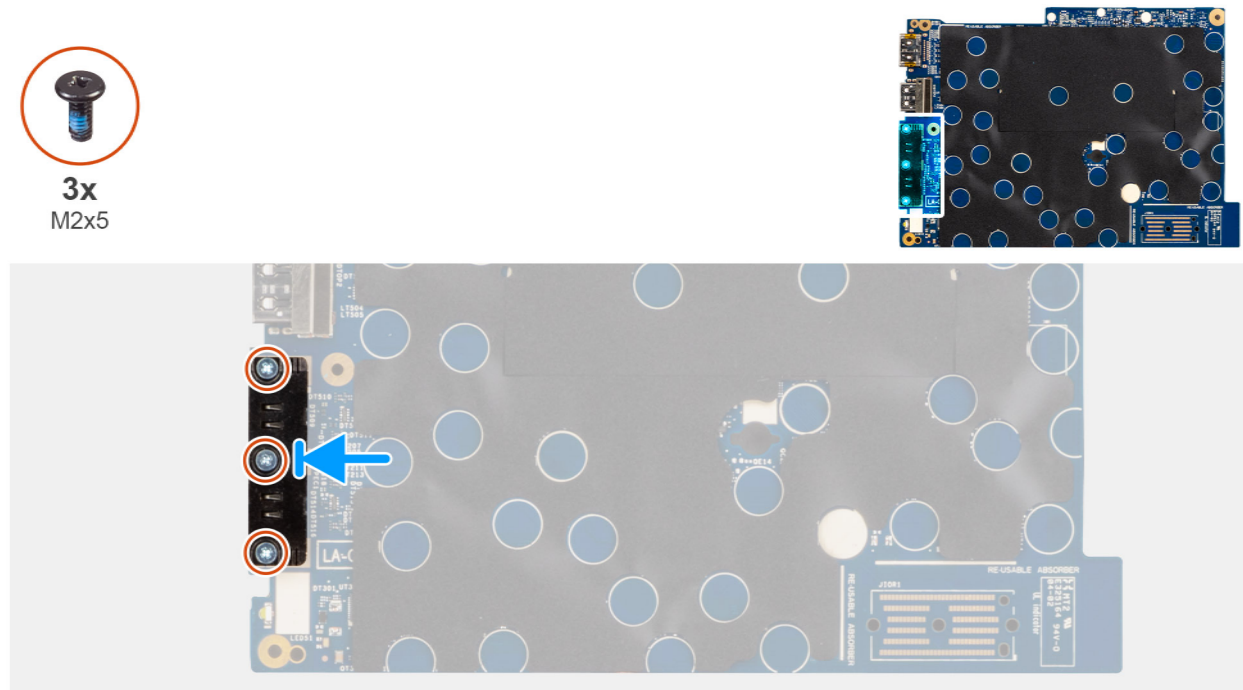


Figure 74. Installing the USB-C connector module

Steps

1. Place the USB-C module to the slot on the bottom side of the system board.
2. Replace the three screws (M2x5) that secure the USB-C connector module in place.

Next steps

1. Install the [system board](#).
2. Install the [heat sink](#).
3. Install the [WWAN card](#).
4. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
5. Install the [base cover](#).
6. Install the [SIM card tray](#), if applicable.
7. Follow the procedure in [after working inside your computer](#).

I/O board

Removing the I/O board

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
6. Remove the [WWAN](#).
7. Remove the [heat sink](#).
8. Remove the [system board](#).

About this task

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



5x
M2x3

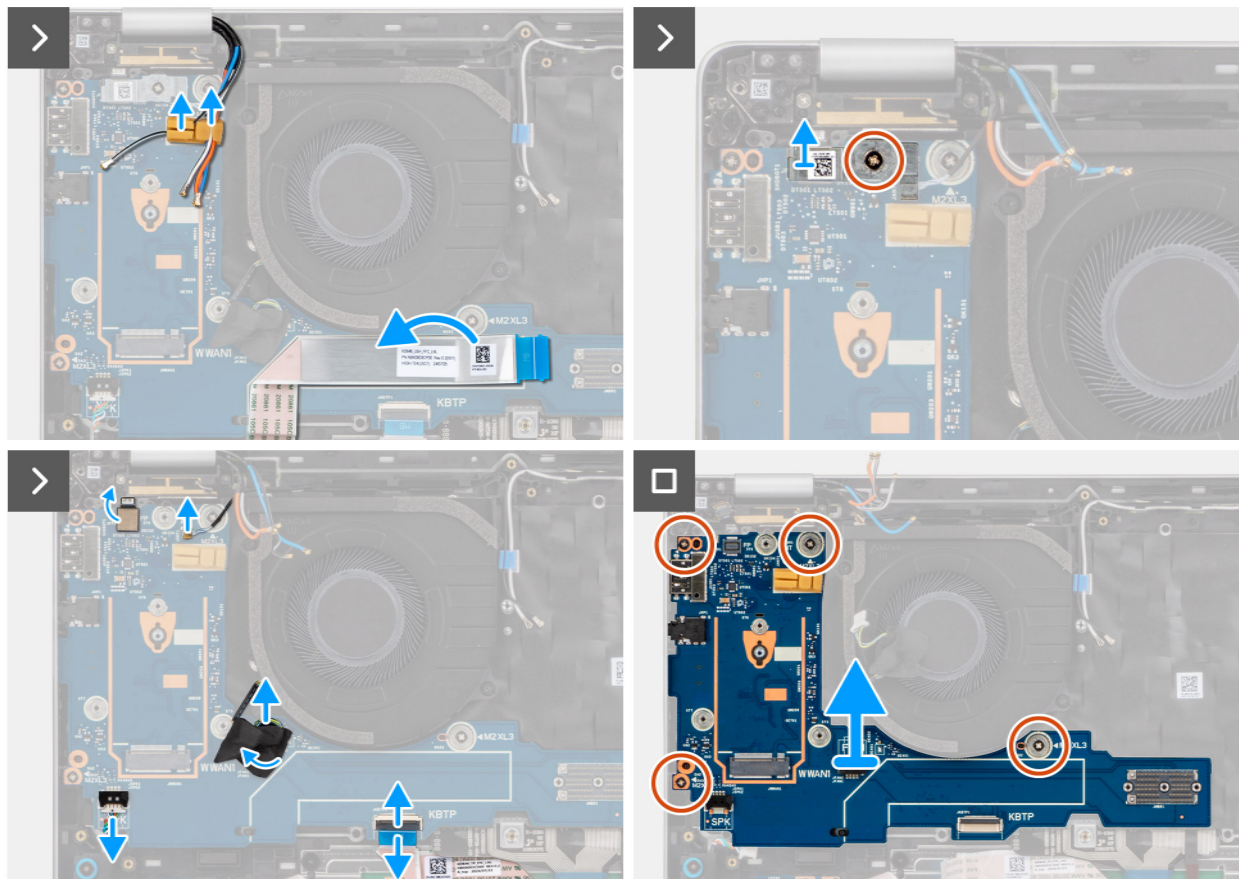
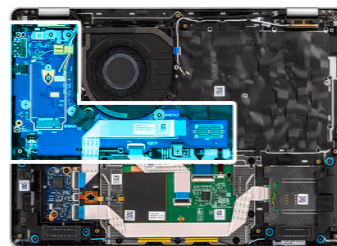


Figure 75. Removing the daughter board

Steps

1. Peel the USH daughter board flexible flat cable from the I/O board.
NOTE: This step applies to models shipped with a USH daughter board.
2. Release the WWAN antenna cables from the routing guides on the I/O board and move it away from the I/O board.
3. Remove the screw (M2x3) that secures the fingerprint-reader bracket in place and remove the fingerprint reader bracket.
NOTE: The fingerprint reader bracket covers both the fingerprint reader connector and Darwin cable connector. Models that are shipped without a fingerprint reader still have a fingerprint-reader bracket to cover the Darwin cable connection.
4. Disconnect the fingerprint reader flexible flat cable (for models shipped with a fingerprint reader), Darwin cable, fan cable, touchpad flexible flat cable, and speakers cable from the I/O board.
5. Remove the four screws (M2x3) that secure the I/O board in place.
6. Lift the left side of the I/O board by left hand and the lower right corner of the I/O board by right hand.
NOTE: While replacing the I/O board, the WWAN card thermal pad mylar sticker at the top side of the I/O board must be replaced to the replacement I/O board.
7. Slide the I/O board off the palm-rest assembly by both hands.

Installing the I/O board

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

About this task

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

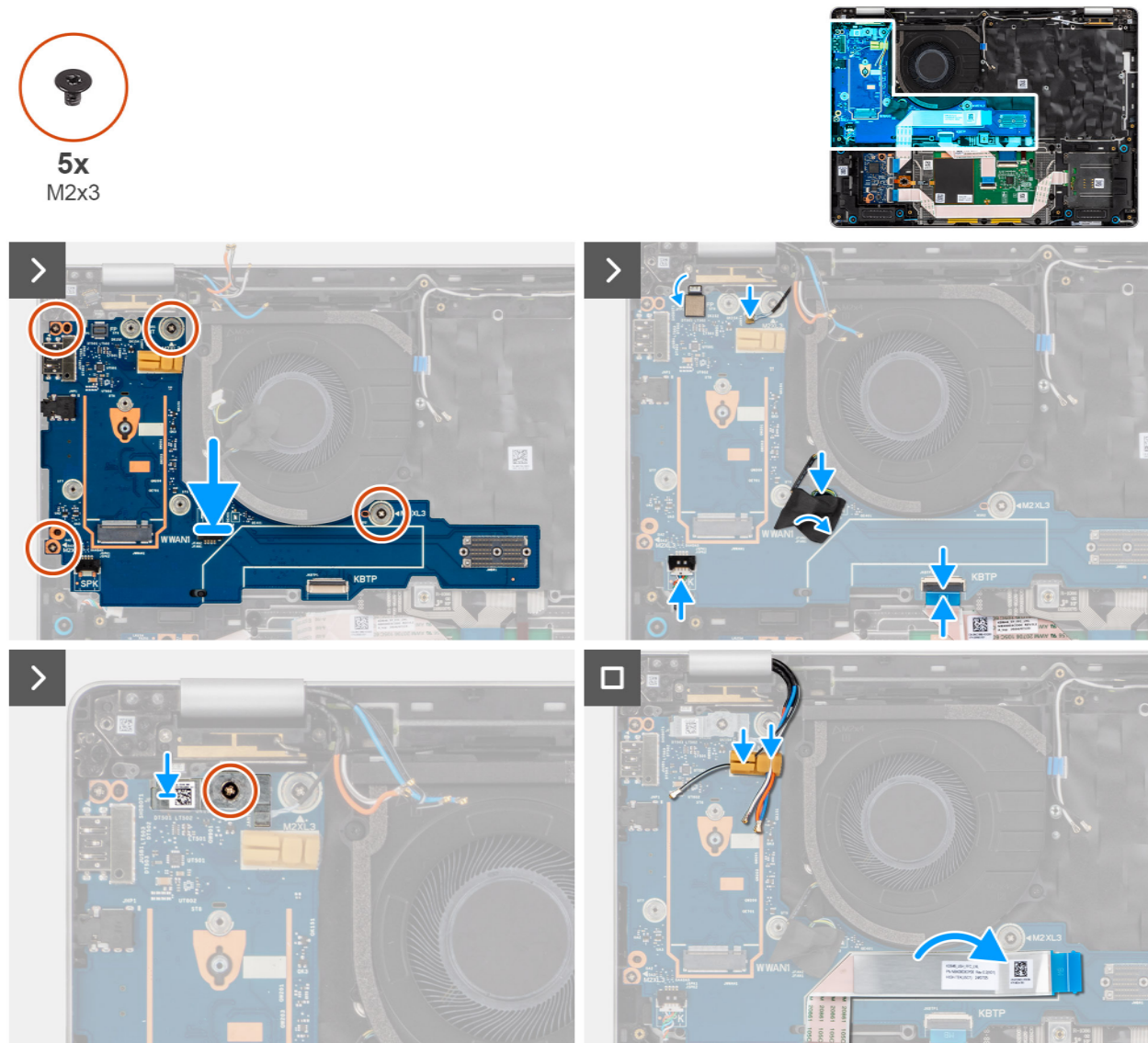


Figure 76. Installing the I/O board

Steps

1. Align and place the I/O board with the slot on the palm-rest assembly.
2. Replace the four screws (M2x3) that secure the I/O board in place.
3. Connect the fingerprint reader FPC (for models shipped with a fingerprint reader), Darwin cable, fan cable, touchpad flexible flat cable, and speakers cable to the I/O board.
4. Place the fingerprint reader bracket over the fingerprint reader FPC and replace the screw (M2x3) that secures the fingerprint reader bracket in place.

NOTE: The fingerprint reader bracket covers both the fingerprint reader connector and Darwin cable connector. Models that are shipped without a fingerprint reader still have a fingerprint reader bracket to cover the Darwin cable connection.

5. Route the WWAN antenna cables along the routing channels on the I/O board.
6. Adhere the USH daughter board flexible flat cable on the I/O board (for models shipped with a USH daughter board).

Next steps

1. Install the [system board](#).
2. Install the [heat sink](#).
3. Install the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

4. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
5. Install the [battery](#).
6. Install the [base cover](#).
7. Install the [SIM card tray](#), if applicable.
8. Follow the procedure in [after working inside your computer](#).

Power-button with fingerprint reader

Removing the power button with fingerprint reader

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if required.
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [WWAN](#).
6. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
7. Remove the [fan](#).
8. Remove the [heat sink](#).
9. Remove the [system board](#).
10. Remove the [I/O board](#).

About this task

The following image indicates the location of the power button with fingerprint reader and provides a visual representation of the removal procedure.

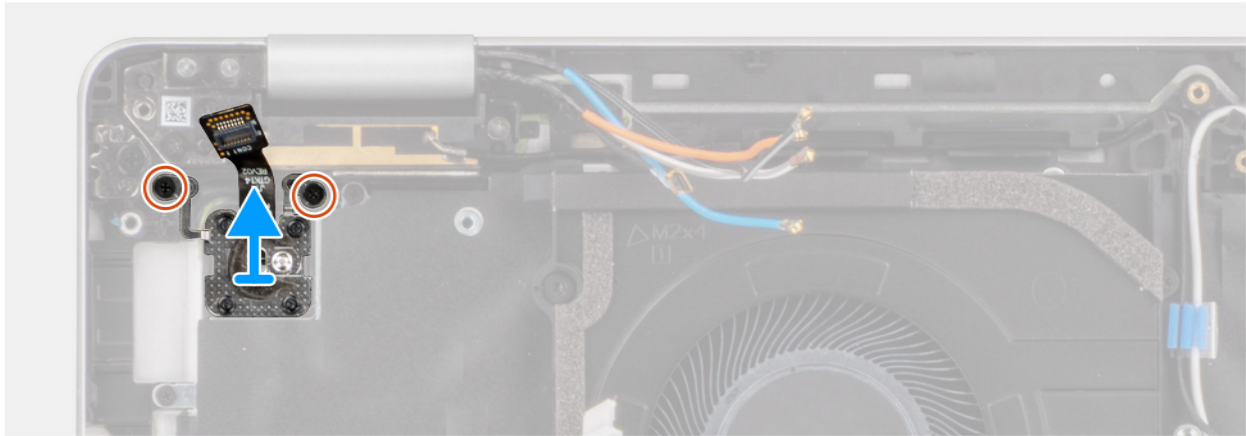
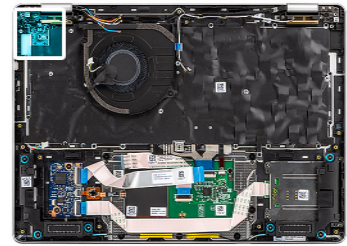


Figure 77. Remove the power button with fingerprint reader

Steps

1. Remove the two screws (M1.6x1.7) that secure the power button bracket in place.
2. Lift the power button bracket off the computer.
3. Disconnect the power button cable from the connector on the chassis.

Installing the power button with fingerprint reader

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

About this task

The following image indicates the location of the power button with fingerprint reader and provides a visual representation of the installation procedure.

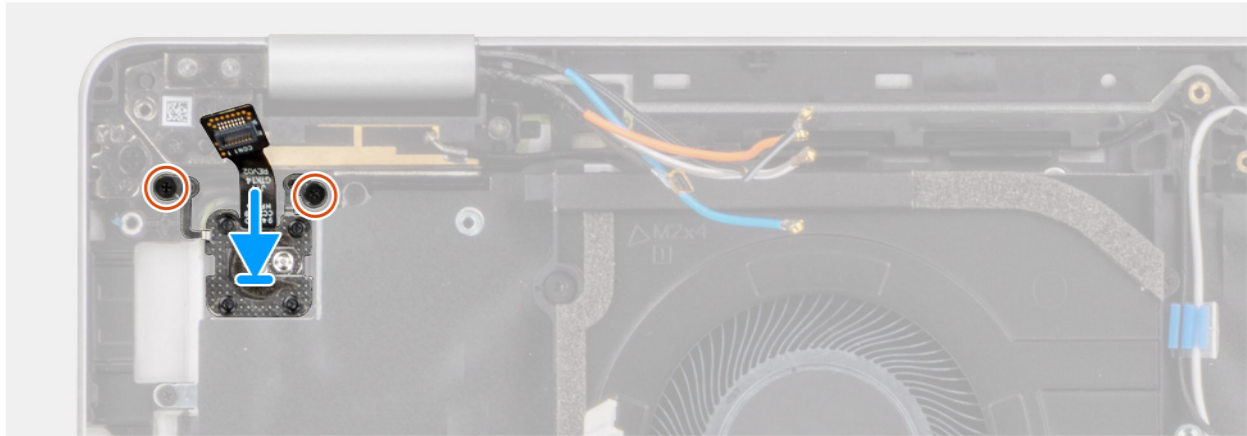
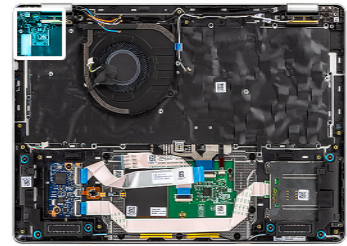


Figure 78. Installing the power button with fingerprint reader

Steps

1. Connect the power button with fingerprint reader cable to the connector on the computer.
2. Replace the power button bracket in place.
3. Replace the two screws (M1.6x1.7) that secure the power button bracket in place.

Next steps

1. Install the [I/O board](#).
2. Install the [system board](#).
3. Install the [heat sink](#).
4. Install the [fan](#).
5. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
6. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

7. Install the [battery](#).
8. Install the [base cover](#).
9. Install the [SIM card tray](#), if required.
10. Follow the procedure in [after working inside your computer](#).

Keyboard assembly

Removing the keyboard

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.

3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [WWAN](#).
6. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
7. Remove the [speakers](#).
8. Remove the [fan](#).
9. Remove the [display assembly](#).
10. Remove the [smart card reader](#).
11. Remove the [USH daughter board](#).
12. Remove the [heat sink](#).

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

13. Remove the [system board](#).
14. Remove the [USB-C connector module](#).
15. Remove the [I/O board](#).
16. Remove the [power button with fingerprint reader](#).

About this task

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



20x
M1.6x1.7

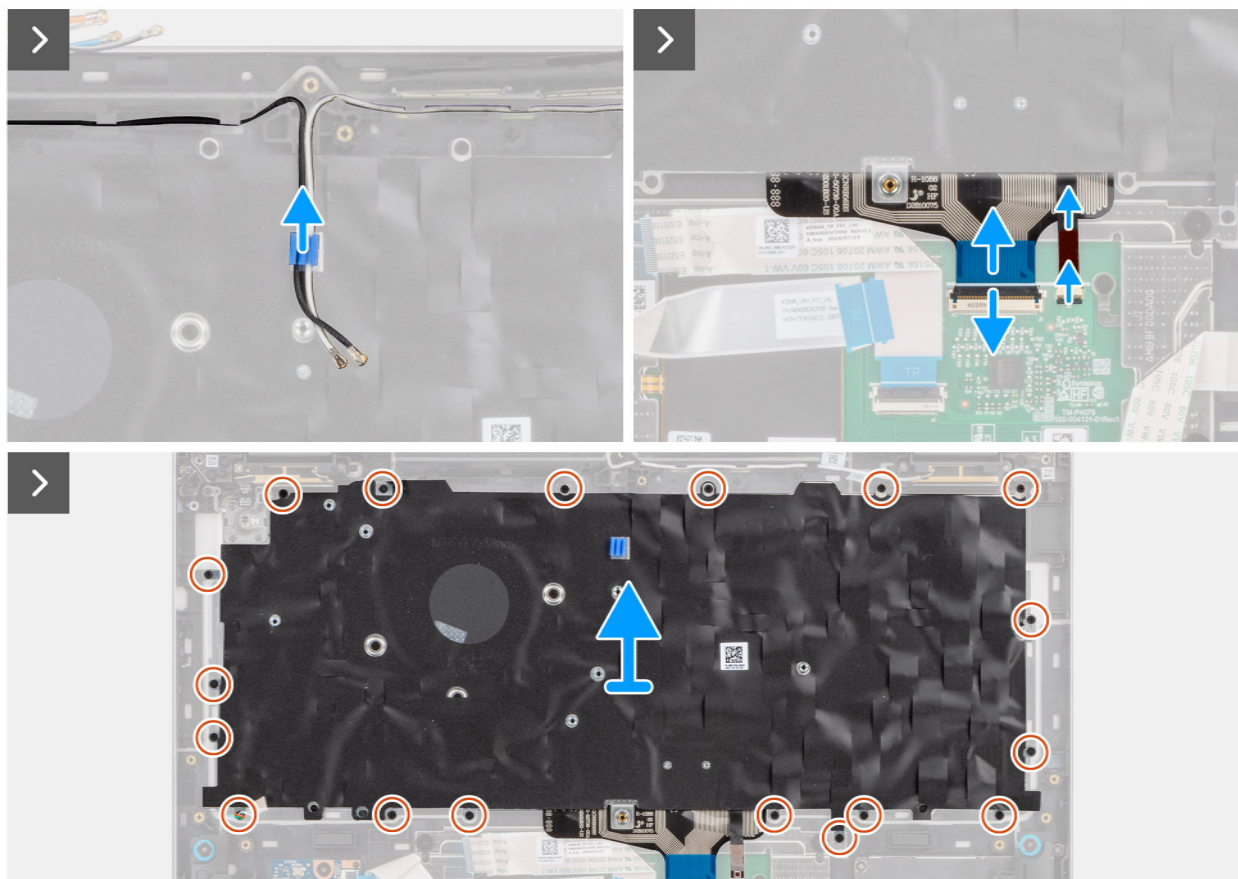
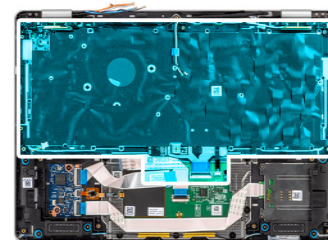


Figure 79. Removing the keyboard



Figure 80. Removing the keyboard

Steps

1. Unroute the WLAN antenna cables from the routing guides on the keyboard bracket.
2. Disconnect the keyboard FPC and keyboard backlight FPC (for models that are shipped with the keyboard backlight) from the touchpad.
3. Remove the eighteen screws (M1.6x1.7) that secure the keyboard assembly in place.
4. Remove the keyboard assembly from the palm rest.
5. Remove the two screws (M2x2) that secure the keyboard to the keyboard bracket from the top side.
6. Remove the keyboard from the keyboard bracket.

Installing the keyboard

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

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 keyboard assembly and provide a visual representation of the installation procedure.



Figure 81. Installing the keyboard

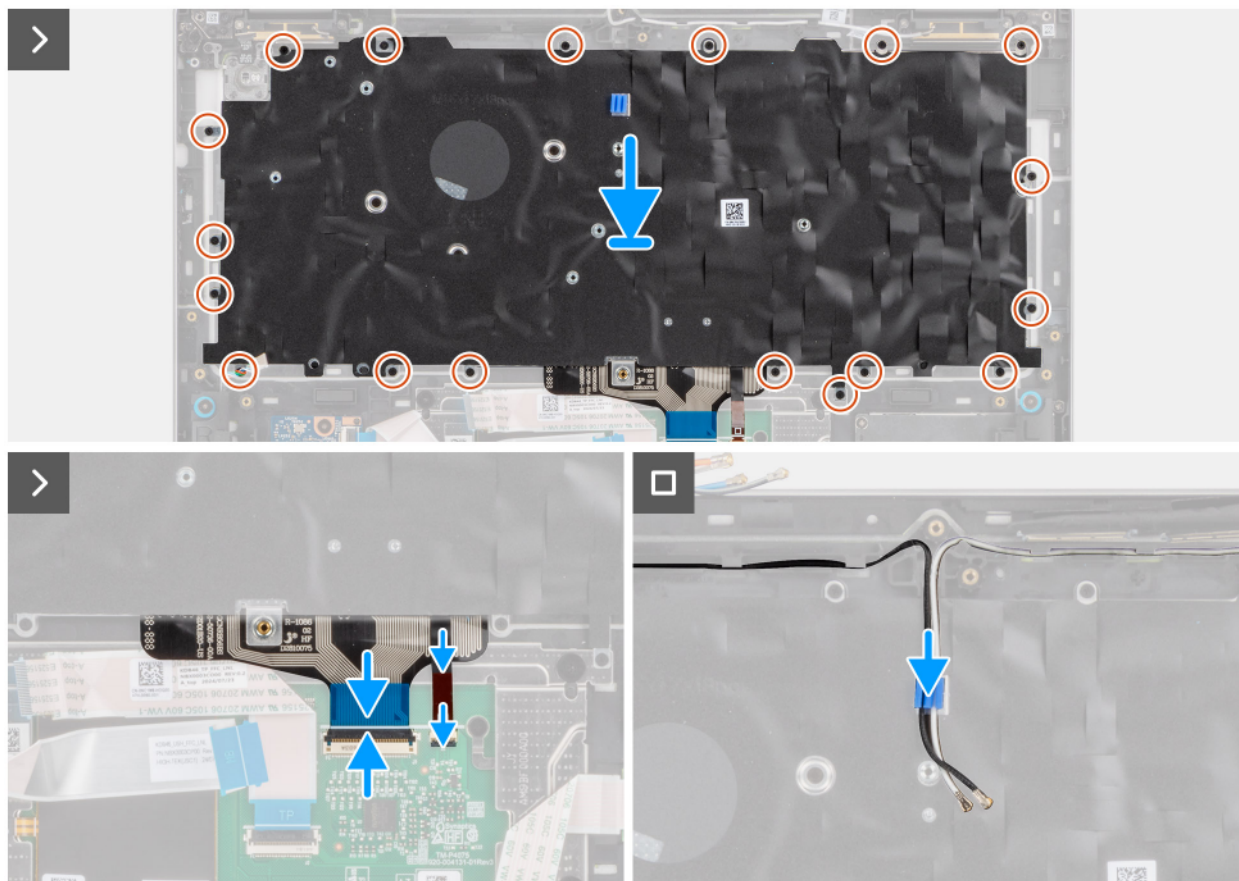


Figure 82. Installing the keyboard

Steps

1. Replace the keyboard on the keyboard bracket.
2. Replace the two screws (M2x2) that secure the keyboard to the keyboard bracket from the top side.
3. Replace the keyboard assembly on the palm rest.
4. Replace the eighteen screws (M1.6x1.7) that secure the keyboard assembly in place.
5. Connect the keyboard FPC and keyboard backlight FPC (for models that are shipped with the keyboard backlight) to the touchpad.
6. Route the WLAN antenna cables along the routing guides on the keyboard bracket.

Next steps

1. Install the [power button with fingerprint reader](#).
2. Install the [I/O board](#).
3. Install the [USB-C connector module](#).
4. Install the [system board](#).
5. Install the [heat sink](#).
6. Install the [USH daughter board](#).
7. Install the [smart card reader](#).
8. Install the [display assembly](#).
9. Install the [fan](#).
10. Install the [speakers](#).
11. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
12. Install the [WWAN](#).

NOTE: This procedure applies only to computers shipped with a WWAN card installed.

13. Install the [battery](#).

14. Install the [base cover](#).
15. Install the [SIM card tray](#), if applicable.
16. Follow the procedure in [after working inside your computer](#).

Palm-rest assembly

Removing the palm-rest assembly

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

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [sim-card tray](#), if applicable.
3. Remove the [base cover](#).
4. Remove the [battery](#).
5. Remove the [WWAN](#).
6. Remove the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
7. Remove the [speakers](#).
8. Remove the [fan](#).
9. Remove the [display assembly](#).
10. Remove the [smart card reader](#).
11. Remove the [USH daughter board](#).
12. Remove the [heat sink](#).

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

13. Remove the [system board](#).
14. Remove the [USB-C connector module](#).
15. Remove the [I/O board](#).
16. Remove the [power button with fingerprint reader](#).
17. Remove the [keyboard assembly](#).

About this task

The figure below shows the palm rest after performing the pre-removal parts procedures for any palm-rest replacement.

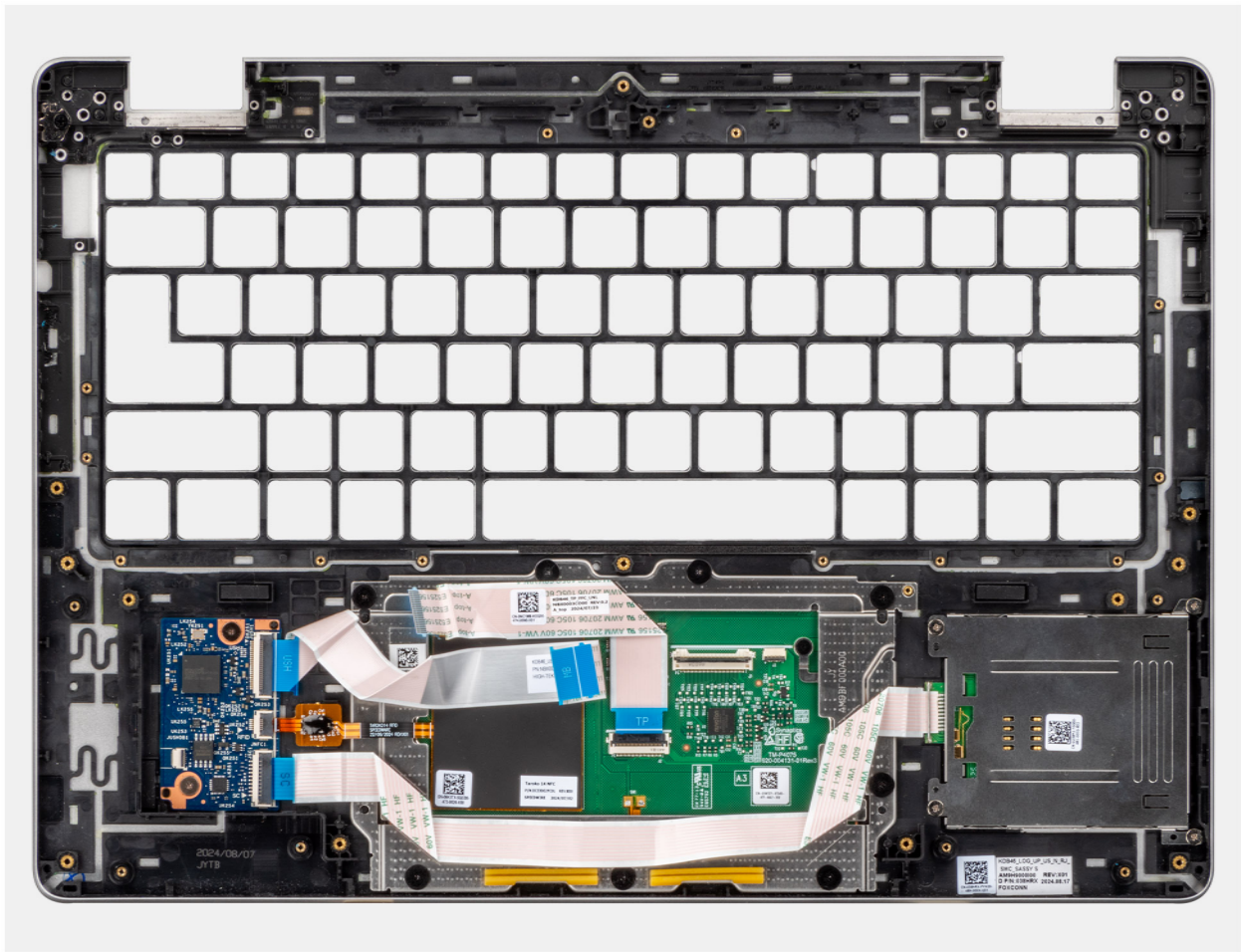


Figure 83. Palm-rest

NOTE: When replacing the palm rest for models shipped with WLAN card, use a plastic scribe to pry off the SIM-card slot filler from the palm rest and then transfer it over to the replacement palm rest.

Installing the palm-rest

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

Prerequisites

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

NOTE: When replacing the palm rest for models shipped with WLAN card, ensure to transfer the SIM-card slot filler over to the replacement palm rest.

Next steps

1. Install the [keyboard](#).
2. Install the [power button with fingerprint reader](#).
3. Install the [I/O board](#).
4. Install the [USB-C connector module](#).
5. Install the [system board](#).
6. Install the [heat sink](#).
7. Install the [USH daughter board](#).
8. Install the [smart card reader](#)
9. Install the [display assembly](#)

10. Install the [fan](#).
11. Install the [speakers](#)
12. Install the [M.2 2230 solid state drive](#) or [M.2 2280 solid state drive](#), as applicable.
13. Install the [WWAN](#).

 **NOTE:** This procedure applies only to computers shipped with a WWAN card installed.

14. Install the [battery](#).
15. Install the [base cover](#).
16. Install the [SIM card tray](#), if applicable.
17. Follow the procedure in [after working inside your computer](#).

Software

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

Operating system

Your Dell Pro 14 Plus supports the following operating systems:

- Windows 11 Pro
- Windows 11 Home
- Ubuntu Linux 24.04

 **NOTE:** Windows 10 22H2 is only for custom-configured computers that are downgraded by end users from Windows 11. Support by Dell Technologies is subject to the Microsoft Windows 10 End of Support plan.

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](#).

Technology and components

 **NOTE:** Instructions that are provided in the following section are applicable to computers that are shipped with the Windows operating system. Windows is factory-installed with this computer.

BIOS Setup

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

 **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.

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 a user-selectable option, such as the user password, type of storage device installed, and enable or disable base devices.

Entering BIOS Setup program

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 29. 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 in [BIOS 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 displayed.

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 [BIOS 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 displayed.

BIOS 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 30. BIOS Setup options—Overview menu

Overview	
Dell Pro 14 Plus PB14250	
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.
Manufacture Date	Displays the manufacture date of the computer.

Table 30. BIOS Setup options—Overview menu (continued)

Overview	
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.
Signed Firmware Update	Displays whether the Signed Firmware Update is enabled on your computer. By default, the Signed Firmware Update option is enabled.
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 the battery life type.
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.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
Intel vPro Technology	Displays the Intel vPro Technology.
Processor L2 Cache	Displays the L2 Cache.
Processor L3 Cache	Displays the L3 Cache.
Memory Information	
Memory Installed	Displays the total memory that is installed on the computer.
Memory Available	Displays the total memory available on the computer.
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.
Devices Information	
Panel Type	Displays the type of display panel available on the computer.
Panel Revision	Displays the panel revision of the computer.
Video Controller	Displays the type of video controller available on 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 30. BIOS 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.
Pass Through MAC Address	Displays the MAC address of the video pass-through.
Cellular Device	Displays the Cellular device information of the computer.

Table 31. BIOS 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 disabled. 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.  CAUTION: When disabled, the Microsoft UEFI CA can cause your system to not 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 disabled. For additional security, Dell Technologies recommends keeping the Enable 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 ability to modify the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the Enable Custom Mode option is disabled.
Custom Mode Key Management	Selects the custom values for expert key management. By default, the PK option is selected.

Table 32. BIOS 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 Internal 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.
Enable Thunderbolt Technology Support	
Enable Thunderbolt Technology Support	Enables the associated ports and adapters for Thunderbolt Technology support. By default, the Enable Thunderbolt Technology Support option is enabled.
Enable Thunderbolt Boot Support	
Enable Thunderbolt Boot Support	Enables the Thunderbolt adapter-peripheral device and USB devices that are connected to the Thunderbolt adapter to be used during BIOS Preboot. By default, the Enable Thunderbolt Boot Support option is disabled.
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	Enables the PCIe devices that are connected through a Thunderbolt adapter to run the PCIe devices UEFI Option ROM (if present) during preboot. By default, the Enable Thunderbolt (and PCIe behind TBT) pre-boot modules option is disabled.
Disable USB4 PCIe Tunneling	Disables the USB4 PCIe Tunneling option. By default, the Disable USB4 PCIe Tunneling option is disabled.
Video/Power only on Type-C Ports	Enables or disables the Type-C port functionality to video or only power. By default, the Video/Power only on Type-C Ports option is disabled.

Table 32. BIOS Setup options—Integrated Devices menu (continued)

Integrated Devices	
Type-C Dock	
Type-C Dock Override	Enables or disables to use connected Type-C Dell Dock to provide data stream with external USB ports disabled. When Type-C Dock override is enabled, the Video/Audio/LAN submenu is activated. By default, the Type-C Dock Override option is enabled.
Type-C Dock Audio	Enables or disables the usage of audio inputs and outputs from the connected Type-C Dell docking station. By default, the Type-C Dock Audio option is enabled.
Type-C Dock LAN	Enables or disables the usage of LAN on the external ports of the connected Type-C Dell docking station. By default, the Type-C Dock LAN option is enabled.
Miscellaneous Devices	
Enable Fingerprint Reader Device	Enables the Fingerprint Reader Device option. By default, the Enable Fingerprint Reader Device option is enabled.
Unobtrusive mode	Enables or disables the unobtrusive mode. When enabled, all system LEDs, LCD panel backlight and audio devices of the computer are turned off. By default, the Unobtrusive Mode option is disabled. NOTE: On computers with collaboration touchpad, the Collaboration Touchpad is disabled when the Unobtrusive Mode option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 33. BIOS Setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated SATA hard drive controller. By default, the AHCI/NVMe option is selected. The storage device is configured for AHCI/NVMe mode.
Storage Interface	
Port Enablement	Enables or disables the M.2 PCIe SSD option. By default, the M.2 PCIe SSD option is enabled.
Smart Reporting	Enables or disables the Smart reporting option. By default, the Smart Reporting option is disabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Drive Information	
Drive Information	Displays the information of onboard drives.

Table 34. BIOS 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.

Table 34. BIOS Setup options—Display menu (continued)

Display	
	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.
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 35. BIOS Setup options—Connection menu

Connection	
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the WLAN option enabled.
WWAN/GPS	Enables or disables the internal WWAN device. By default, the WWAN/GPS option is enabled.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the Bluetooth option enabled.
Contactless Smartcard/NFC	Enables or disables the smartcard device. By default, the Contactless Smartcard/NFC option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
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. By default, the Control WLAN Radio option is disabled.
Control WWAN Radio	Enables to sense the connection of the computer to a wired network and then disables the selected WWAN radios. By default, the Control WWAN Radio option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
WWAN Bus Mode	
Enable UEFI Bluetooth Stack	Enables or disables the UEFI Bluetooth Stack and controls the onboard LAN Controller. By default, the Enable UEFI Bluetooth Stack option is enabled.

Table 35. BIOS Setup options—Connection menu (continued)

Connection	
 NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.	
HTTP(s) Boot Feature	
HTTP(s) Boot	When enabled, supports HTTP(s) boot on the client BIOS, which offers wired or wireless and HTTP/HTTPS connection options.  NOTE: To view this option, enable HTTP(s) Boot as described in View Advanced Setup options.
HTTP(s) Boot Modes	In Auto Mode, the boot URL is obtained from the DHCP response; the boot URL specifies the HTTP Boot Server and location of the Network Boot Program (NBP) file. In Manual mode, the user enters the URL in the text box, which must start with <code>http://</code> or <code>https://</code> and end with the NBP file name. By default, the Control WWAN Radio option is disabled. By default, Auto Mode is selected.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 36. BIOS 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 computer to run on battery during peak power usage hours. By default, the Enable Peak Shift option is disabled.
Type-C Connector Power	
USB PowerShare	Enables or disables the USB PowerShare on the computer. By default, the USB Powershare 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 enabled.

Table 36. BIOS Setup options—Power menu (continued)

Power	
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.
Power On Lid Open	When enabled, it allows the computer to turn on from the off state whenever the lid is opened. By default, the Power On Lid Open 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 37. BIOS 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.

Table 37. BIOS Setup options—Security menu (continued)

Security	
	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.
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.
Intel Total Memory Encryption	Enables or disables the processor's memory encryption feature. By default, the Intel Total Memory Encryption option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Chassis intrusion	
Chassis Intrusion	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. 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.

Table 37. BIOS Setup options—Security menu (continued)

Security	
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 the data can no longer be recovered. When enabled, the data wipe option provides prompts 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.
Authenticated BIOS Interface	
Enable Authenticated BIOS Interface	Allows the administrator to control access to BIOS configuration through an authenticated interface. When enabled, this option ensures that BIOS configuration changes are secured by authentication. By default, the Enable Authenticated BIOS Interface option is disabled.
Clear Certificate Store	Allows the administrator to delete all certificates stored in the Key Management System (KMS). When enabled, this option will remove all certificates, which may be necessary for security purposes or if the certificates have expired or are no longer valid. By default, the Clear Certificate Store option is disabled.
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

Table 37. BIOS Setup options—Security menu (continued)

Security	
	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.
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.
Clear Firmware Device Tamper Detection	Allows you to clear the events that are logged when tampering of firmware device is detected. By default, the Clear Firmware Device Tamper Detection option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Pluton Security Processor	Pluton Security Processor is used by the operating system to provide security services such as Key Storage Provider functionality. When enabled, the Pluton Security Processor services are available to the operating system. Disabling the Pluton Security Processor might limit some operating system security services and impact functionality. By default, the Pluton Security Processor option is enabled. For additional security, Dell Technologies recommends keeping the Pluton Security Processor option enabled.

Table 38. BIOS 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 storage passwords are previously set. • The administrator password can be used in place of the computer and/or internal storage passwords. • When set, the administrator password must be provided during a firmware update. • Clearing the administrator password also clears the computer password (if set).

Table 38. BIOS Setup options—Passwords menu (continued)

Passwords	
	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. • 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.
M.2 PCIe SSD-0	The hard drive password can be set to prevent unauthorized access of the data stored on the solid-state 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 or M.2 PCIe SSD-0 Password option is used. • The hard drive password option cannot be accessed when the 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 system and hard drive passwords are set to the same value, the hard drive unlocks after the correct system password is entered. Dell Technologies recommends using a hard drive password to protect unauthorized data access.
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.

Table 38. BIOS Setup options—Passwords menu (continued)

Passwords	
	 NOTE: This option does not remove the requirement to enter the password after shutting down. By default, the Password Bypass option is disabled. For additional security, Dell Technologies recommends keeping the Password Bypass option enabled.
Password Changes	
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.
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.
Allow Non-Admin PSID Revert	The Allow Non-Admin PSID Revert option allows a user to clear the hard drive password without entering the BIOS Admin Password. When an Admin Password is set, the ability to enter the PSID is protected by requiring authentication with the Admin Password. If this option is enabled, any user can clear the drive without entering the Admin Password. By default, the Enable Allow Non-Admin PSID Revert option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 39. BIOS 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

Table 39. BIOS Setup options—Update, Recovery menu (continued)

Update, Recovery	
	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 OS 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 OS Recovery Tool. By default, the Dell Auto OS Recovery Threshold value is set to 2.

Table 40. BIOS 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.
Intel AMT Capability	Configure Intel Active Management Technology (AMT) options, which can be enabled, disabled, or restricted.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
First Power On Date	
Diagnostics	Enable or disable the option for applications running in the operating system to run with preboot diagnostics on subsequent boots.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .

Table 40. BIOS Setup options—System Management menu (continued)

System Management	
Power-on-Self-Test Automatic Recovery	Enable or disable the automatic recovery of the computer from no power or no-POST failure by applying mitigation steps. By default, the Power-On-Self-Test Automatic Recovery option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 41. BIOS Setup options—Keyboard menu

Keyboard	
Fn Lock Options	Enables or disables the Fn Lock option. By default, the Fn Lock 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 Dim 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.
Device Configuration HotKey Access	Allows you to control whether you can access device configuration screens through hotkeys during computer startup. By default, the Device Configuration HotKey Access option is enabled.  NOTE: 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 using a key sequence, are not affected by this setting.

Table 42. BIOS Setup options—Pre-boot 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.  NOTE: Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.
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.

Table 42. BIOS Setup options—Pre-boot Behavior menu (continued)

Preboot Behavior	
	By default, the System Unique MAC Address option is selected.
Sign of Life	
Ownership tag with Logo	Display Ownership tag with Logo. By default, the Ownership tag with Logo option is enabled.
Early Keyboard Backlight	Keyboard Backlight Sign of Life. By default, the Early Keyboard Backlight option is enabled.

Table 43. BIOS 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.
Intel Trusted Execution Technology (TXT)	Intel Trusted Execution Technology (TXT) is a set of hardware extensions to Intel processors and chipsets. It provides a hardware-based root of trust to ensure that a platform boots with a known good configuration of firmware, BIOS, virtual machine monitor, and operating system. The following must be enabled in order to enable Intel TXT - • Intel Virtualization Technology - X • Intel Virtualization Technology - Direct By default, the Intel Trusted Execution Technology (TXT) option is enabled. For additional security, Dell Technologies recommends keeping the Intel Trusted Execution Technology (TXT) option 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. <i>i</i> 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. <i>i</i> 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. <i>i</i> 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.

Table 43. BIOS Setup options—Virtualization menu (continued)

Virtualization Support	
	 NOTE: This option is provided only for compatibility purposes, since some older hardware is not DMA capable.
Internal Port DMA Compatibility Mode	Allows you to control the Internal Port DMA Compatibility for both internal and external ports. By default, the Internal Port DMA Compatibility Mode option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 44. BIOS Setup options—Performance menu

Performance	
Multi-Core Support	
Active Multiple Performance Cores (P-Cores) Select	Allows 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.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
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.  NOTE: To view this option, enable Service options as described in View Service options.
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.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enables or disables 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.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 45. BIOS 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. By default, the Keep Log option is selected.
Thermal Event Log	

Table 45. BIOS Setup options—System Logs menu (continued)

System Logs	
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](#).

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or search 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, use the SupportAssist to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
For more information, search in the Knowledge Base Resource at [Dell Support Site](#).

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article [000131486](#) at [Dell Support Site](#).

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](#).

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or search 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, use the SupportAssist to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. 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

You can run the BIOS flash update file from Windows using a bootable USB drive or you can also update the BIOS from the One-Time boot menu on the computer. To update your computers BIOS, copy the BIOS XXXX.exe file onto a USB drive formatted with the FAT32 file system. Then, restart your computer and boot from the USB drive using the One-Time Boot Menu.

About this task

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the computer it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the computer will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system reinstall. For more information about this subject, search in the Knowledge Base Resource at [Dell Support Site](#).

BIOS Update

To confirm if the BIOS Flash Update is listed as a boot option you can boot your computer to the **One Time Boot** Menu. If the option is listed, then the BIOS can be updated using this method.

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

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

Perform the following steps to update the BIOS from the One-Time boot menu:

 **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. Turn off the computer, insert the USB drive that contains the BIOS flash update file.
2. Turn on the computer and press **F12** to access the **One Time Boot** Menu. Select **BIOS Update** using the mouse or arrow keys then press **Enter**.
The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select the external USB device.

5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS flash update is completed.

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 46. 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. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to create the system password:
 - A password can have up to 32 characters.
 - A password can at least have one special character: "(! " # \$ % & ' * + , - . / : ; < = > ? @ [\] ^ _ ` { | })")"
 - A password can have numbers 0 to 9.
 - A password can have an upper case letters from A to Z.
 - A password can have a lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press 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. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
2. In the **System Security** screen, verify that the **Password Status** is Unlocked.
3. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.
 **NOTE:** If you change the system 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.
5. Press Esc. A message prompts you to save the changes.
6. Press Y to save the changes and exit from **System Setup**.
The computer restarts.

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.

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](#).

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 built-in 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 indicator LED 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 LED flashes one of the following error codes for 30 seconds:

Table 47. LED error codes

Blinking Pattern		Possible Problem
Amber	White	
2	1	CPU 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.

Logical 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 [2,7].

 **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.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.

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 Dell Pro 14 Plus.

The following table shows different Service LED blinking patterns and associated problems. The diagnostic light codes consist of a two-digit number, and the digits are separated by a comma. The number stands for a blinking pattern; the first digit shows the number of blinks in amber color, and the second digit shows the number of blinks in white color. The Service LED blinks in the following manner:

- The Service LED blinks the number of times equal to the value of the first digit and turns off with a short pause.
- After that, the Service LED blinks the number of times equal to the value of the second digit.
- The Service LED turns off again with a longer pause.
- After the second pause, the blinking pattern will be repeated.

Table 48. Diagnostic light codes

Diagnostic light codes (Amber, White)	Problem description	Recommended solutions
1,1	TPM Detection Failure	Replace the system board.
1,2	Unrecoverable SPI Flash Failure	Replace the system board.

Table 48. Diagnostic light codes (continued)

Diagnostic light codes (Amber, White)	Problem description	Recommended solutions
1,4	Hinge Cable OCP	Replace LCM (cable and Panel)
1,5	EC unable to program i-Fuse	Replace the system board.
1,6	Generic catch-all for ungraceful EC code flow errors	Disconnect all power source (AC, coin cell) and drain flea power by pressing and holding down the power button.
1,7	Non-RPMC Flash on Boot Guard fused system	Flash latest BIOS version. If the problem persists, replace the system board.
1,8	Chipset "Catastrophic Error" signal has tripped	Replace the CPU.
2,1	CPU configuration or CPU failure	Replace the CPU.
2,2	System board: BIOS or Read-Only Memory (ROM) failure	Flash latest BIOS version. If the problem persists, replace the system board.
2,3	No memory or Random-Access Memory (RAM) detected	Reseat and swap memory modules among the slots. If the problem persists, replace the memory module.
2,4	Memory or Random-Access Memory (RAM) failure	Reseat and swap memory modules among the slots. If the problem persists, replace the memory module.
2,5	Invalid memory installed	Reseat and swap memory modules among the slots. If the problem persists, replace the memory module.
2,6	System board/Chipset Error	Replace the system board.
2,7	LCD failure SBIOS message	Replace the display.
3,1	CMOS battery failure	Reset the CMOS battery connection. If the problem persists, replace the RTC battery.
3,2	PCI of Video card/chip failure	Replace the system board.
3,3	Recovery image not found	Replace the system board.
3,4	Recovery image found but invalid	Replace the system board.
3,5	EC power-rail error	Replace the system board.
3,6	Flash corruption detected by SBIOS	Flash corruption is detected by SBIOS. If the problem persists, replace the system board.
3,7	Timeout waiting on ME to reply to HECI message	Replace the system board.
4,1	Memory DIMM power rail failure	Replace the system board.
4,2	CPU Power cable connection issue	• Perform the PSU BIST Test, reseat the cable. • If this does not work, replace the system board, power supply or cabling.
4,4	LCD Power Rail Failure	Replace motherboard

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 in 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**.

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.

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 49. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	Dell Site
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , 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 about your purchase invoice, packing slip, bill, or Dell product catalog.