

Latitude 5495

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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Working on your computer

Topics:

- [Safety precautions](#)
- [Before working inside your computer](#)
- [After working inside your computer](#)

Safety precautions

The safety precautions chapter details the primary steps to be taken 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 system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any notebook to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 15 seconds should discharge residual power in the system board. notebooks.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done through the use of 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 non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding 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 DIMMs, and system boards. Very slight charges 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.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

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 DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code 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 DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms 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, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they 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, ensure that you discharge static electricity from your body.
- 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.

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 mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a 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 ESD mat is not required, or connected 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 ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware 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 of 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 call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire 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.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **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 portable environment. Servers are typically installed in a rack within a data center; desktops or portables 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 system 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 part 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 ESD mat, in the system, or inside an anti-static bag.

- **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.

ESD protection summary

It is recommended that all field service technicians use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical that technicians keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

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.

Before working inside your computer

- 1 Ensure that your work surface is flat and clean to prevent the computer cover from being scratched.
- 2 Turn off your computer.
- 3 If the computer is connected to a docking device (docked), undock it.
- 4 Disconnect all network cables from the computer (if available).

 **CAUTION:** If your computer has an RJ45 port, disconnect the network cable by first unplugging the cable from your computer.

- 5 Disconnect your computer and all attached devices from their electrical outlets.
- 6 Open the display.
- 7 Press and hold the power button for few seconds, to ground the system board.

 **CAUTION:** To guard against electrical shock unplug your computer from the electrical outlet before performing Step # 8.

 **CAUTION:** To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface at the same time as touching a connector on the back of the computer.

- 8 Remove any installed ExpressCards or Smart Cards from the appropriate slots.

After working inside your computer

After you complete any replacement procedure, ensure that you connect any external devices, cards, and cables before turning on your computer.

 **CAUTION:** To avoid damage to the computer, use only the battery designed for this particular Dell computer. Do not use batteries designed for other Dell computers.

- 1 Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
- 2 Connect any telephone or network cables to your computer.

 **CAUTION:** To connect a network cable, first plug the cable into the network device and then plug it into the computer.

- 3 Connect your computer and all attached devices to their electrical outlets.
- 4 Turn on your computer.

Disassembly and reassembly

Recommended tools

The procedures in this document require the following tools:

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

NOTE: The #0 screw driver is for screws 0-1 and the #1 screw driver is for screws 2-4

Screw list

The following table provides the list of screws that are used for securing different components.

Table 1. Screw list

Component	Secured to	Screw type	Quantity
Base cover	Palm-rest assembly	M2x6	8
Battery	Palm-rest assembly	M2x6	1
Heat sink assembly	System board	M2x3 (Thin head)	4 (UMA), 6 (DSC)
WLAN	System board	M2x3 (Thin head)	1
WWAN (optional)	System board	M2x3 (Thin head)	1
SSD card	Palm-rest assembly	M2x3 (Thin head)	1
SSD frame	Chassis frame	M2x3 (Thin head)	1
Keyboard	Palm-rest assembly	M2.0x2.5	5
Display assembly	Palm-rest assembly	M2.0x5	4
Display cable bracket	System board	M2x3	2
Display panel	Display back cover	M2x3 (Thin head)	4
Power connector port	Hinge saddle	M2x3 (Thin head)	2
System board	Palm-rest assembly	M2x3 (Thin head)	4
Type-C USB bracket	System board	M2.0x5	2
Display hinge cover	Chassis	M2x3 (Thin head)	2
Display hinges	Hinge screw plate	M2.5x3	6
Hard drive	Chassis frame	M2x2.7	4

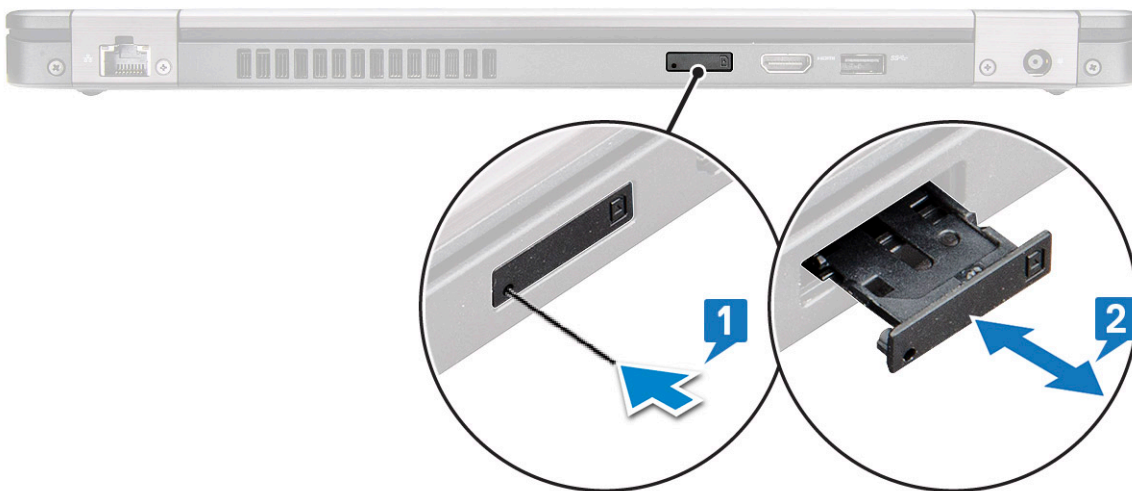
Component	Secured to	Screw type	Quantity
M.2 NVMe SSD thermal plate	Chassis frame	M2x3	2
Hard drive bracket	Hard drive	M3.0x3.0	4
Chassis frame	Chassis	M2.0x5, M2x3 (Thin head)	8, 5
Touchpad panel (button)	Palm-rest assembly	M2x3 (Thin head)	2
Smart card module	Palm-rest assembly	M2x3 (Thin head)	2

Subscriber Identity Module(SIM) board – optional

Removing the Subscriber Identification Module card

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

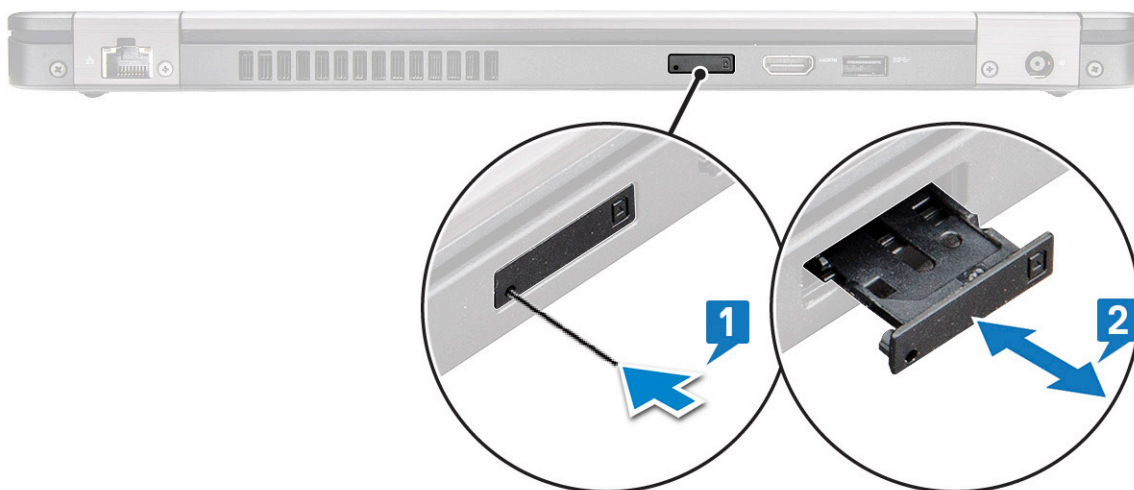
- 1 Insert a paperclip or a SIM card removal tool into the pinhole on the SIM card tray [1].
- 2 Pull the SIM card tray to remove it [2].
- 3 Remove the SIM card from the SIM card tray.
- 4 Push the SIM card tray into the slot until it clicks into place [2].



Installing the Subscriber Identification Module card

- 1 Insert a paperclip or a SIM card removal tool into the pinhole [1].
- 2 Pull the SIM card tray to remove it [2].
- 3 Place the SIM card on the SIM card tray.

- 4 Push the SIM card tray into the slot until it clicks into place [2].

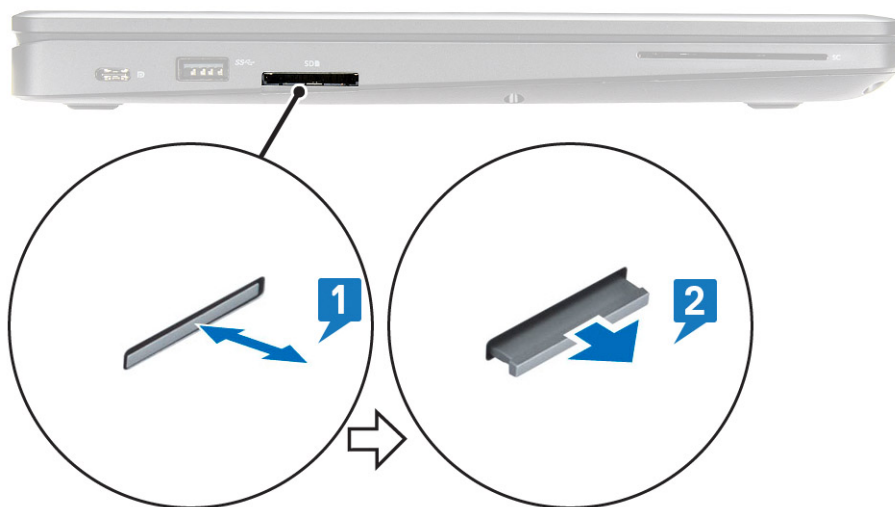


SD card – optional

SD card is an optional component.

Removing the SD card

- 1 Follow the procedure [Before working inside your computer](#)
- 2 Push the SD card so that the SD card pops out from its slot, and then remove it from the system.



Installing the SD card

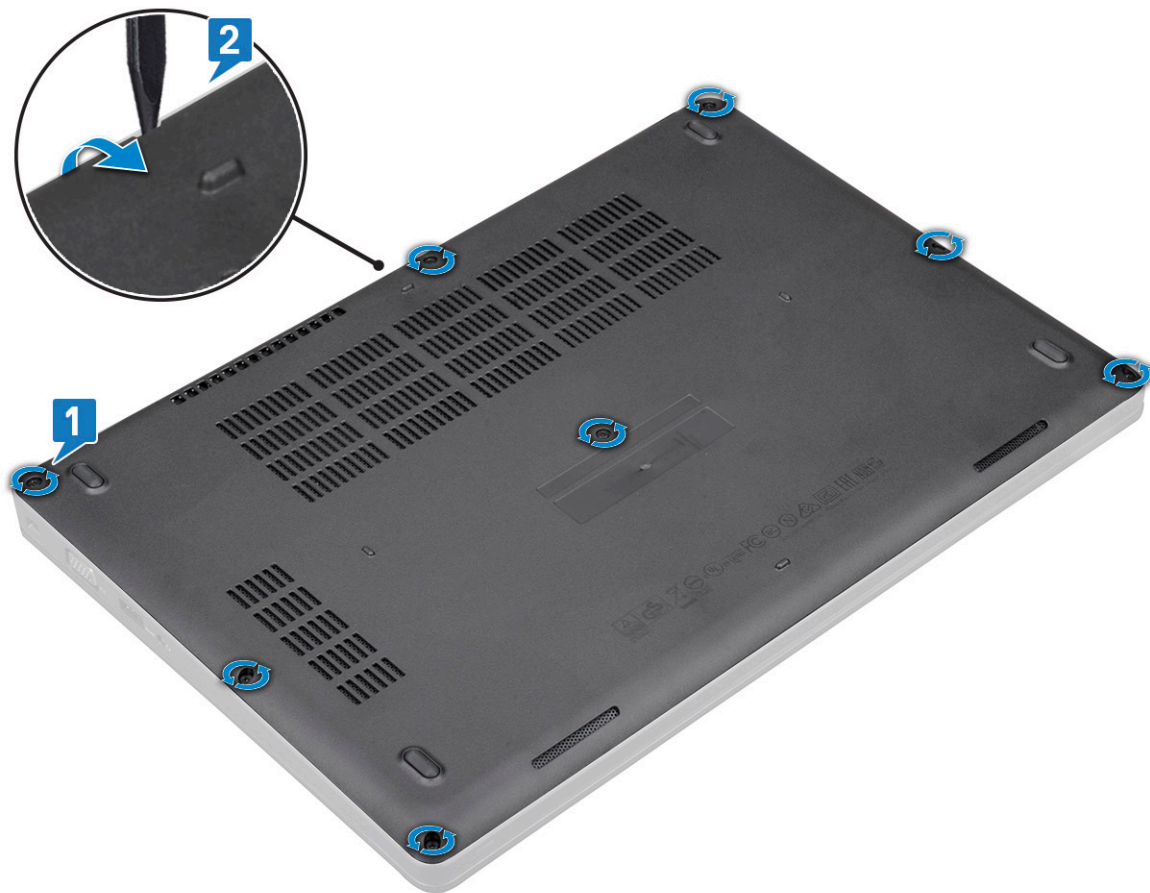
- 1 Push the SD card into its slot until the SD card gets secured with a click sound.
- 2 Follow the procedure in [After working inside your computer](#)

Base cover

Removing the base cover

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 To remove the base cover:
 - a Loosen the 8 captive screws that secure the base cover to the system [1].
 - b Pry the base cover from the recess at the top edge [2] and continue prying throughout the outer sides of the base cover in clockwise direction to release the base cover.

 **NOTE:** You may need a plastic scribe to pry the base cover from the edges.



- c Lift the base cover from the system.



Installing the base cover

- 1 Place the base cover to align with the screw holders on the system and press the sides of the base cover.
- 2 Tighten the 8 captive screws to secure the base cover to the system.
- 3 Follow the procedure in [After working inside your computer](#).

Battery

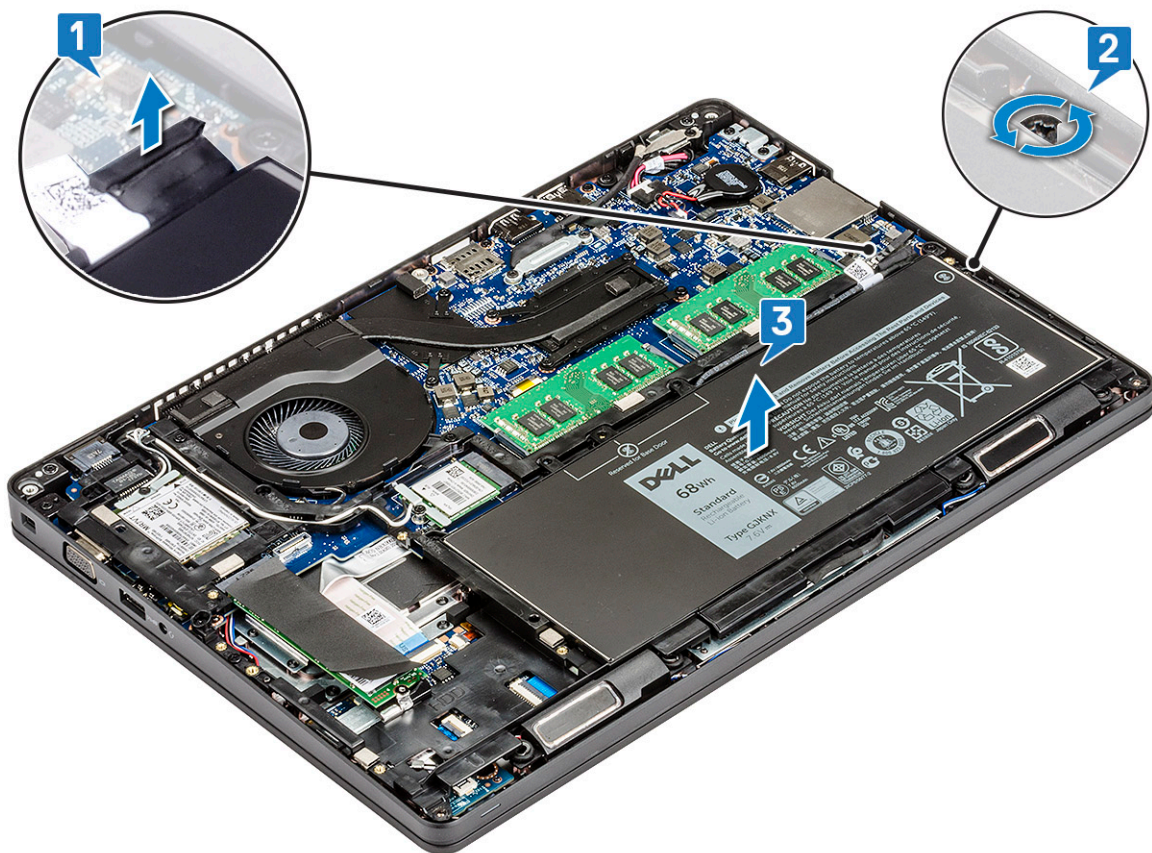
Lithium-ion battery precautions

⚠ CAUTION:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery as much as possible before removing it from the system. This can be done by disconnecting the AC adapter from the system to allow the battery to drain.
- 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.
- 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 Lithium-ion battery can be dangerous. In such an instance, the entire system should be replaced. Contact <https://www.dell.com/support> for assistance and further instructions.
- Always purchase genuine batteries from <https://www.dell.com> or authorized Dell partners and re-sellers.

Removing the battery

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the [base cover](#).
- 3 To remove the battery:
 - a Disconnect the battery cable from the connector on the system board [1] and unroute the cable from the routing channel.
 - b Loosen the M2x6 captive screw that secures the battery to the system [2].
 - c Lift the battery away from the system [3].



Installing the battery

- 1 Insert the battery into the slot on the system.
- 2 Route the battery cable through the routing channel.
- 3 Tighten the M2x6 captive screw to secure the battery to the system.
- 4 Connect the battery cable to the connector on the system board.
- 5 Install the [base cover](#).
- 6 Follow the procedure in [After working inside your computer](#).

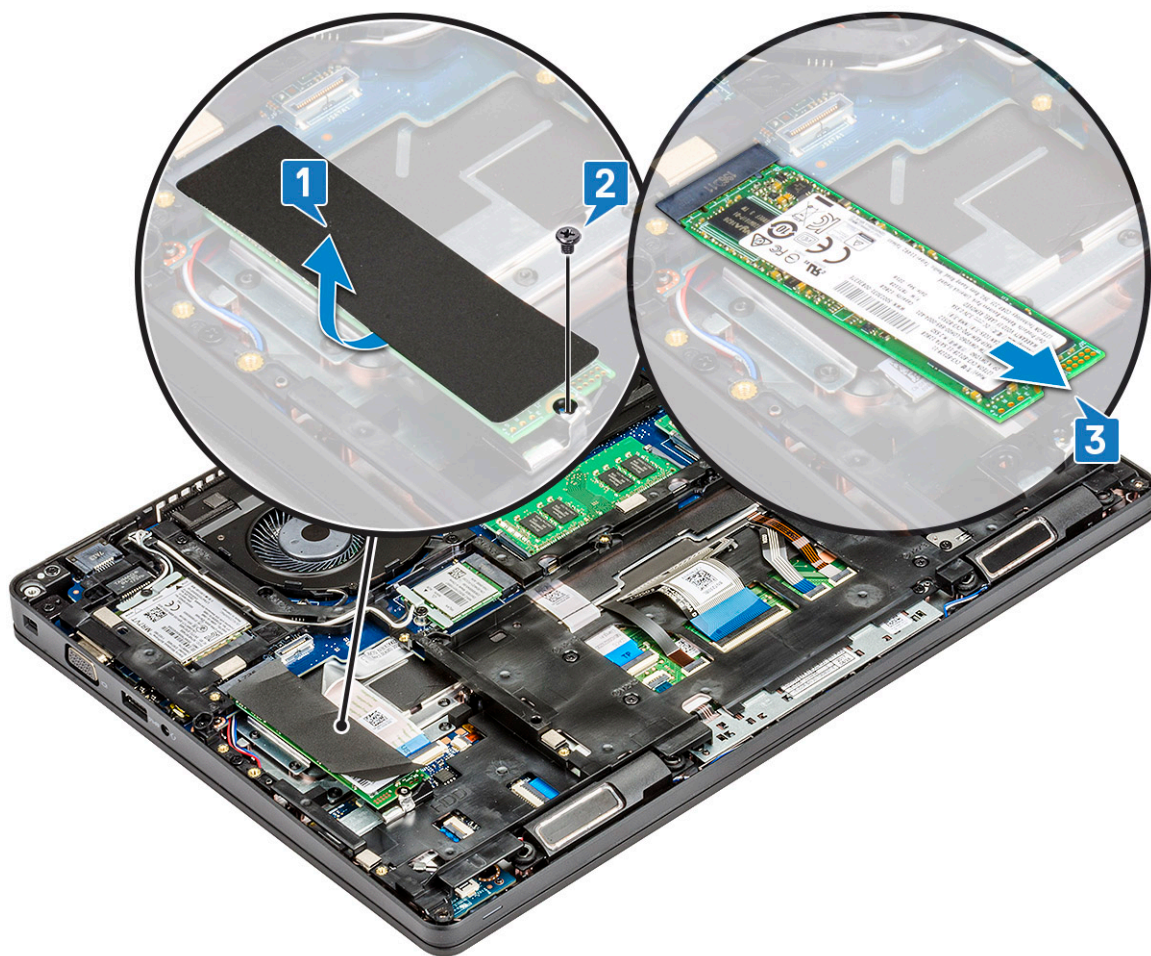
Solid state drive

Removing the SSD card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the Solid State Drive (SSD) card:
 - a Peel the adhesive mylar shield that secures the SSD card [1].

① **NOTE:** Need to be removed carefully in order to be reused on the replacement SSD.

 - b Remove the M2x3 screw that secures the SSD to the system [2].
 - c Slide and lift the SSD from the system [3].



① **NOTE:** This applies only to the SATA M.2 2280 version of the SSD

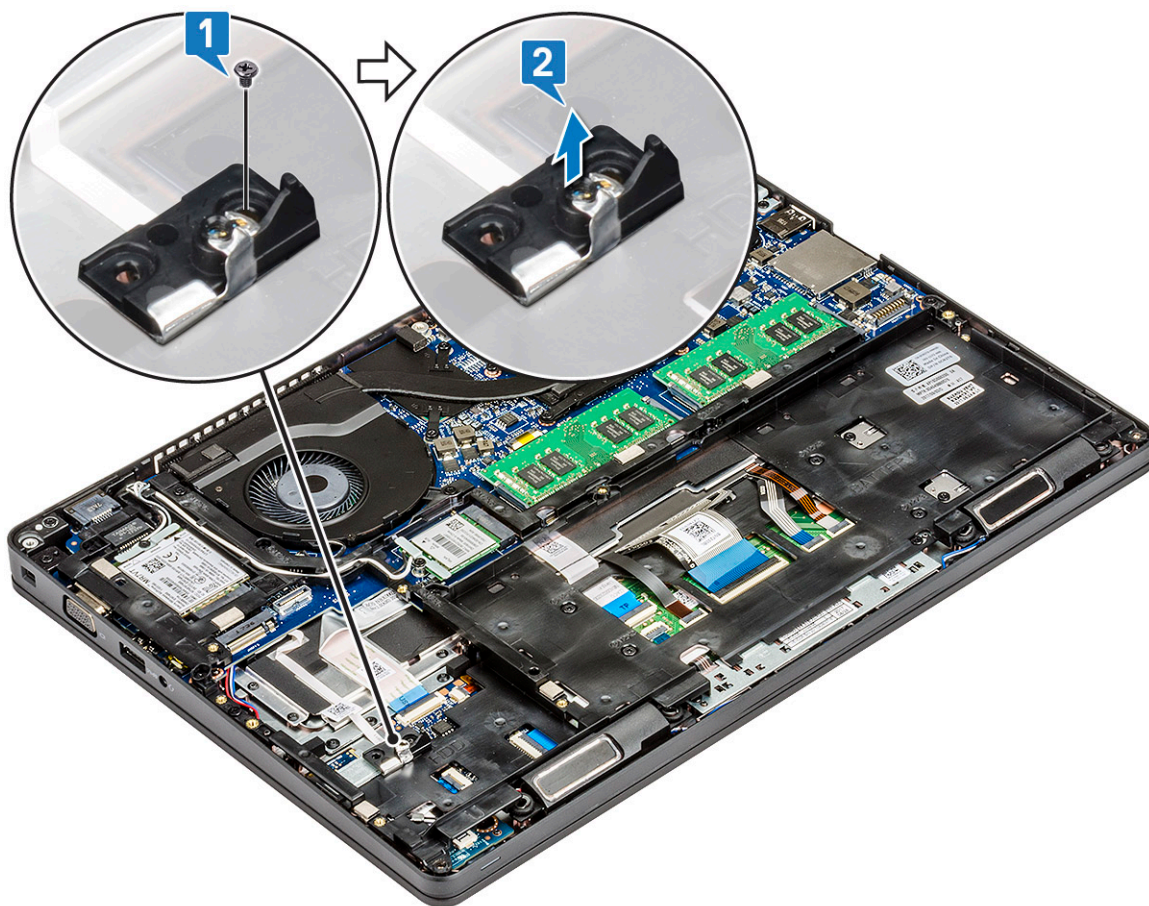
Installing the SSD card

- 1 Insert the SSD card into the connector on the system.
- 2 Replace the M2x3 screw that secures the SSD card to the system.

- 3 Place the Mylar shield over the SSD.
- 4 Install the :
 - a [battery](#)
 - b [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

Removing the SSD frame

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [SSD card](#)
- 3 To remove the SSD frame:
 - a Remove the M2x3 screw that secures the SSD frame to the system [1].
 - b Lift the SSD frame from the system [2].



Installing the SSD frame

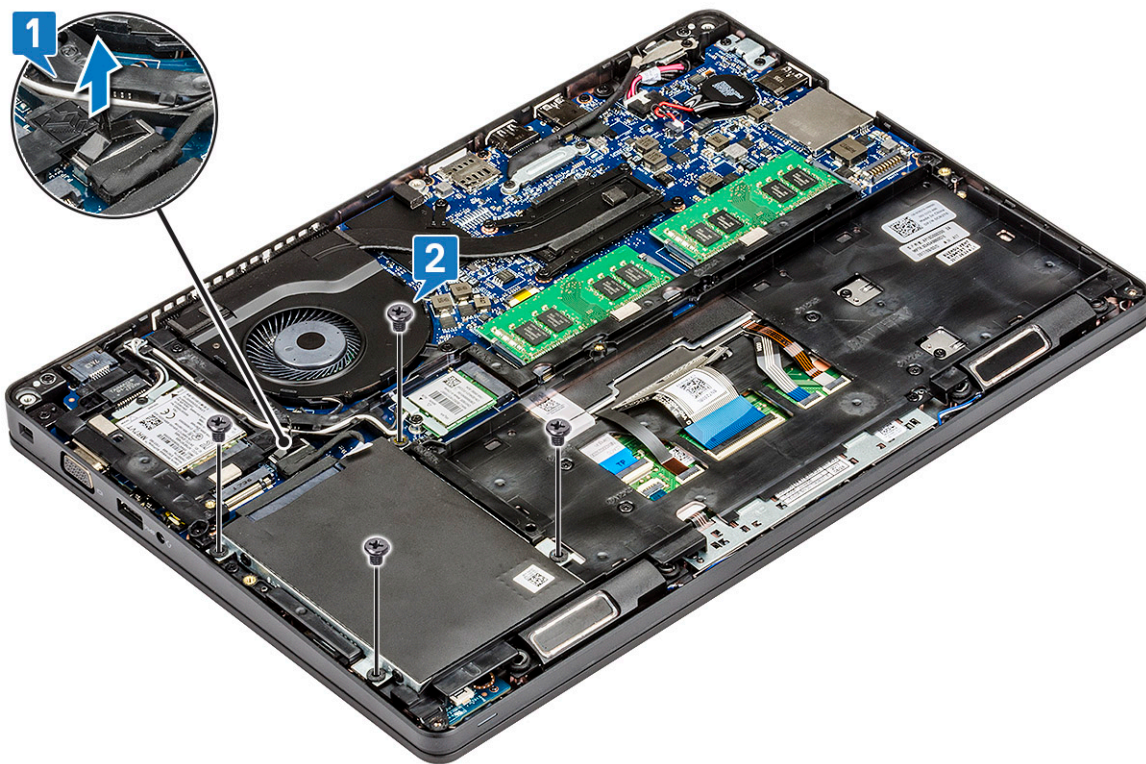
- 1 Place the SSD frame into the slot in the system.
- 2 Replace the M2x3 screw that secures the SSD frame to the system.
- 3 Install the:
 - a [SSD card](#)

- b battery
 - c base cover
- 4 Follow the procedure in [After working inside your computer](#).

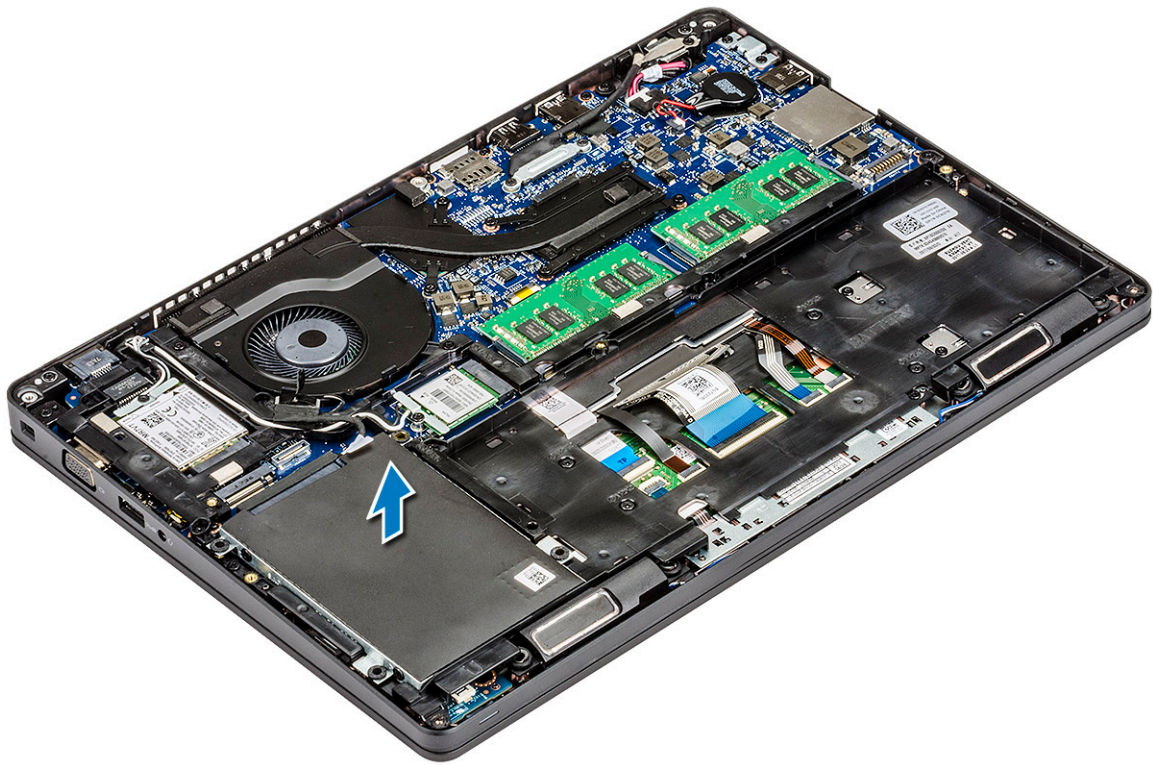
Hard drive

Removing hard drive

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
- a base cover
 - b battery
- 3 To remove the hard drive:
- a Disconnect the hard drive cable from the connector on the system board [1].
 - b Remove the four (M2 x 2.7) screws that secure the hard drive to the system [2].



- c Lift the hard drive from the system.



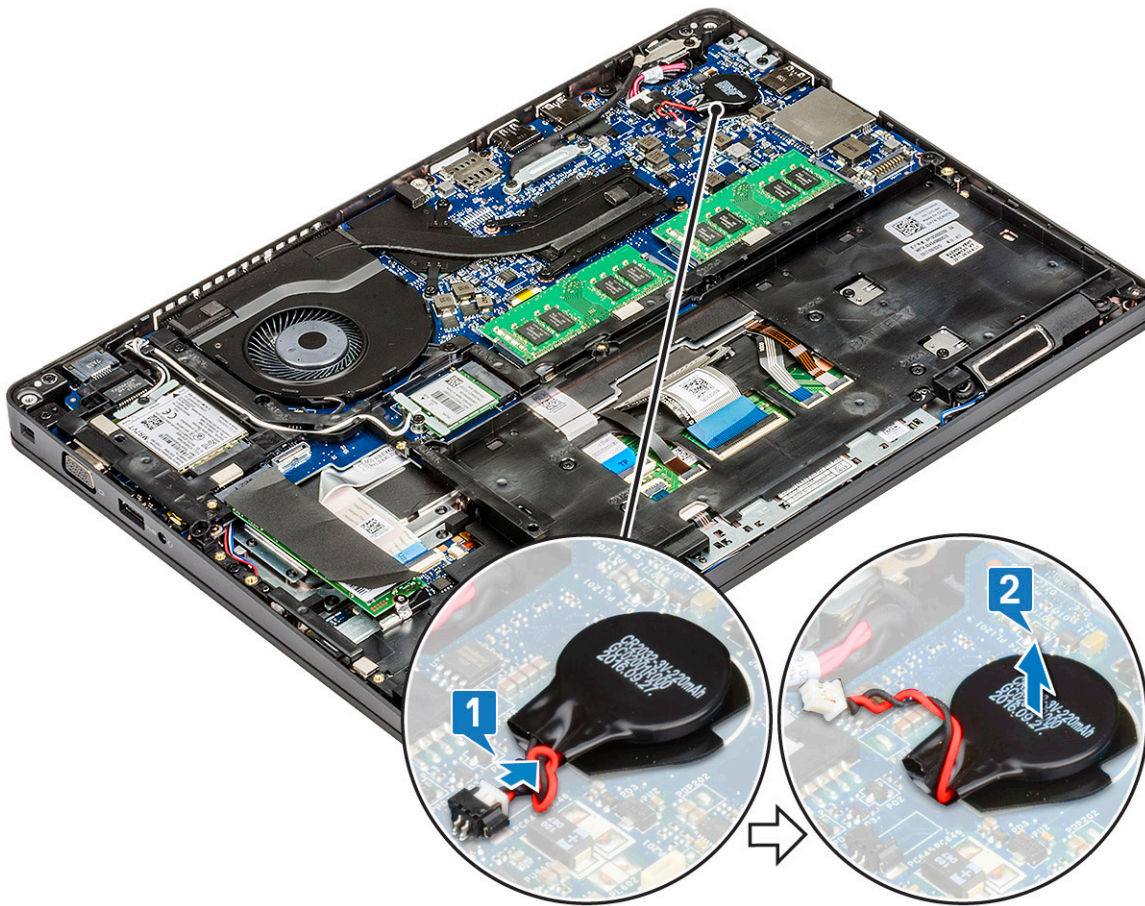
Installing hard drive

- 1 Insert the hard drive into the slot on the system.
- 2 Replace the four M2 x 2.7 screws to secure the hard drive to the system.
- 3 Connect the hard drive cable to the connector on the system board.
- 4 Install the :
 - a [battery](#)
 - b [base cover](#)
- 5 Follow the procedures in [After working inside your system](#).

Coin cell battery

Removing the coin cell battery

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the coin cell battery:
 - a Disconnect the coin cell battery cable from the connector on the system board [1].
 - b Lift the coin cell battery to release from the adhesive and lift it away from the system board [2].



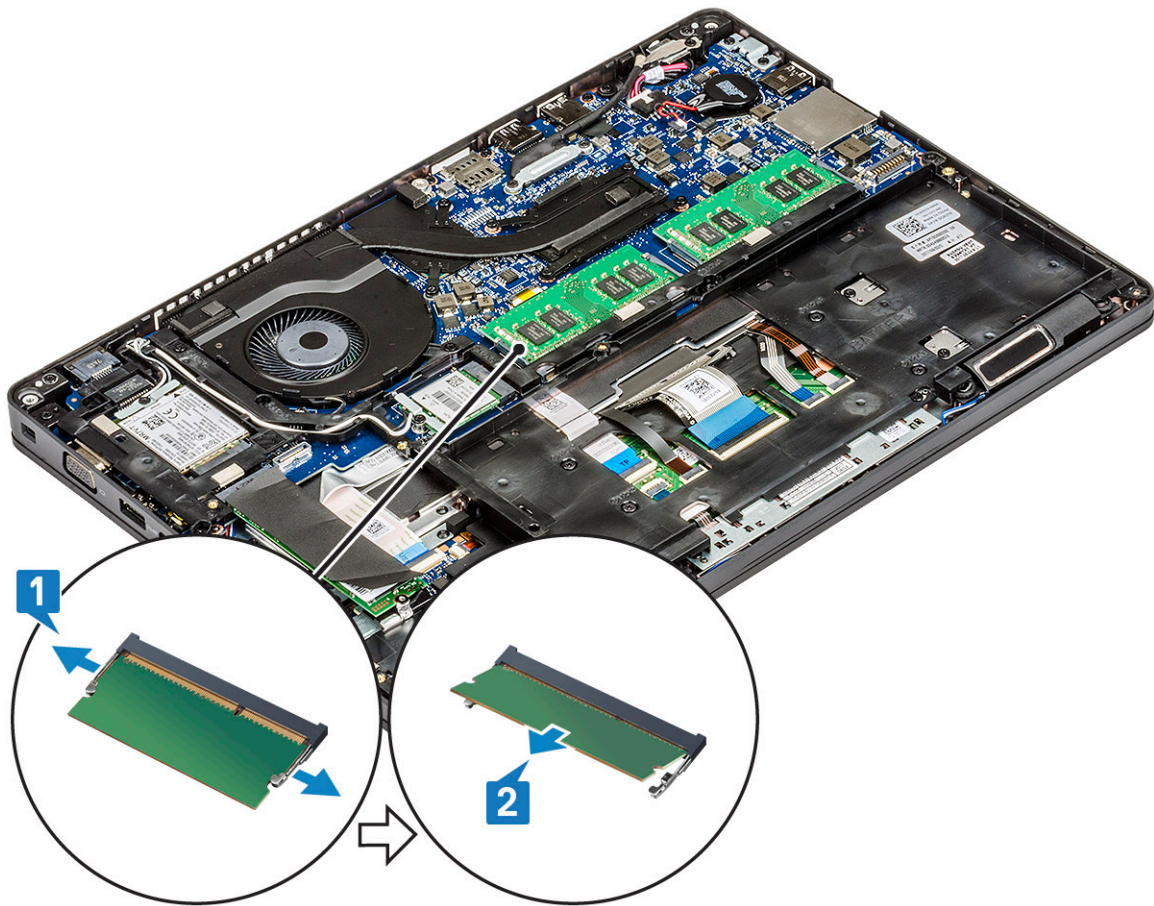
Installing coin cell battery

- 1 Affix the coin cell battery on the system board.
- 2 Connect the coin cell battery cable to the connector on the system board.
- 3 Install the :
 - a battery
 - b base cover
- 4 Follow the procedure in [After working inside your computer](#).

Memory modules

Removing the memory module

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a base cover
 - b battery
- 3 To remove the memory module:
 - a Pry the clips securing the memory module until the memory module pops-up [1].
 - b Lift the memory module from the connector [2].



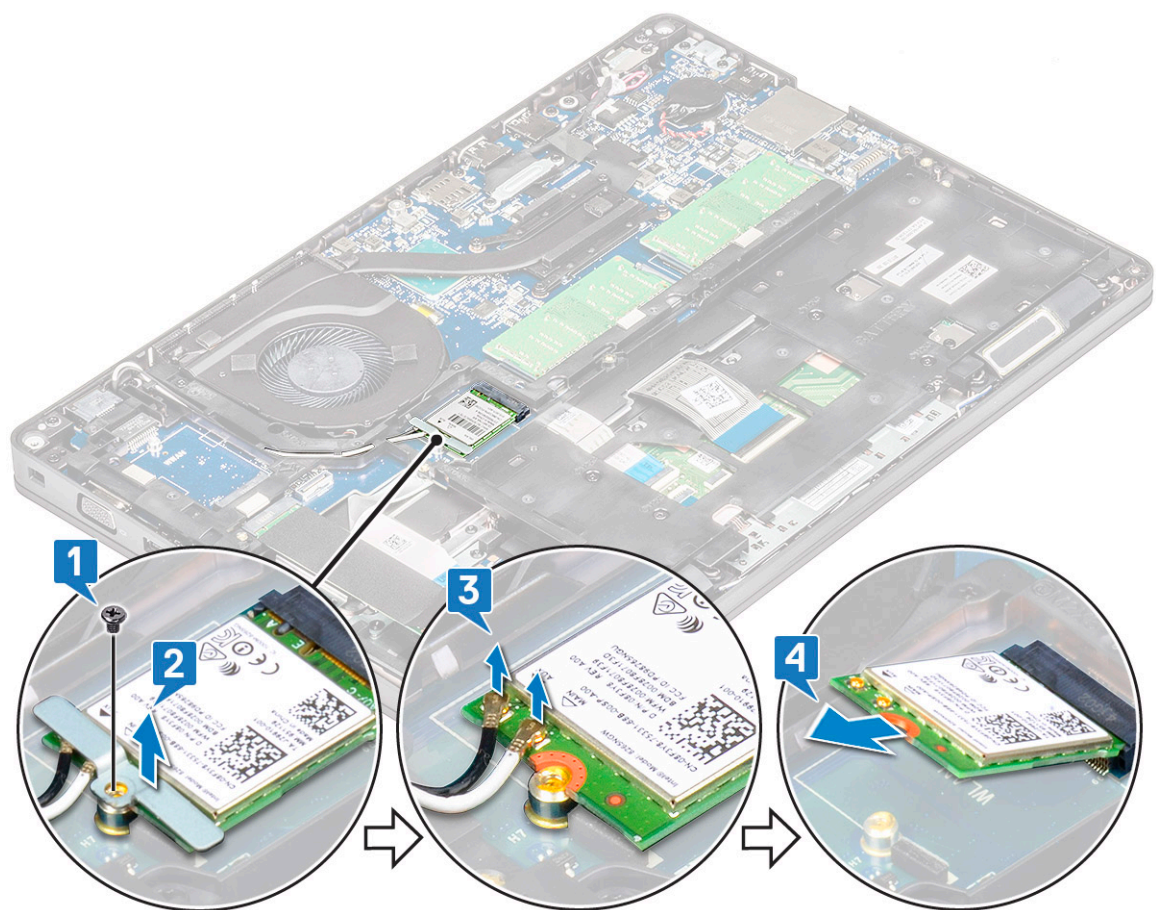
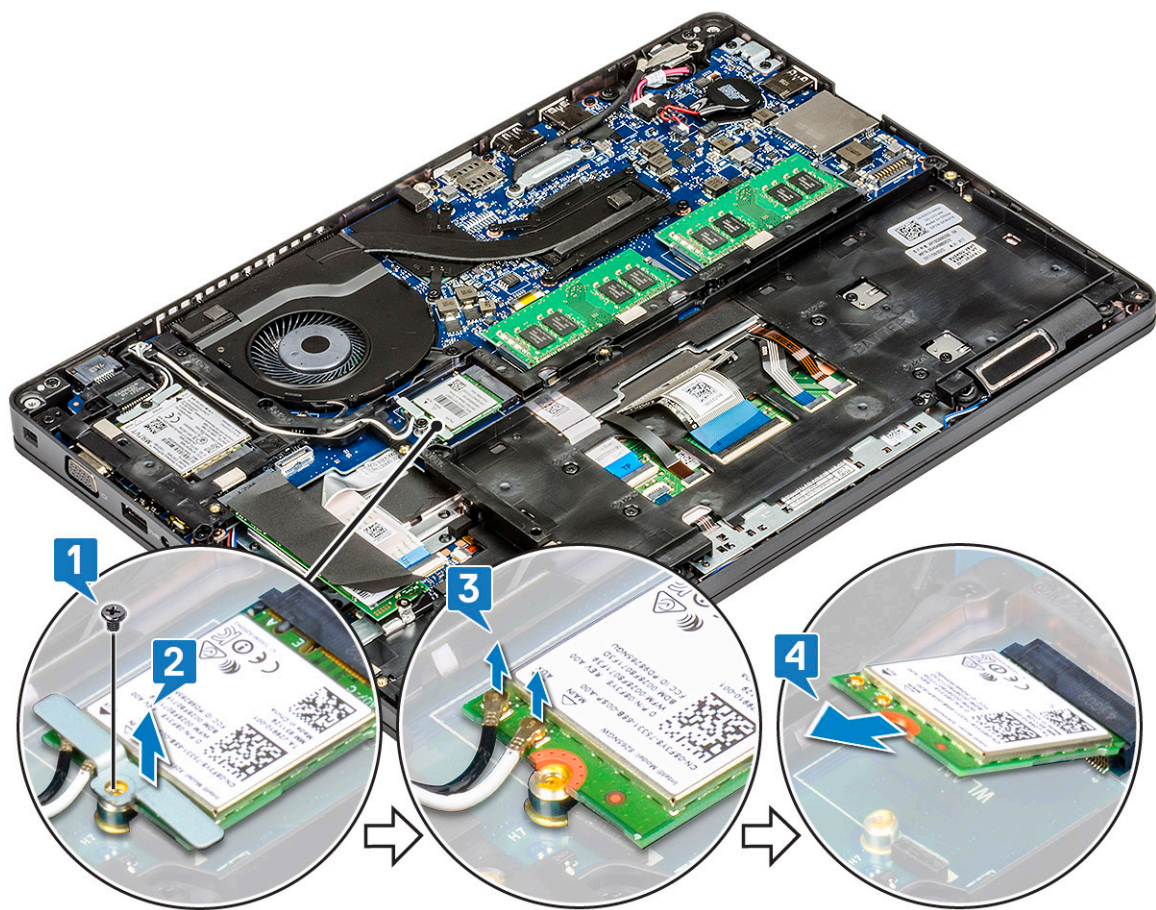
Installing the memory module

- 1 Insert the memory module into the memory connector at a 30 degree angle until the contacts are fully seated into the slot. Then, press the module until the clips secure the memory module.
- 2 Install the :
 - a [battery](#)
 - b [base cover](#)
- 3 Follow the procedure in [After working inside your computer](#).

WLAN card

Removing WLAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the WLAN card:
 - a Remove the (M2x3) screw that secures the WLAN card bracket to the system [1].
 - b Remove the WLAN card bracket that secures the WLAN antenna cables [2].
 - c Disconnect the WLAN antenna cables from the connectors on the WLAN card [3].
 - d Lift the WLAN card away the connector as shown in the figure [4].



Installing WLAN card

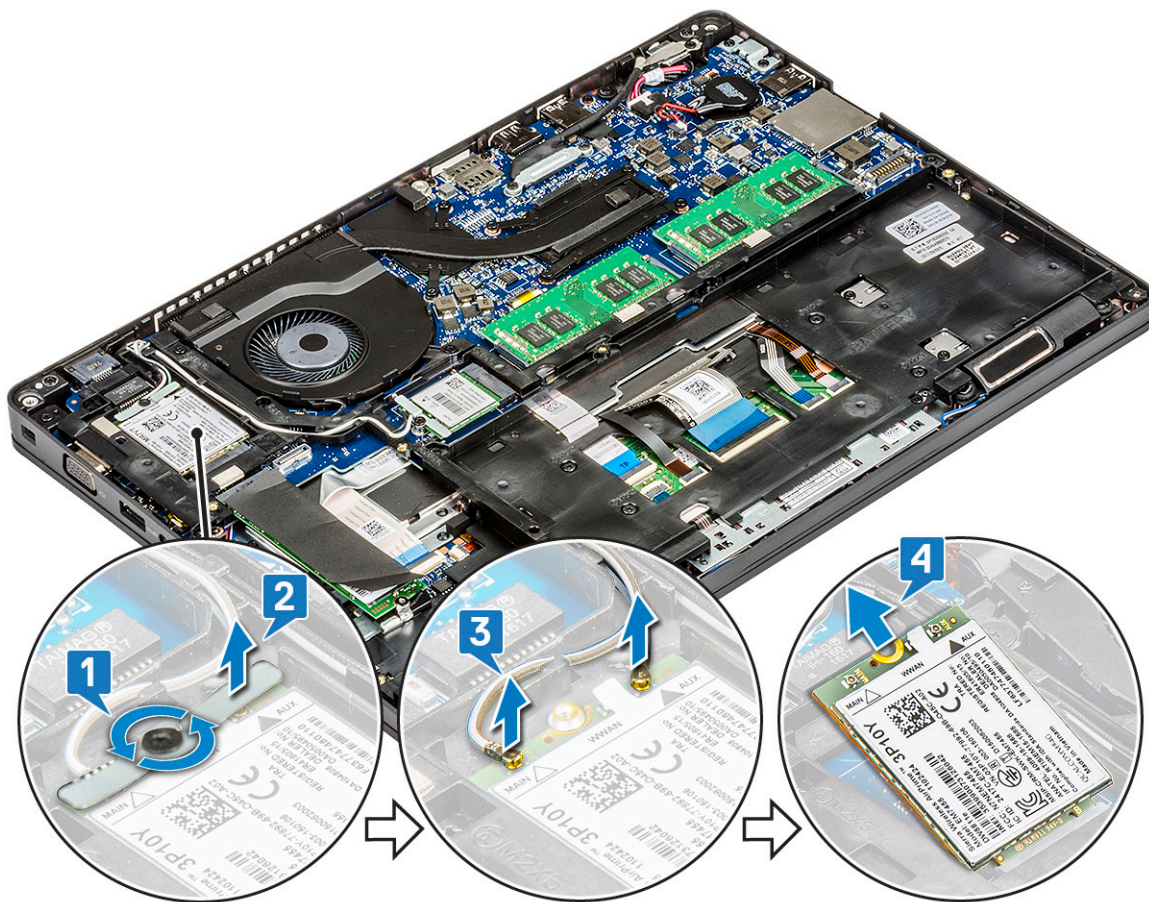
- 1 Insert the WLAN card into the connector on the system board.
- 2 Connect the WLAN antenna cables to the connectors on the WLAN card.
- 3 Place the WLAN card bracket to secure the WLAN cables.
- 4 Replace the M2x3 screw to secure the WLAN card to the system.
- 5 Install the :
 - a [battery](#)
 - b [base cover](#)
- 6 Follow the procedure in [After working inside your computer](#).

WWAN card – optional

This is optional as the system might not ship with WWAN card.

Removing the WWAN card

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the WWAN card:
 - a Remove the single (M2x3) screw that secures the WWAN card bracket [1].
 - b Remove the metal bracket away from the system [2].
 - c Disconnect the WWAN antenna cables from the connectors on the WWAN card [3].
 - d Slide and lift the WWAN card from the system [4].



Installing the WWAN card

- 1 Insert the WWAN card into the slot on the system.
- 2 Connect the WWAN antenna cables to the connectors on the WWAN card.
- 3 Place the metal bracket on the WWAN card.
- 4 Replace the screw (M2X3) to secure the WWAN card to the computer.
- 5 Install the :
 - a [battery](#)
 - b [base cover](#)
- 6 Follow the procedure in [After working inside your computer](#).

Chassis frame

Removing the chassis frame

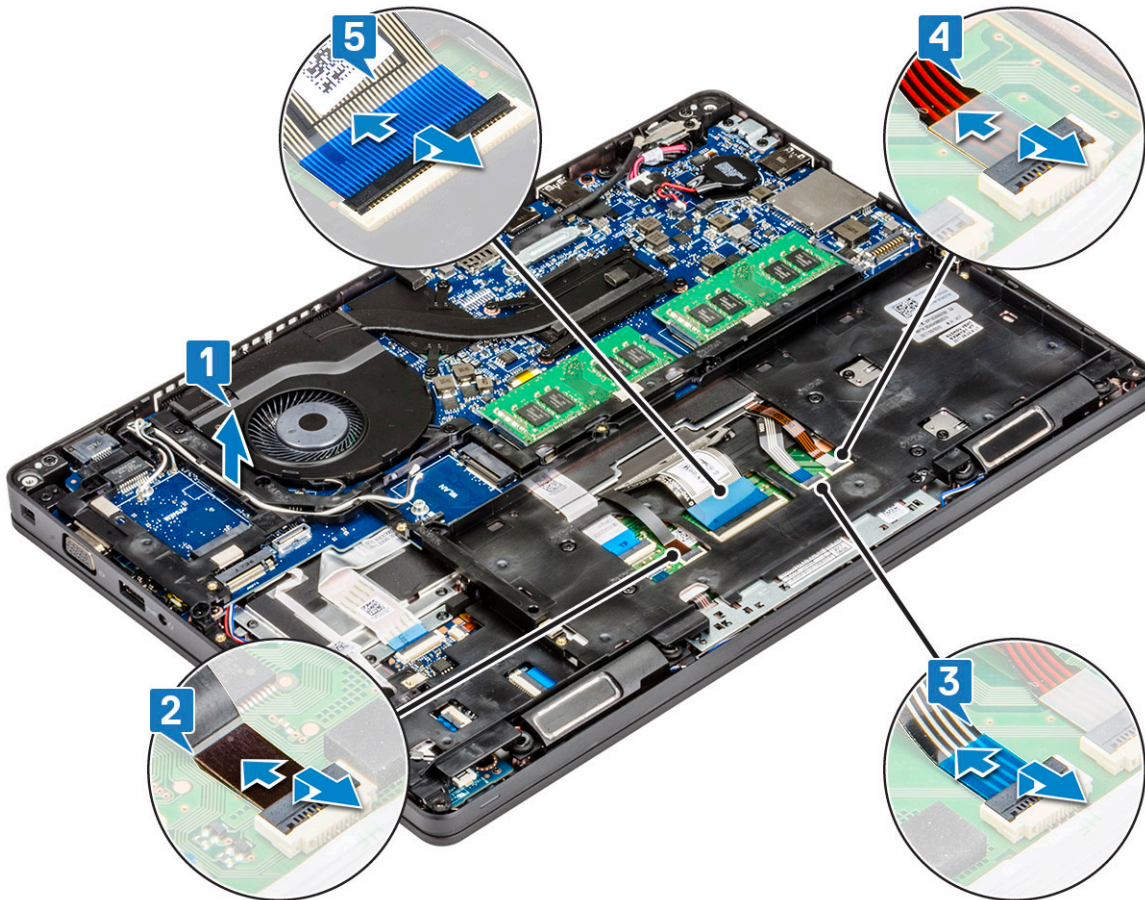
- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [hard drive](#)
 - d [SSD card](#)
 - e [SSD frame](#)

- f WLAN card
- g WWAN card (optional)

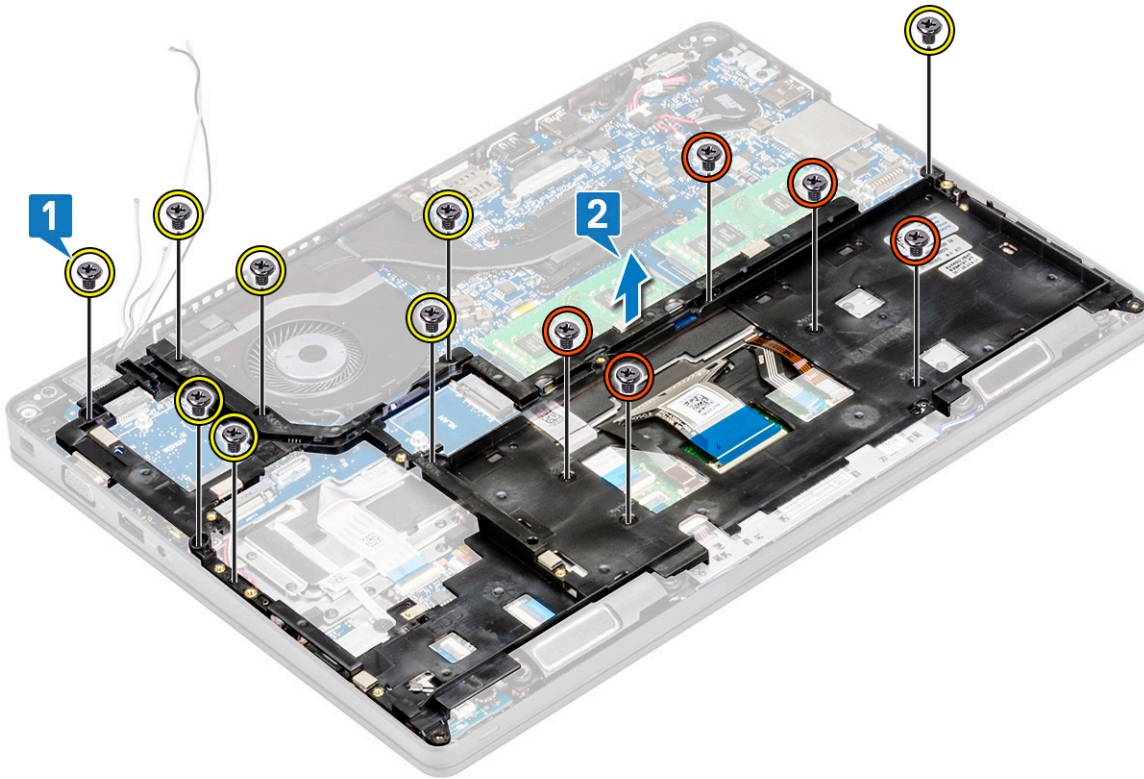
NOTE: There are two different screw sizes for chassis frame: M2x5 8ea and M2x3 5ea

- 3 To release the chassis frame:
 - a Unroute the WLAN and WWAN cables from the routing channels [1].
 - b Lift the latch and disconnect the keyboard backlight cable and the keyboard cable from their connectors [2,3,4,5] on the system.

NOTE: There may be more than one cable to disconnect based on the keyboard type.



- 4 To remove the chassis frame:
 - a Remove the five (M2x3) screws and eight (M2x5) screws that secure the chassis frame to the system [1].
 - b Lift the chassis frame from the system [2].



Installing the chassis frame

- 1 Place the chassis frame into the slot on the system.

NOTE: Gently pull the keyboard cable and keyboard back light cables through the spacing in the chassis frame before placing the chassis frame in the slot on the system.

- 2 Replace the five (M2x3) screws and eight (M2x5) screws to secure the chassis frame to the system.
- 3 Connect the keyboard cable and the keyboard backlight cable to their connectors on the system.

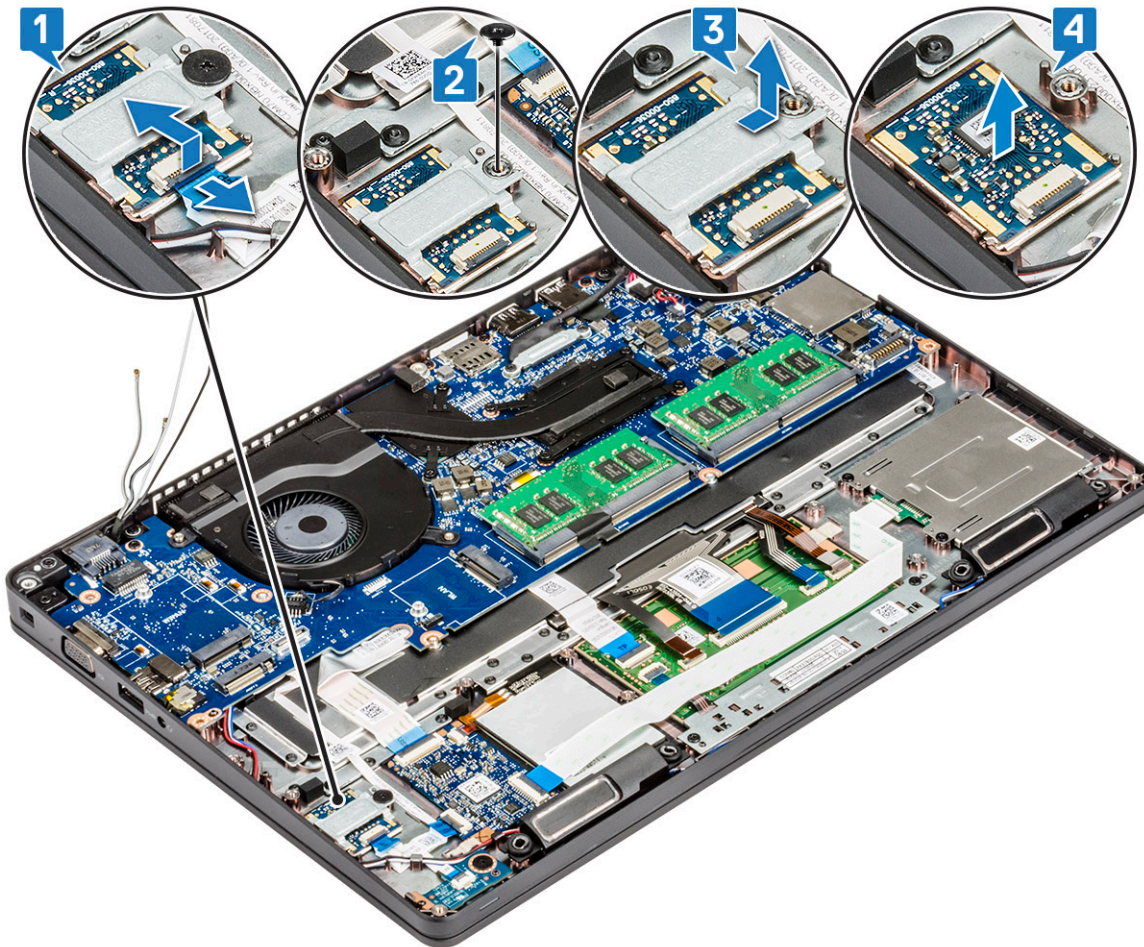
NOTE: There may be more than one cable to connect based on keyboard types.

- 4 Route the WLAN and WWAN (optional) cables through the routing channels.
- 5 Install the:
 - a WWAN card (optional)
 - b WLAN card
 - c SSD frame
 - d SSD card
 - e hard drive
 - f battery
 - g base cover
- 6 Follow the procedure in [After working inside your system](#).

Fingerprint reader – optional

Removing the fingerprint reader

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
 - c [hard drive](#)
 - d [SSD card](#)
 - e [SSD frame](#)
 - f [WLAN card](#)
 - g [WWAN card \(optional\)](#)
 - h [chassis frame](#)
- 3 To remove the fingerprint reader:
 - a Lift the latch and disconnect the fingerprint cable from the connector on the fingerprint reader [1].
 - b Remove the M2x2 screw securing the fingerprint reader bracket to the system [2].
 - c Lift the fingerprint reader bracket from the system [3].
 - d Lift the fingerprint reader off the computer [4].



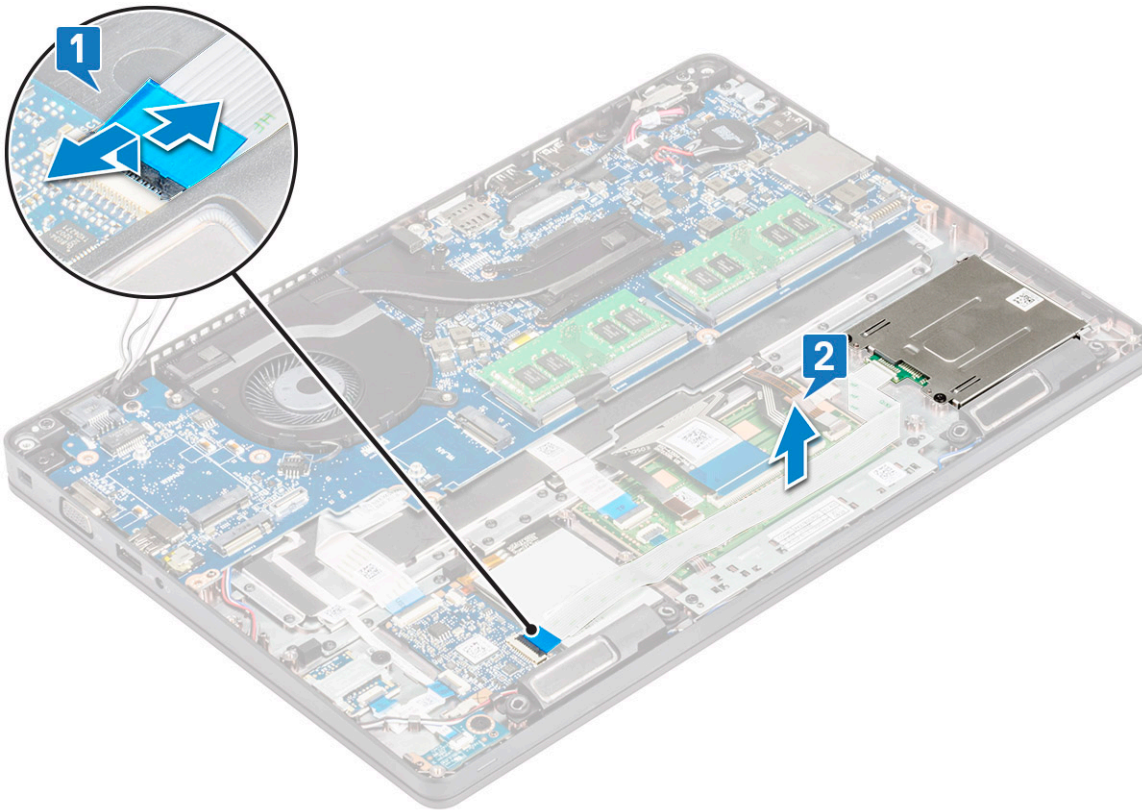
Installing the fingerprint reader

- 1 Place the fingerprint reader into the slot on the palmrest.
- 2 Place the metal bracket on the fingerprint reader and replace the M2x2 screw to secure the fingerprint reader bracket to the system.
- 3 Connect the fingerprint reader cable to the connector on the fingerprint reader.
- 4 Install the :
 - a [chassis frame](#)
 - b [WWAN card \(optional\)](#)
 - c [WLAN card](#)
 - d [SSD frame](#)
 - e [SSD card](#)
 - f [hard drive](#)
 - g [battery](#)
 - h [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#)

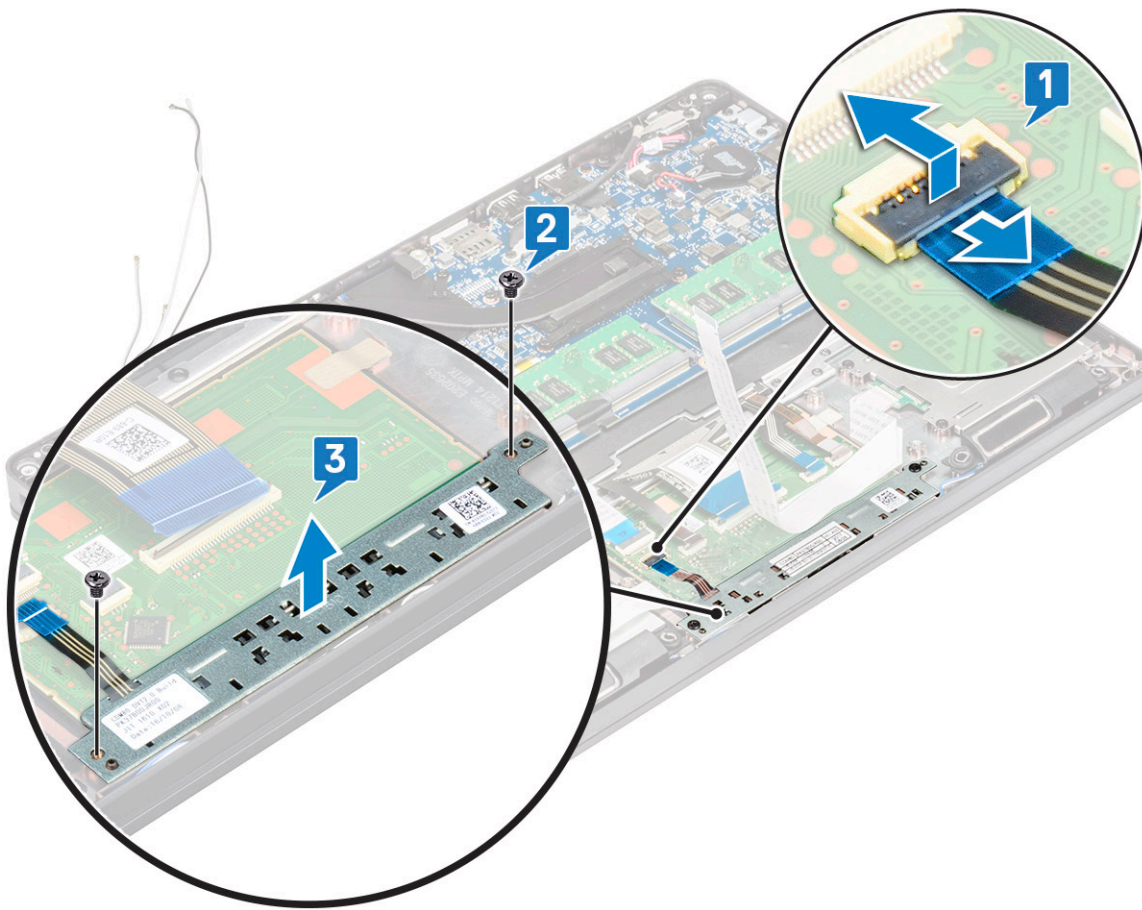
Touchpad panel

Removing the touchpad buttons

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [hard drive](#)
 - d [SSD card](#)
 - e [SSD frame](#)
 - f [WLAN card](#)
 - g [WWAN card \(optional\)](#)
 - h [chassis frame](#)
- 3 Lift the latch and disconnect the smart card reader board cable from the connector [1].
- 4 Peel the smart card reader board cable from the palmrest [2].



- 5 Disconnect the touchpad button cable from the connector on the system [1].
- 6 Remove the two M2x3 screws that secure the touchpad button on the computer [2] and lift the touchpad button from the system [3].



Installing the touchpad buttons

- 1 Place the touchpad buttons into the slot on the computer and replace the two M2x3 screws to secure it to the system.
- 2 Connect the touchpad button cable to the connector on the system.
- 3 Affix the smart card reader cable on the palmrest and connect the cable to the connector on the system board.
- 4 Install the:
 - a chassis frame
 - b WWAN card (optional)
 - c WLAN card
 - d SSD frame
 - e SSD card
 - f hard drive
 - g battery
 - h base cover
- 5 Follow the procedure in [After working inside your computer](#).

Heat sink assembly

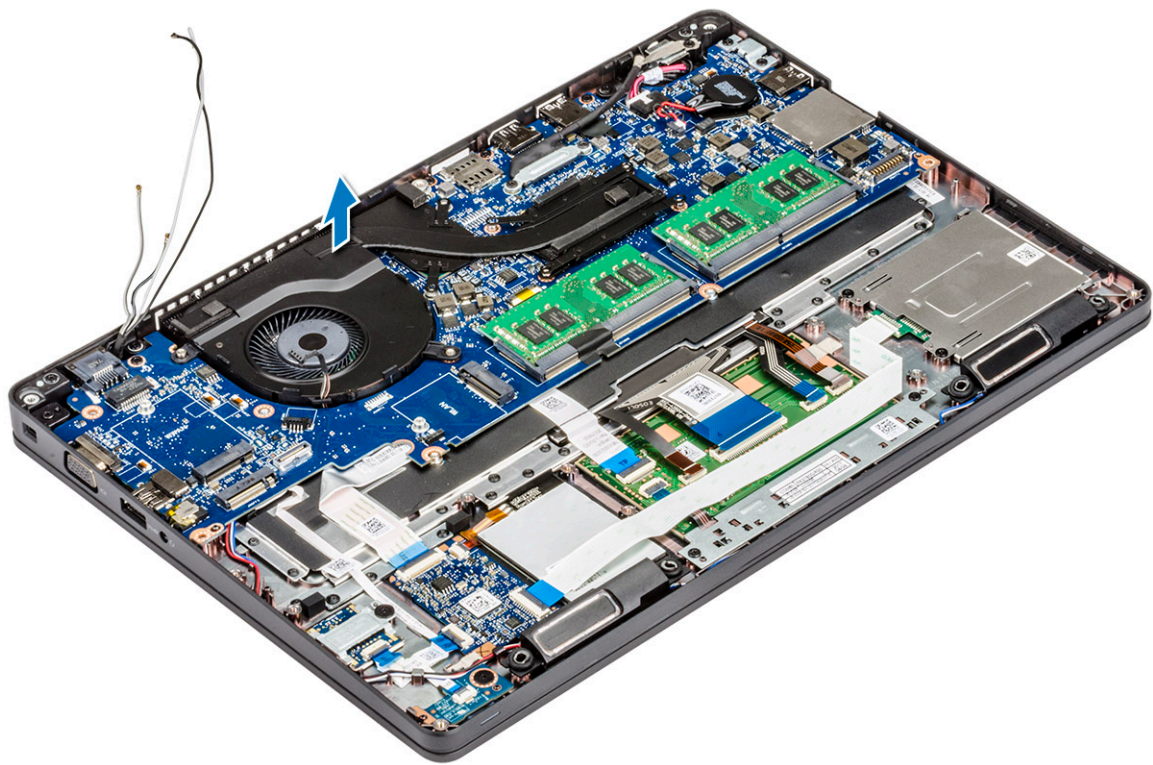
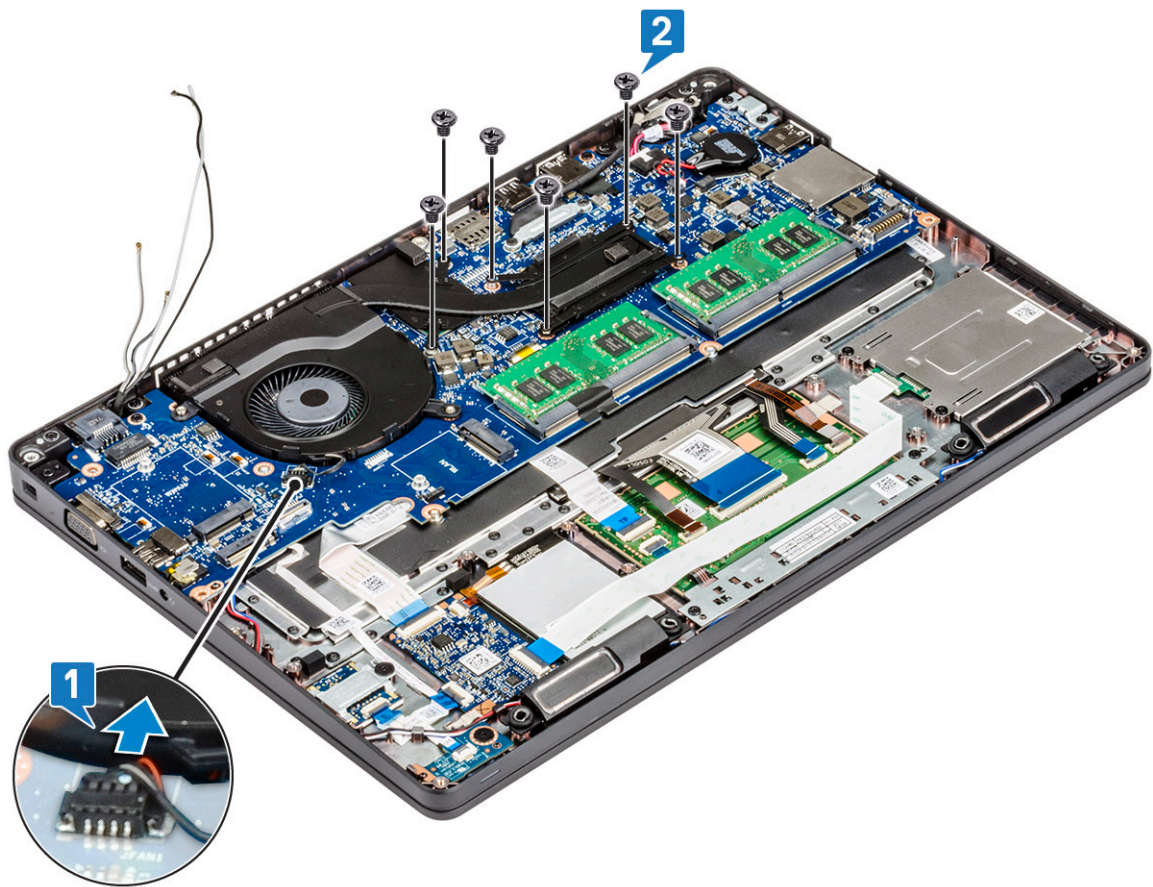
Removing the heat sink assembly

NOTE: This procedure is only for the UMA model. In the discrete model, heat sink is secured to the system board with four screws.

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a [base cover](#)
 - b [battery](#)
 - c [hard drive](#)
 - d [SSD card](#)
 - e [SSD frame](#)
 - f [WLAN card](#)
 - g [WWAN card \(optional\)](#)
 - h [chassis frame](#)
- 3 To remove the heat sink :
 - a Disconnect the system fan cable from the connector on the system board [1].
 - b Remove the six (M2x3) screws that secure the heat sink assembly on the system board [2].

NOTE:

- Remove the heat sink assembly screws in sequential order as indicated on the heat-sink assembly.
- c Lift the heat sink assembly from the system .



Installing the heat sink assembly

① **NOTE:** This procedure is only for the UMA model. In the discrete model, heat sink is secured to the system board with four screws.

- 1 Place the heat sink assembly on the system board.
- 2 Replace the six (M2x3) screws that secure the heat sink assembly on the system board.

① **NOTE:**

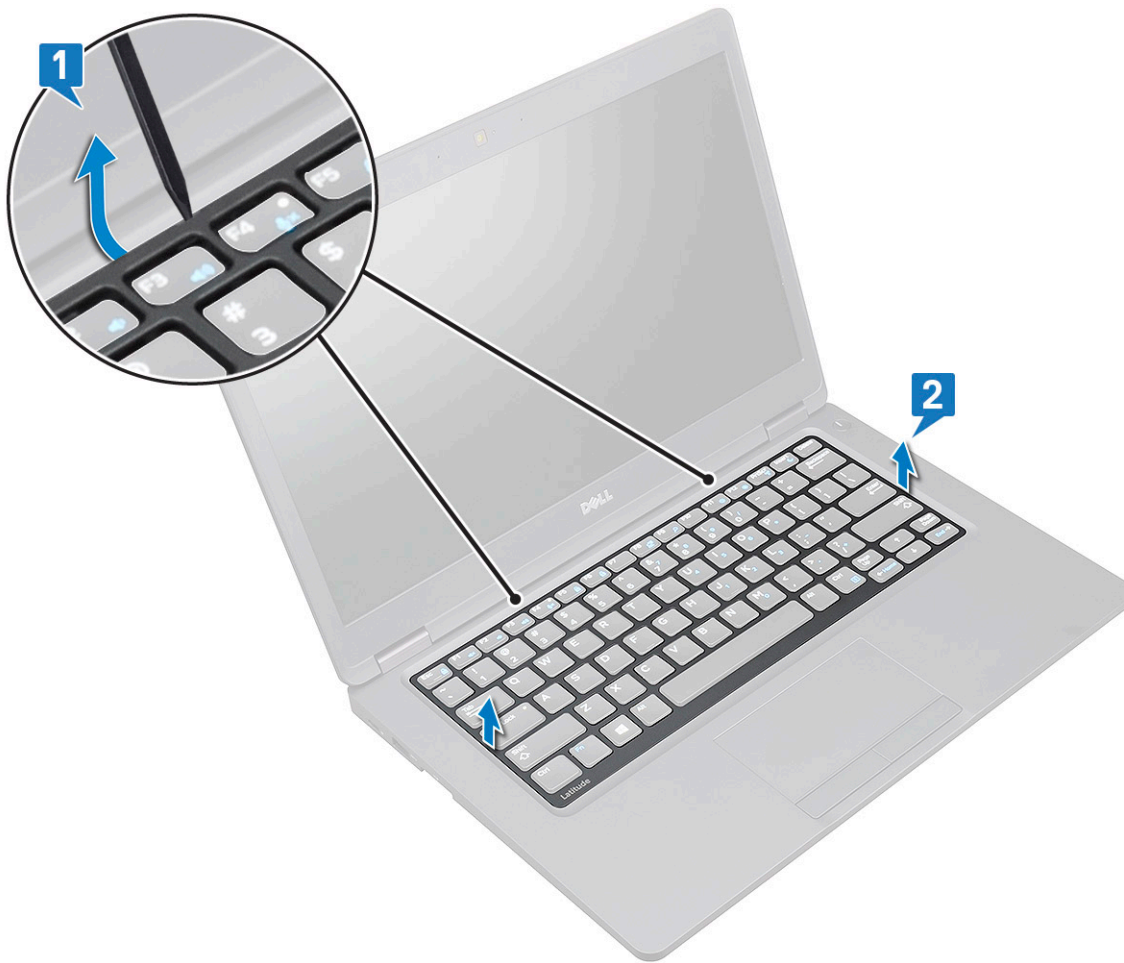
- Replace the heat sink assembly screws in sequential order as indicated on the heat-sink.

- 3 Connect the system fan cable to the connector on system board.
- 4 Install the :
 - a chassis frame
 - b WWAN card (optional)
 - c WLAN card
 - d SSD frame
 - e SSD card
 - f hard drive
 - g battery
 - h base cover
- 5 Follow the procedure in [After working inside your computer](#).

Keyboard lattice and Keyboard

Removing keyboard lattice

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Pry the keyboard lattice from one of the recess points [1] and continue prying the sides in clockwise or anticlockwise direction, and then lift the keyboard lattice from the system [2]



NOTE: Use a plastic scribe to pry the keyboard lattice from the pry points and move around the lattice for removal.

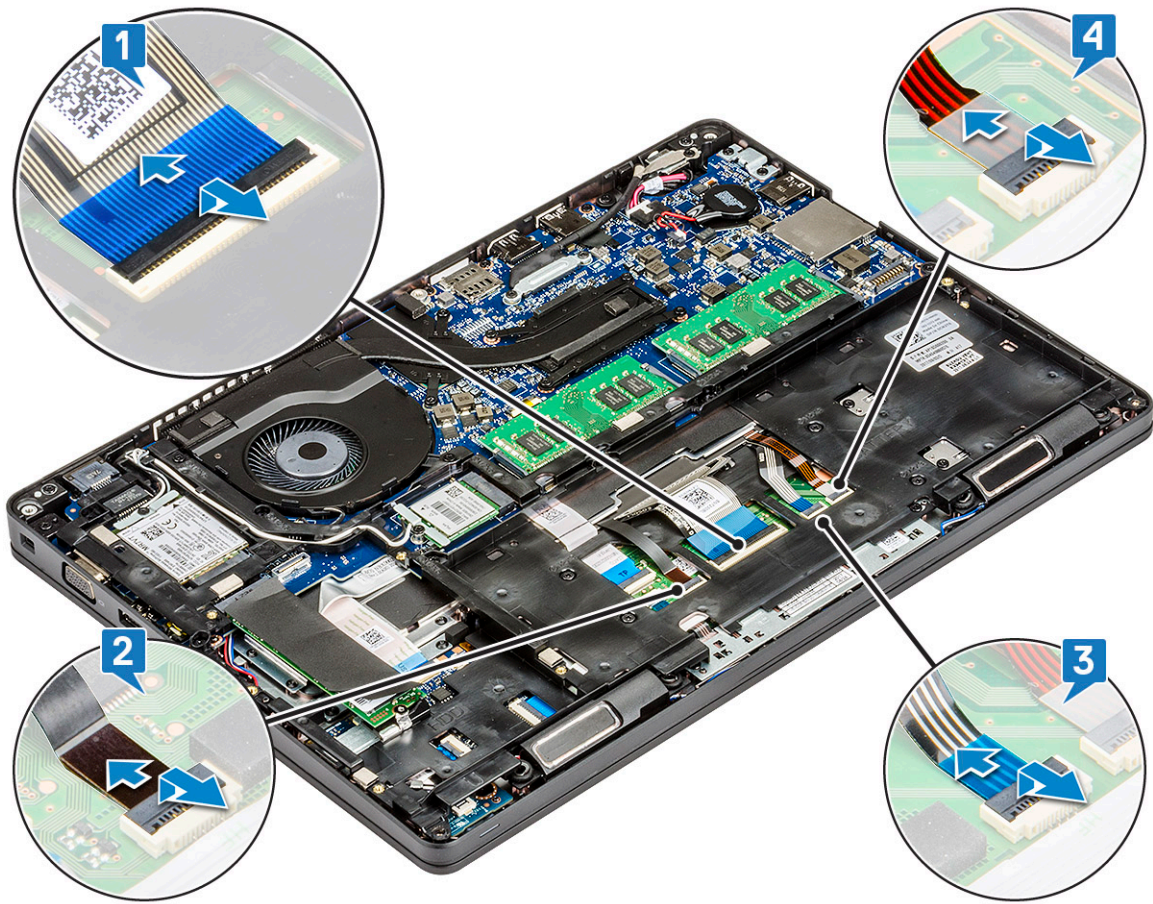
Installing keyboard lattice

- 1 Place the keyboard lattice on the keyboard and press along the edges and in between the rows of keys until the lattice clicks in place.
- 2 Follow the procedure in [After working inside your computer](#).

Removing the keyboard

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [keyboard lattice](#)
- 3 To remove the keyboard:
 - a Lift the latch and disconnect the keyboard cable from the connector on the system.
 - b Lift the latch and disconnect the keyboard backlight cables from the connectors on the system [2,3,4].

NOTE: Number of cables to disconnect is based on the keyboard type.



- c Turn over the system and open the laptop in front view mode.
- d Remove the five (M2x2.5) screws that secure the keyboard to the system [1].
- e Flip the keyboard from the bottom and lift it from the system along with the keyboard cable and the keyboard back light cable [2]s.

⚠ WARNING: Gently pull the keyboard cable and the keyboard back light cables routed beneath the chassis frame to avoid damaging the cables.



Installing the keyboard

- 1 Hold the keyboard and route the keyboard cable and the keyboard backlight cables through the palmrest in the system.
- 2 Align the keyboard with the screw holders on the system.
- 3 Replace the five (M2x2.5) screws to secure the keyboard to the system.
- 4 Turn the system over and connect the keyboard cable and the keyboard backlight cable to the connectors in the system.

NOTE: When reinstalling the chassis frame ensure the keyboard cables are NOT under the lattice , but run through the opening in the frame before connecting them to system board.

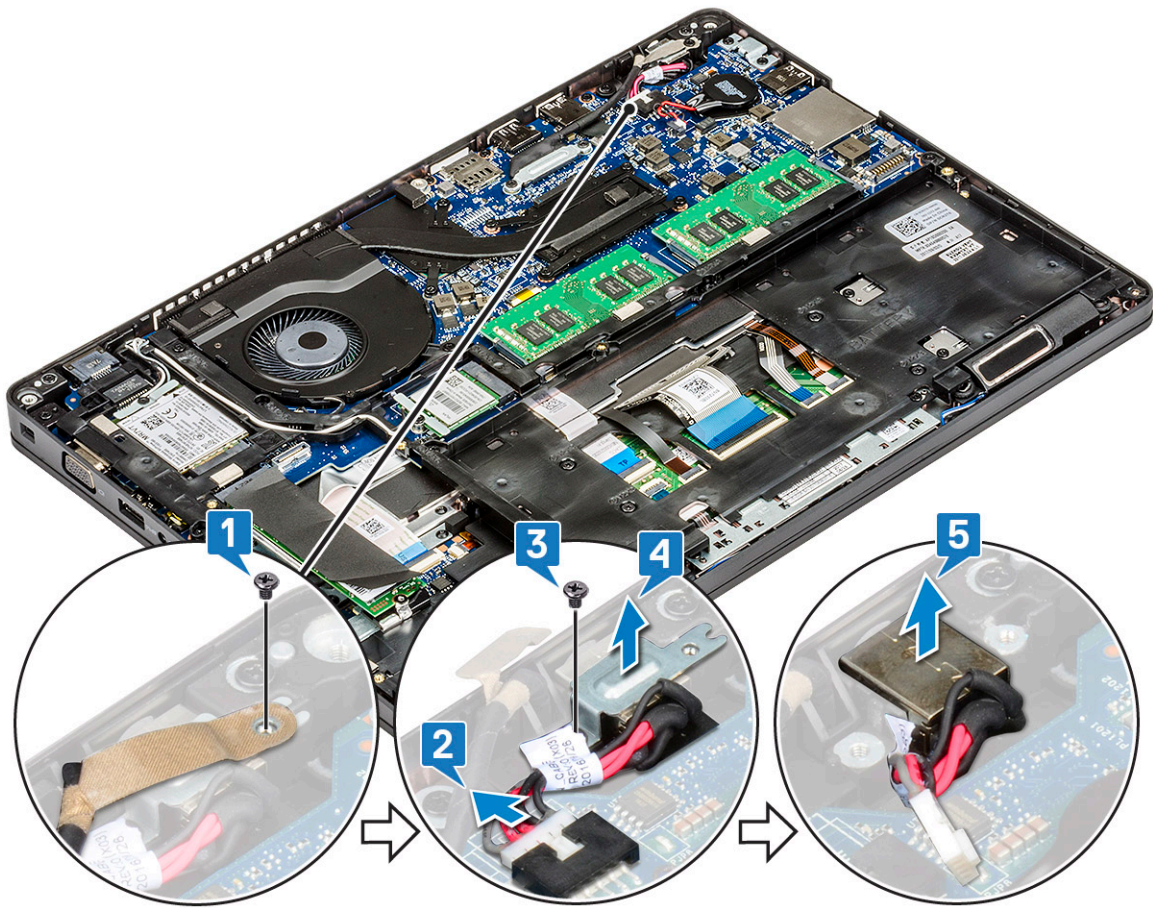
NOTE: The number of keyboard cables in the system is based on the type of the keyboard.

- 5 Install the:
 - a keyboard lattice
 - b battery
 - c base cover
- 6 Follow the procedure in [After working inside your computer](#).

Power connector port

Removing the power connector port

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the :
 - a base cover
 - b battery
- 3 To remove the power connector port:
 - a Remove the M2x3 screw that secures the adhesive tape of the display cable to the power connector bracket [1], and peel off the adhesive tape.
 - b Disconnect the power connector cable from the connector on the system board [2].
 - c Remove the M2x3 screw to release the power connector bracket that secures the power connector port to your system [3].
 - d Remove the power connector bracket from the system [4].
 - e Pull the power connector port, and lift it from the system [5].



Installing power connector port

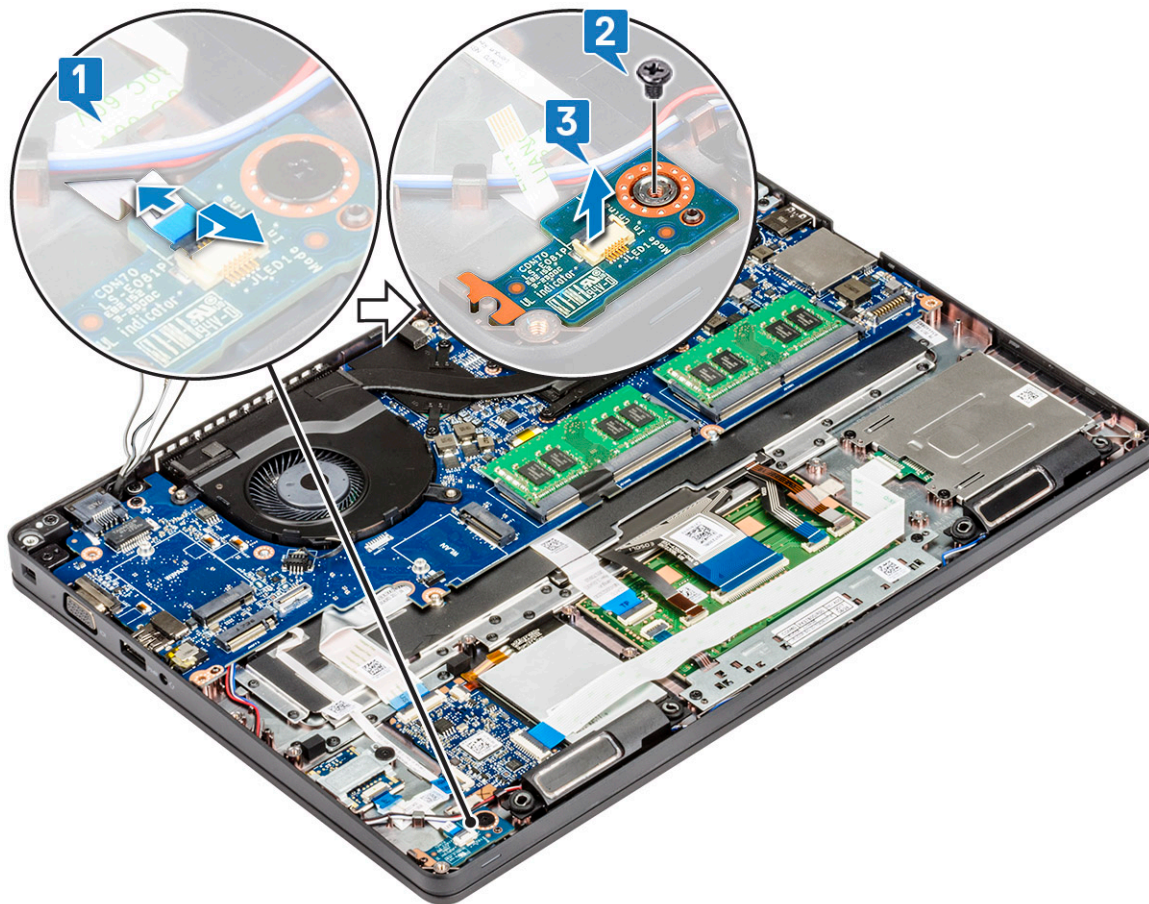
- 1 Align the power connector port along the grooves on the slot and push it down.
- 2 Place the metal bracket on the power connector port.
- 3 Replace the M2x3 screw that secures one end of the power connector bracket to the power connector port.
- 4 Connect the power connector cable to the connector on the system board.
- 5 Affix the adhesive tape of the display cable to the power connector bracket and replace the M2x3 screw to secure another end of the power connector bracket.
- 6 Install the :
 - a battery
 - b base cover
- 7 Follow the procedure in [After working inside your computer](#).

LED board

Removing LED board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the .
 - a base cover
 - b battery
 - c hard drive

- d SSD card
 - e SSD frame
 - f WLAN card
 - g WWAN card (optional)
 - h chassis frame
- 3 To remove the LED board:
- a Lift the latch and remove the LED cable connected to the connector on the LED board [1]
 - b Remove the (M2.0x2.0) screw that secures the LED board to the system [2].
 - c Lift the LED board from the connector as shown in the figure [3].



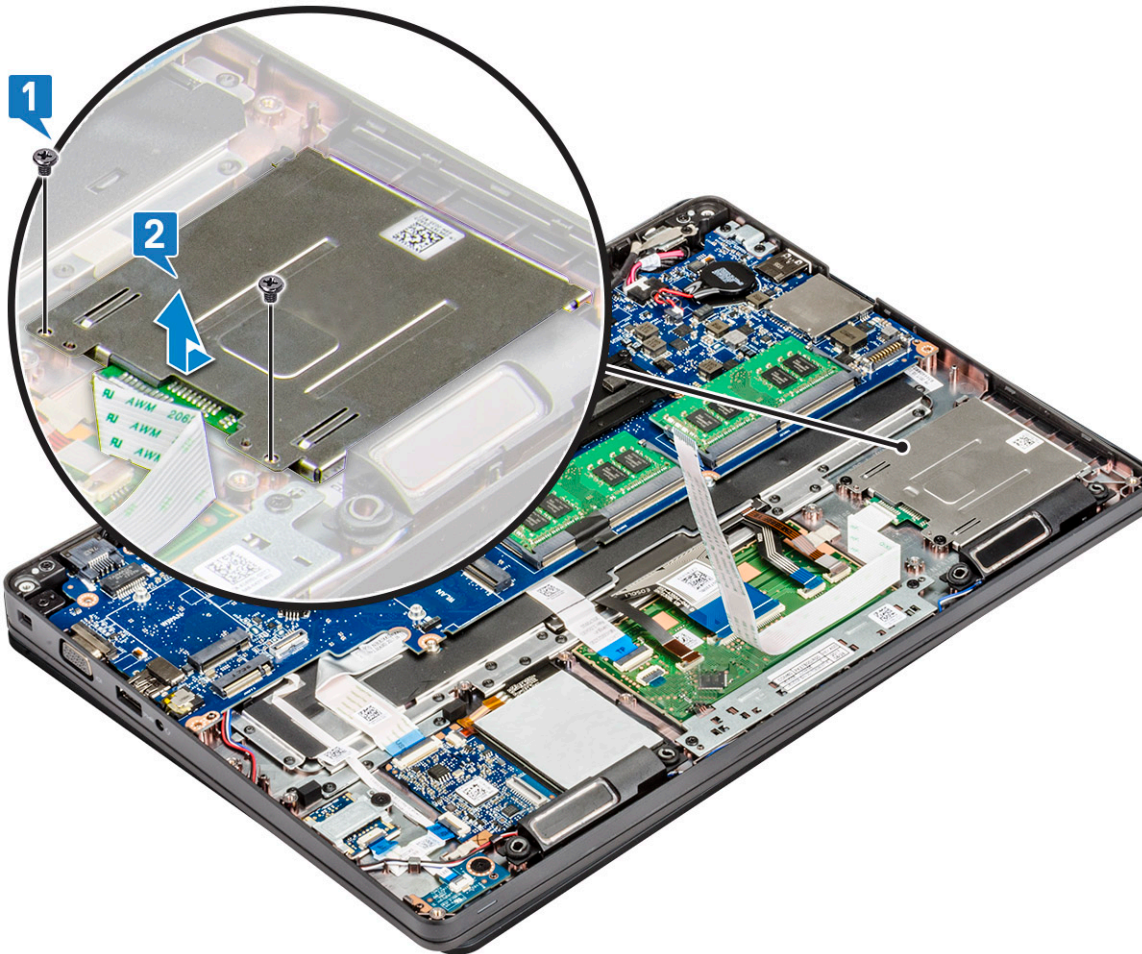
Installing LED board

- 1 Place the LED board in its slot on the system.
- 2 Replace the M2.0x2.0 screw to secure the LED board to the system.
- 3 Connect the LED cable to its connector on the LED board.
- 4 Install the:
 - a chassis frame
 - b WWAN card (optional)
 - c WLAN card
 - d SSD frame
 - e SSD card
 - f hard drive
 - g battery
 - h base cover
- 5 Follow the procedure in [After working inside your computer](#).

SmartCard module

Removing smart card reader board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [hard drive](#)
 - d [SSD card](#)
 - e [SSD frame](#)
 - f [WLAN card](#)
 - g [WWAN card \(optional\)](#)
 - h [chassis frame](#)
- 3 To release the smart card reader board:
- 4 To remove the smart card reader board:
 - a Remove the 2 (M2x3) screws that secure the smart card reader board to the palmrest [1].
 - b Slide and lift the smart card reader from the slot in the system [2].



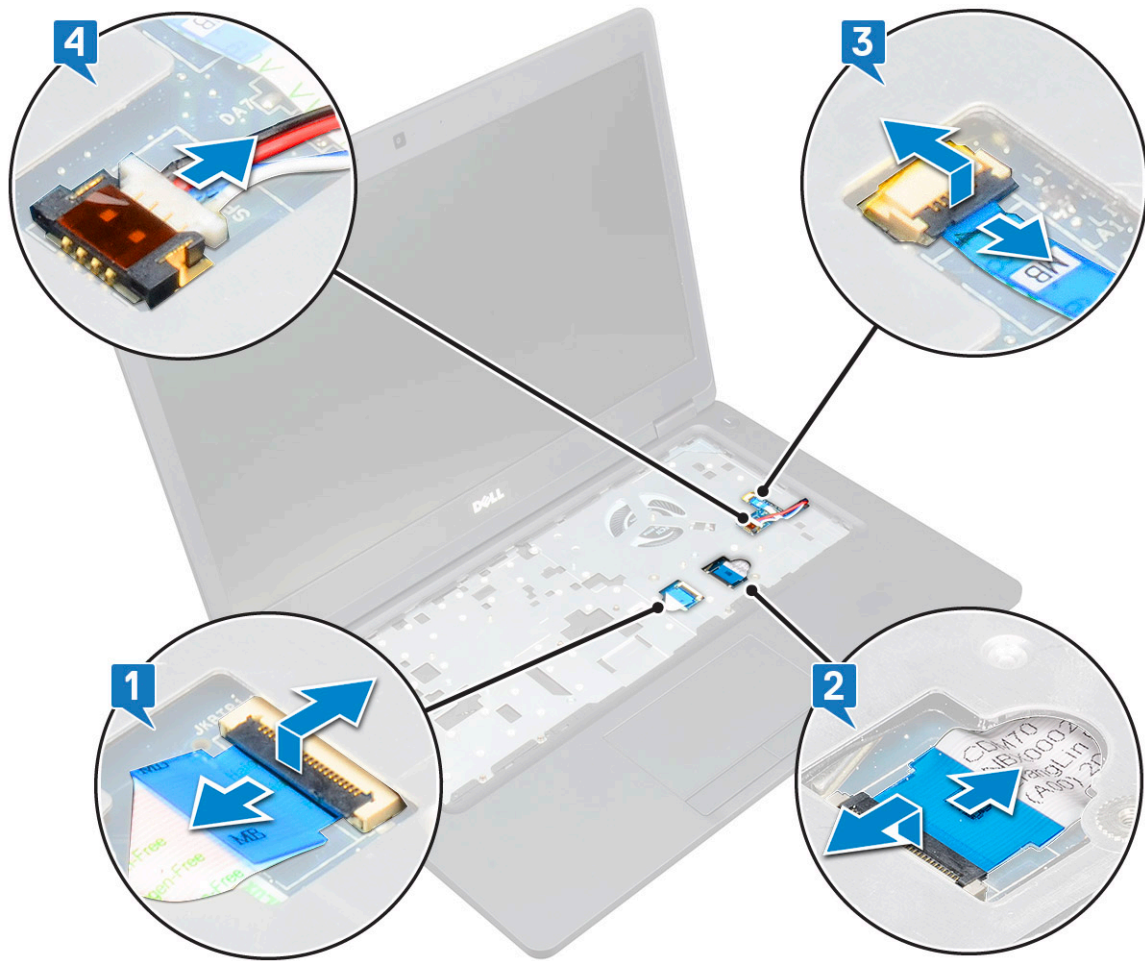
Installing smart card reader board

- 1 Insert the smart card reader board to align with the tabs on the chassis.
- 2 Replace the 2 (M2x3) screws to secure the smart card reader board to the system.
- 3 Affix the smart card reader board cable and connect the cable to the connector.
- 4 Install the:
 - a [chassis frame](#)
 - b [WWAN card \(optional\)](#)
 - c [WLAN card](#)
 - d [SSD frame](#)
 - e [SSD card](#)
 - f [hard drive](#)
 - g [battery](#)
 - h [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

System board

Removing system board

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [SIM card](#)
 - b [base cover](#)
 - c [battery](#)
 - d [memory module](#)
 - e [hard drive](#)
 - f [SSD card](#)
 - g [SSD frame](#)
 - h [WLAN card](#)
 - i [WWAN card \(optional\)](#)
 - j [keyboard lattice](#)
 - k [keyboard](#)
 - l [chassis frame](#)
 - m [heat sink assembly](#)
- 3 Disconnect the following cables from the system board:
 - a Touchpad cable [1]
 - b USH cable [2]
 - c LED board cable [3]
 - d Speaker cable [4]

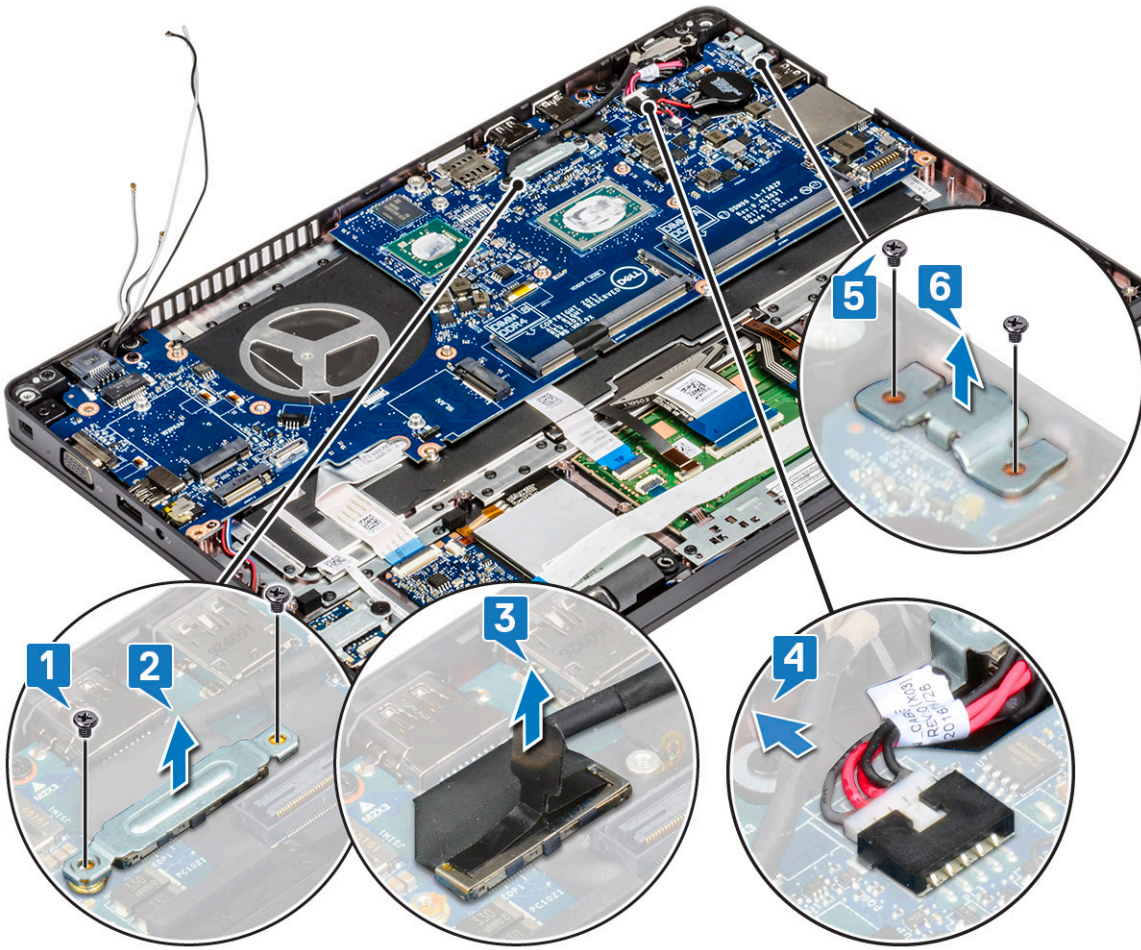


4 To release the system board:

- a Flip over the system and remove the two M2x3 screws that secure the display cable bracket in place [1].
- b Lift the metal display cable bracket from the system [2].
- c Disconnect the display cable from the connector on the system board [3] and peel the adhesive tape securing the display cable to the system.
- d Disconnect the power connector port cable from the connector on the system board [4].
- e Remove the two M2x5 screws that secure the Type-C USB bracket in place [5].

NOTE: The metal bracket secures the DisplayPort over USB Type-C.

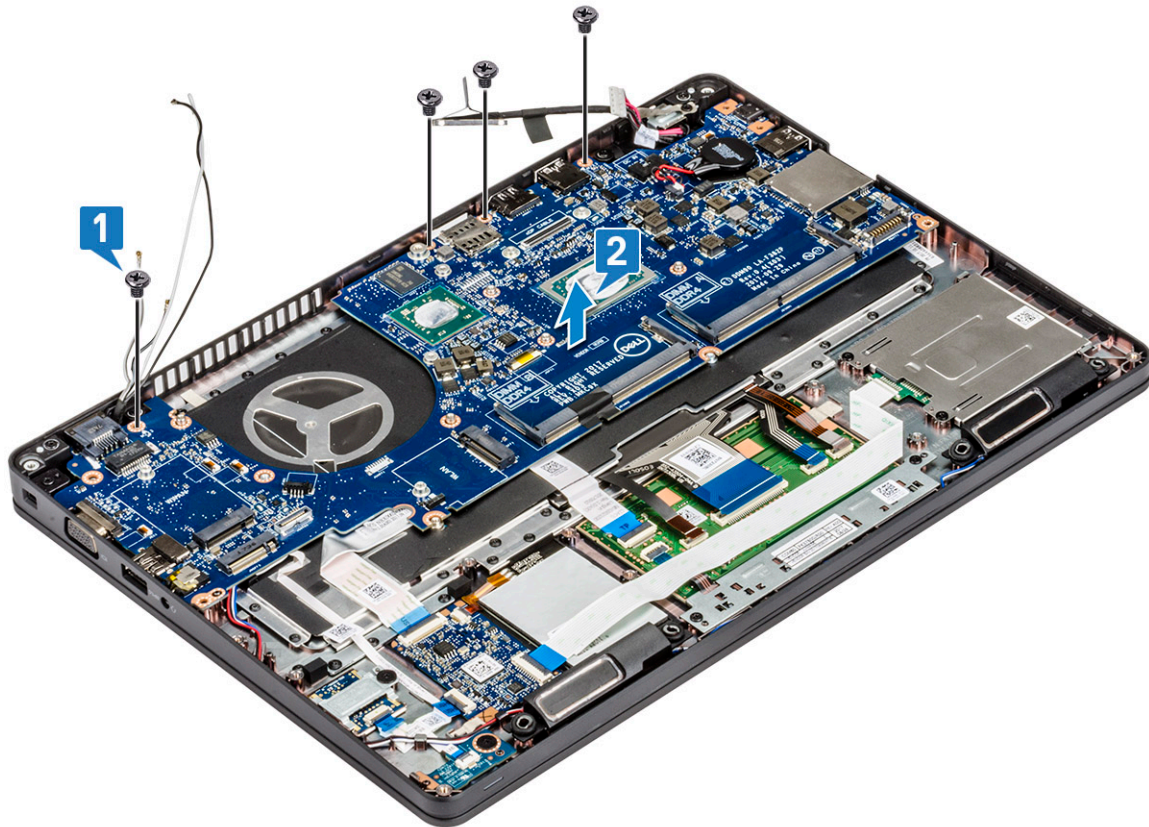
- f Lift the metal bracket away from the system [6].



5 To remove the system board:

NOTE: Ensure SIM card tray is removed

- a Remove the four (M2x3) screws that secure the system board in place [1].
- b Lift the system board away from the system [2].



Installing system board

- 1 Align the system board with the screw holders on the computer.
- NOTE:** Insert the cables through the openings in the keyboard area while placing the system board in the computer.
- 2 Replace the four (M2x3) screws to secure the system board to the system.
- 3 Place the metal bracket to secure the DisplayPort over USB Type-C.
- 4 Replace the 2 (M2x5) screws to secure the metal bracket on the DisplayPort over USB Type-C.
- 5 Connect the power connector port cable to the connector on the system board.
- 6 Connect the display cable to the connector on the system board and affix the tape that secures the display cable to the system.
- 7 Place the display cable metal bracket over the display cable.
- 8 Replace the two M2x3 screws to secure the metal bracket.
- 9 Flip over the system and open the system in working mode.
- 10 Connect the following cables:
 - a Touchpad cable
 - b LED board cable
 - c USH board cable
 - d speaker cable
- 11 Install the:
 - a [heat sink assembly](#)
 - b [chassis frame](#)
 - c [keyboard](#)
 - d [keyboard lattice](#)
 - e [WWAN card \(optional\)](#)
 - f [WLAN card](#)

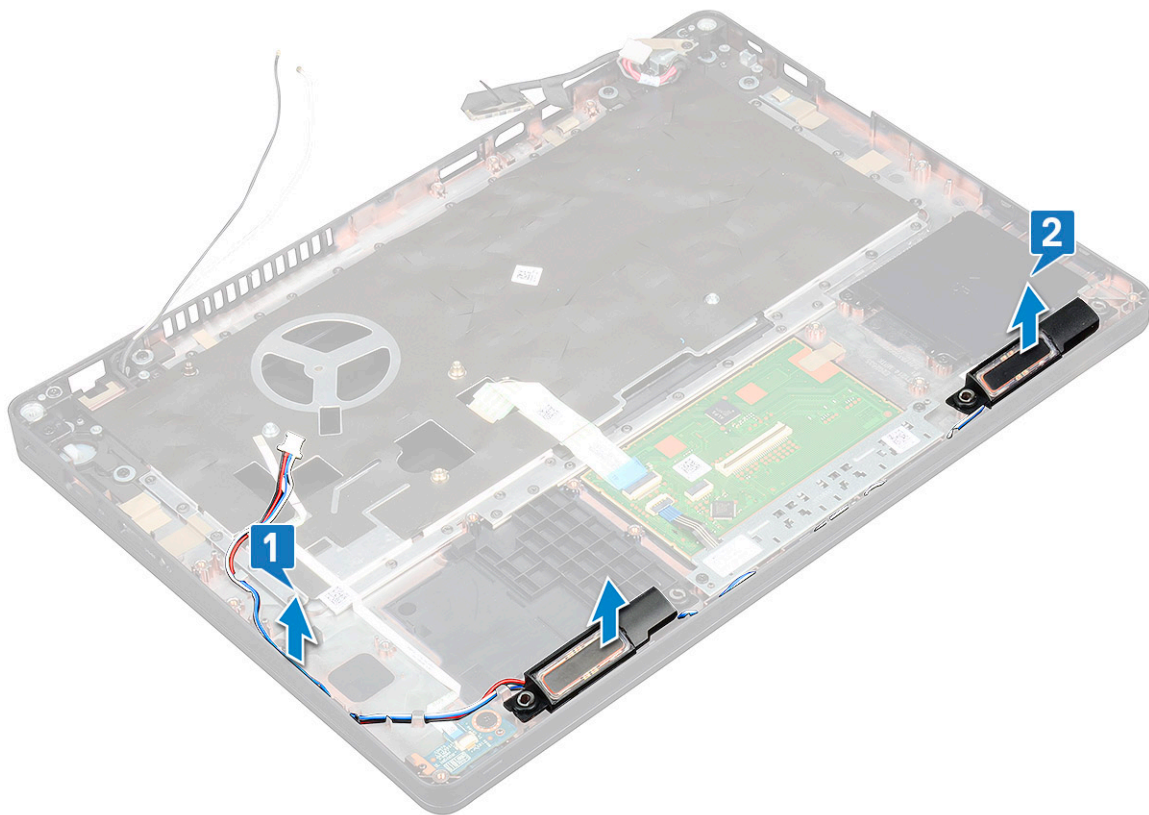
- g SSD frame
- h SSD card
- i hard drive
- j memory module
- k battery
- l base cover
- m SIM card

12 Follow the procedure in [After working inside your computer](#).

Speaker

Removing the speaker

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a SIM card
 - b base cover
 - c battery
 - d memory module
 - e hard drive
 - f SSD card
 - g SSD frame
 - h WLAN card
 - i WWAN card (optional)
 - j keyboard lattice
 - k keyboard
 - l chassis frame
 - m system board
- 3 To remove the speakers:
 - a Release the speaker cable through the routing channels [1].
 - b Lift the speaker away from the computer [2].



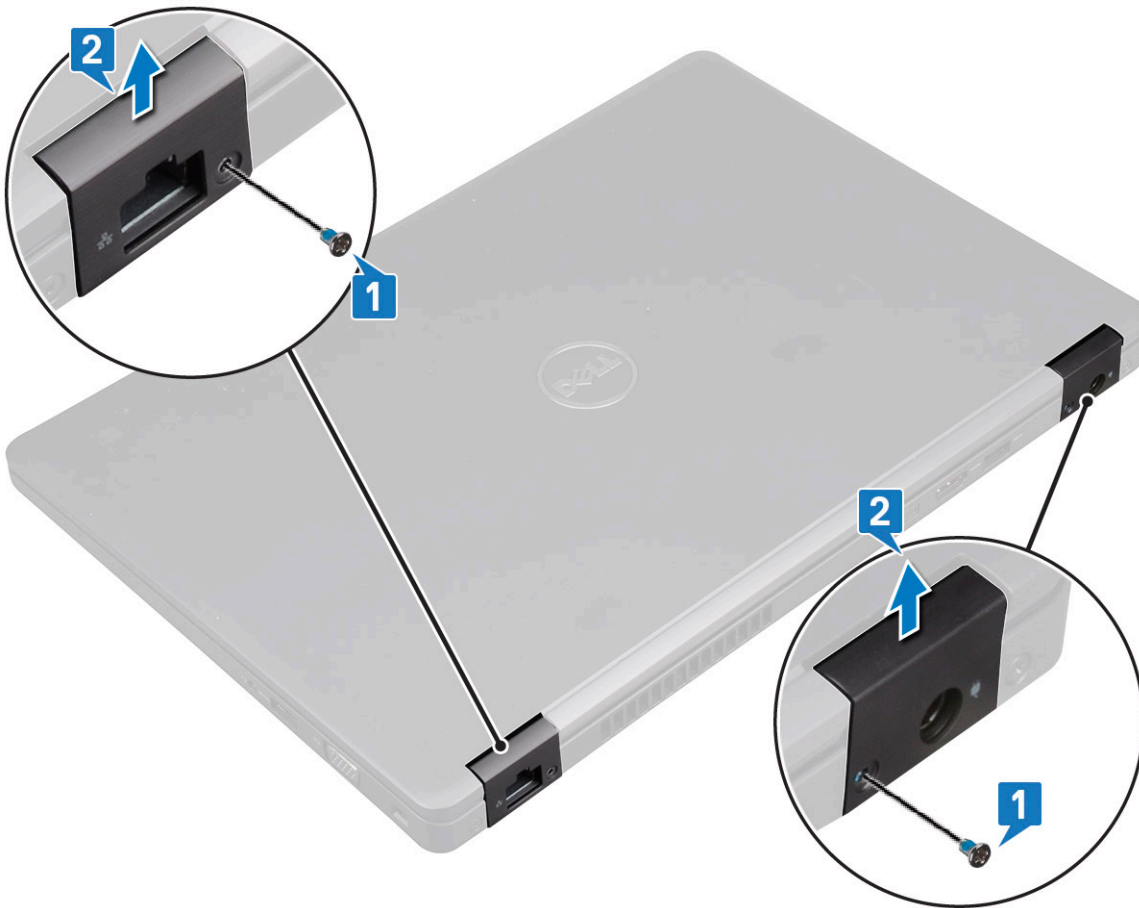
Installing the speaker

- 1 Insert the speaker module aligning it with the nodes on the chassis.
- 2 Route the speaker cable through the routing channels.
- 3 Install the:
 - a [system board](#)
 - b [chassis frame](#)
 - c [keyboard](#)
 - d [keyboard lattice](#)
 - e [WWAN card \(optional\)](#)
 - f [WLAN card](#)
 - g [SSD frame](#)
 - h [SSD card](#)
 - i [hard drive](#)
 - j [memory module](#)
 - k [battery](#)
 - l [base cover](#)
 - m [SIM card](#)
- 4 Follow the procedure in [After working inside your computer](#).

Display hinge cover

Removing display hinge cover

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
- 3 To remove the display hinge cover:
 - a Remove the M2x3 screw that secures the display hinge cover to the chassis [1].
 - b Lift the display hinge cover away from the display hinge [2].
 - c Repeat step a and step b to remove the other display hinge cover.



Installing display hinge cover

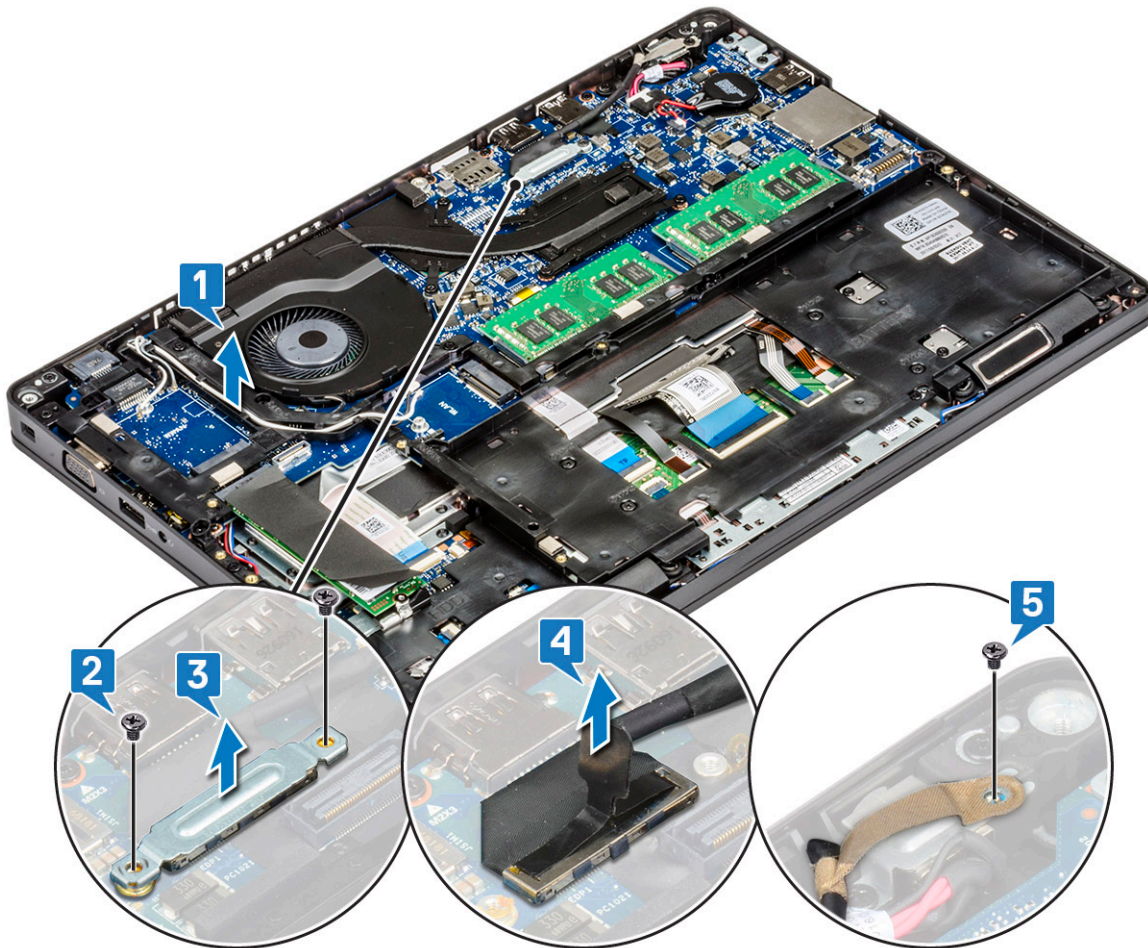
- 1 Place the display hinge cover on the display hinge.
- 2 Replace the M2x3 screw to secure the display hinge cover to the display hinge.
- 3 Repeat step 1 and step 2 to install the other display hinge cover.
- 4 Install the:
 - a [battery](#)
 - b [base cover](#)

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

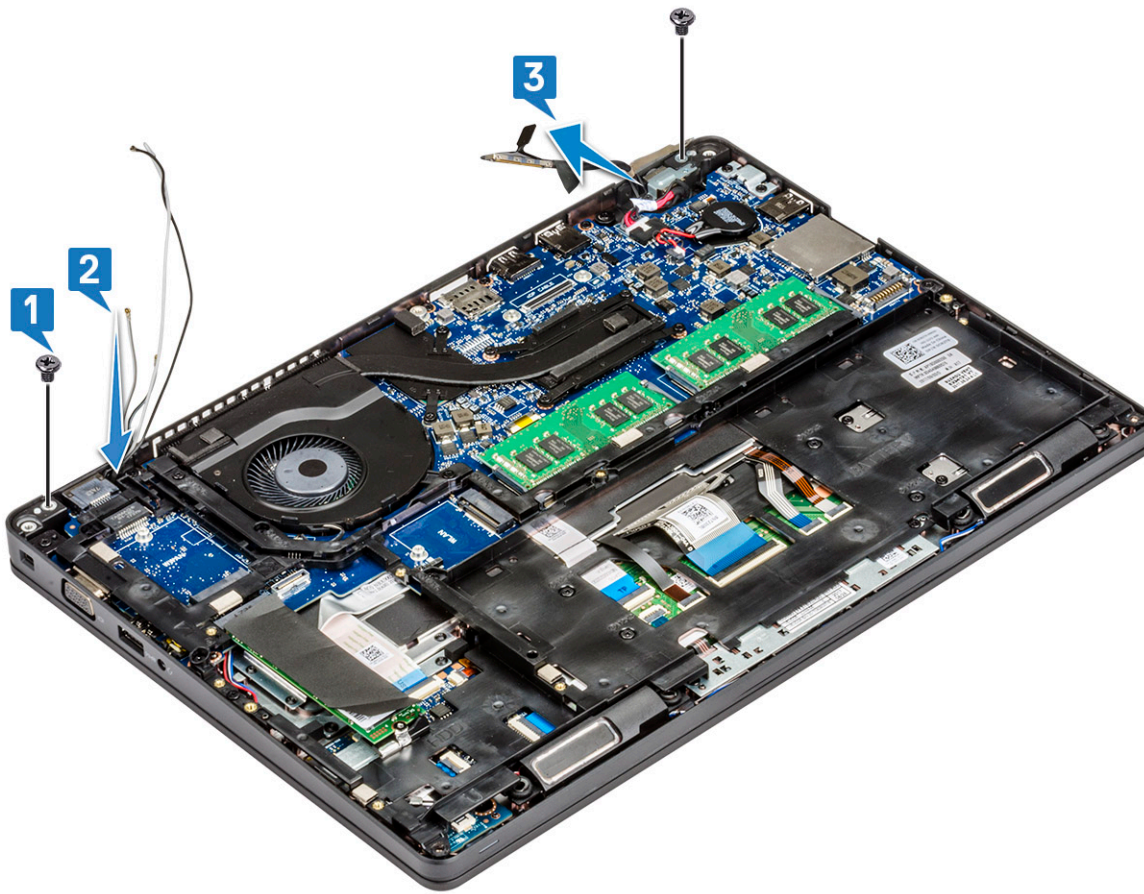
Display assembly

Removing display assembly

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [WWAN card \(optional\)](#)
 - e [display hinge cover](#)
- 3 To disconnect the display cable:
 - a Release the WLAN and WWAN cables from the routing channels [1].
 - b Remove the two (M2x3) screws that secure the display cable bracket in place [2].
 - c Remove the display cable bracket that secures the display cable from the system [3].
 - d Disconnect the display cable from the connector on the system board [4].
 - e Remove the single screw that secures the power connector bracket and also the display cable to the system [5].



- 4 To release the display assembly:
 - a Remove the two M2x5 screws that secure the display assembly to the computer [1].
 - b Release the WLAN cable, WWAN cable, and display cable through the routing channels [2] [3].



- 5 Turn over the computer.
- 6 To remove the display assembly:
 - a Remove the two M2x5 screws that secure the display assembly to the computer [1].
 - b Open the display [2].



- c Lift the display assembly from the computer.



Installing display assembly

- 1 Place the chassis on a plane surface.
- 2 Align the display assembly with the screw holders on the system and place it on the chassis.
- 3 Close the display.
- 4 Replace the two screws that secure the display assembly.
- 5 Replace the screws that secure the power connector bracket and the display cable to the system.
- 6 Flip over the system and replace two screws to secure the display assembly to the system.
- 7 Replace the single screw that secure the power connector bracket and the display cable to the system.
- 8 Connect the display cable to the connector on the system board.
- 9 Place the metal bracket to secure the display cable.
- 10 Replace the (M2x3) screws to secure the metal bracket to the system.
- 11 Route the WLAN and WWAN cables through the routing channels.
- 12 Install the:
 - a [hinge cover](#)
 - b [WWAN card \(optional\)](#)
 - c [WLAN card](#)
 - d [battery](#)
 - e [base cover](#)
- 13 Follow the procedure in [After working inside your computer](#).

Display bezel

Removing display bezel

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

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

2 Remove the:

- a base cover
- b battery
- c WLAN card
- d WWAN card (optional)
- e Display hinge cover
- f display assembly

3 To remove the display bezel:

- a Pry the display bezel at the base of the display [1].

NOTE: When removing or reinstalling the display bezel from the display assembly, technicians should note that the display bezel is secured to the LCD panel with a strong adhesive and care must be taken to avoid damage to LCD.

b Lift the display bezel to release it [2].

c Pry the edges on the side of the display to release the display bezel [3, 4,5].

CAUTION: The adhesive used on the LCD bezel to seal it with the LCD itself, makes it hard to remove the bezel as the adhesive is very strong and tends to stay stuck to the LCD portion and can peel the layers up or crack the glass when trying to pry the two items apart.



Installing display bezel

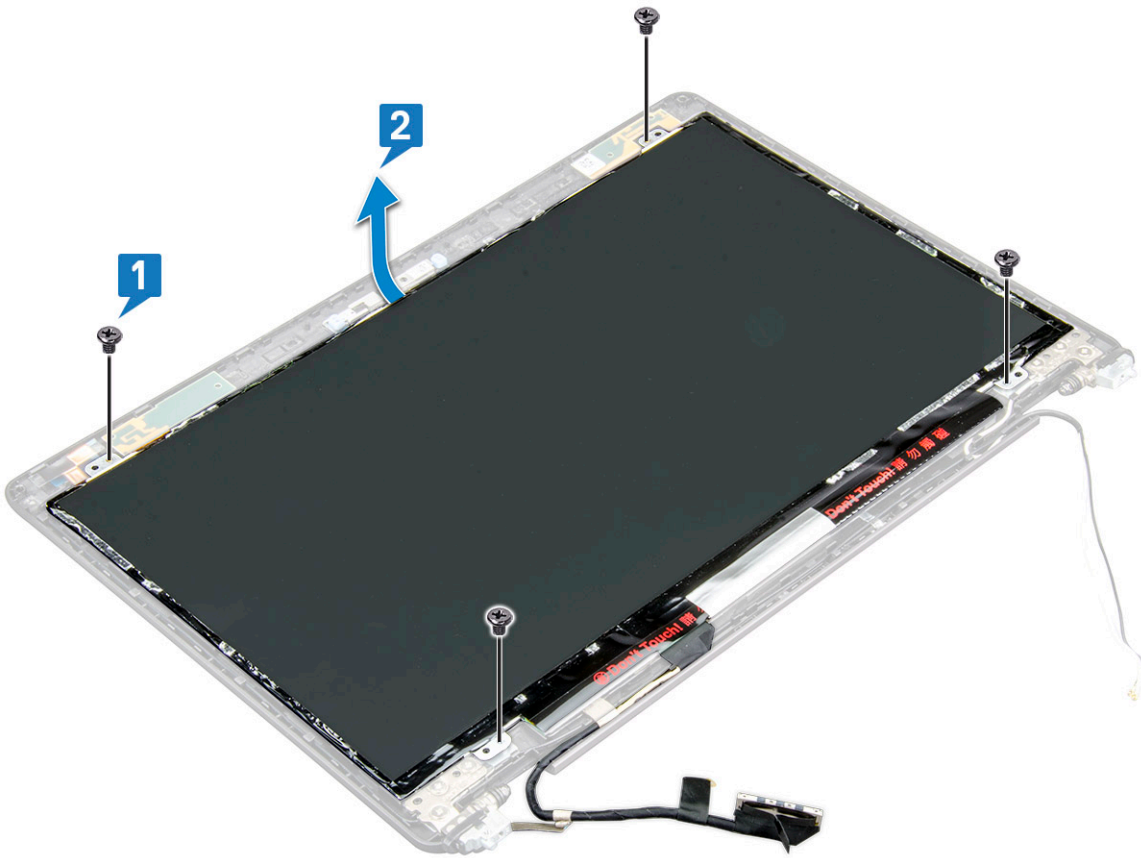
NOTE: The display bezel is a disposable part and should be replaced with a new display bezel anytime it is removed from the system.

- 1 Place the display bezel on the display assembly.
NOTE: Remove the protective covering on the adhesive on the LCD bezel before placing on the display assembly.
- 2 Starting from a top corner, press on the display bezel and work around the entire bezel until it clicks on to the display assembly.
- 3 Install the:
 - a display assembly
 - b display hinge cover
 - c WWAN card (optional)
 - d WLAN card
 - e battery
 - f base cover
- 4 Follow the procedure in [After working inside your computer](#).

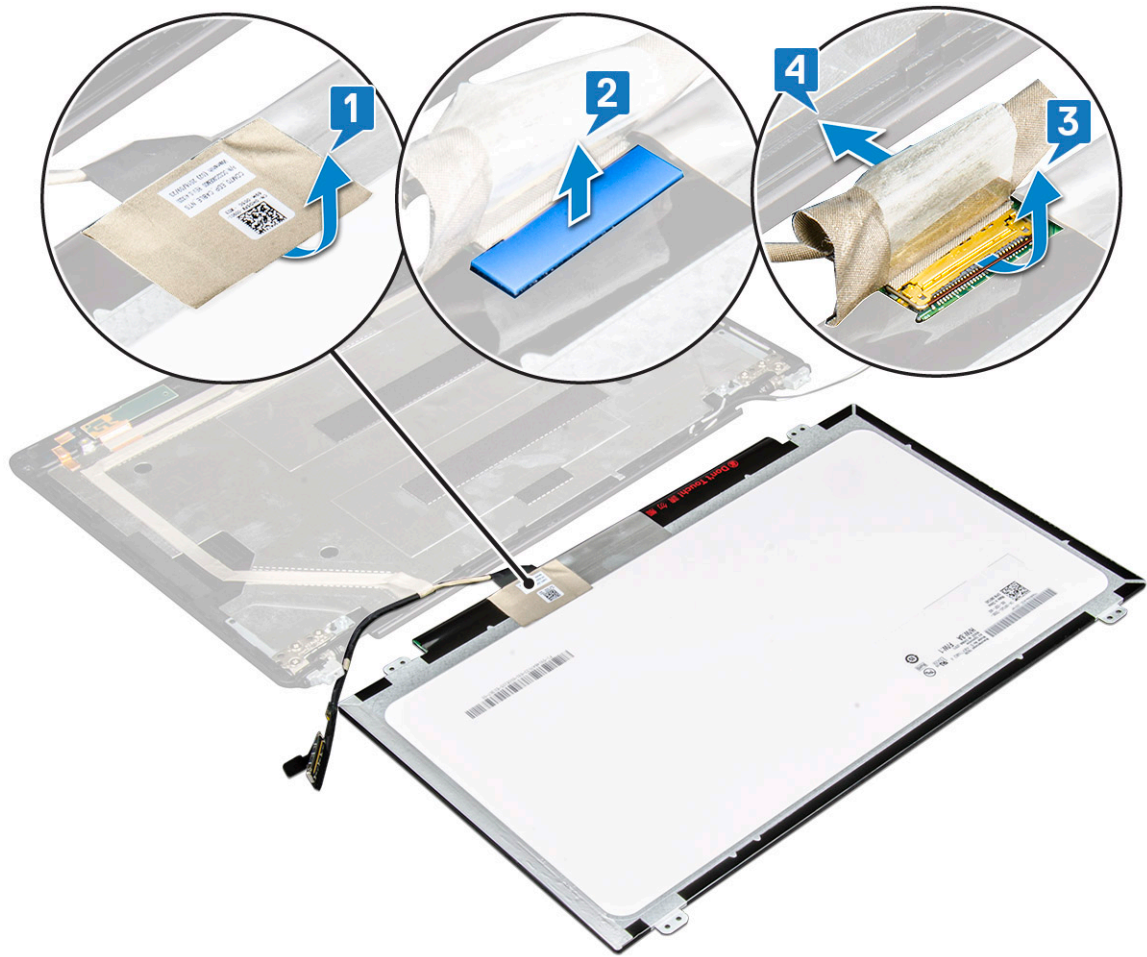
Display panel

Removing display panel

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a base cover
 - b battery
 - c WLAN card
 - d WWAN card (optional)
 - e display hinge cover
 - f display assembly
 - g display bezel
- 3 Remove the four M2x3 screws that secure the display panel to the display assembly [1] and lift to turn over the display panel to access the display cable [2].



- 4 To remove the display panel:
- a Peel the conductive tape [1].
 - b Remove the adhesive strip that secures the display cable [2].
 - c Lift the latch and disconnect the display cable from the connector on the display panel [3] [4].



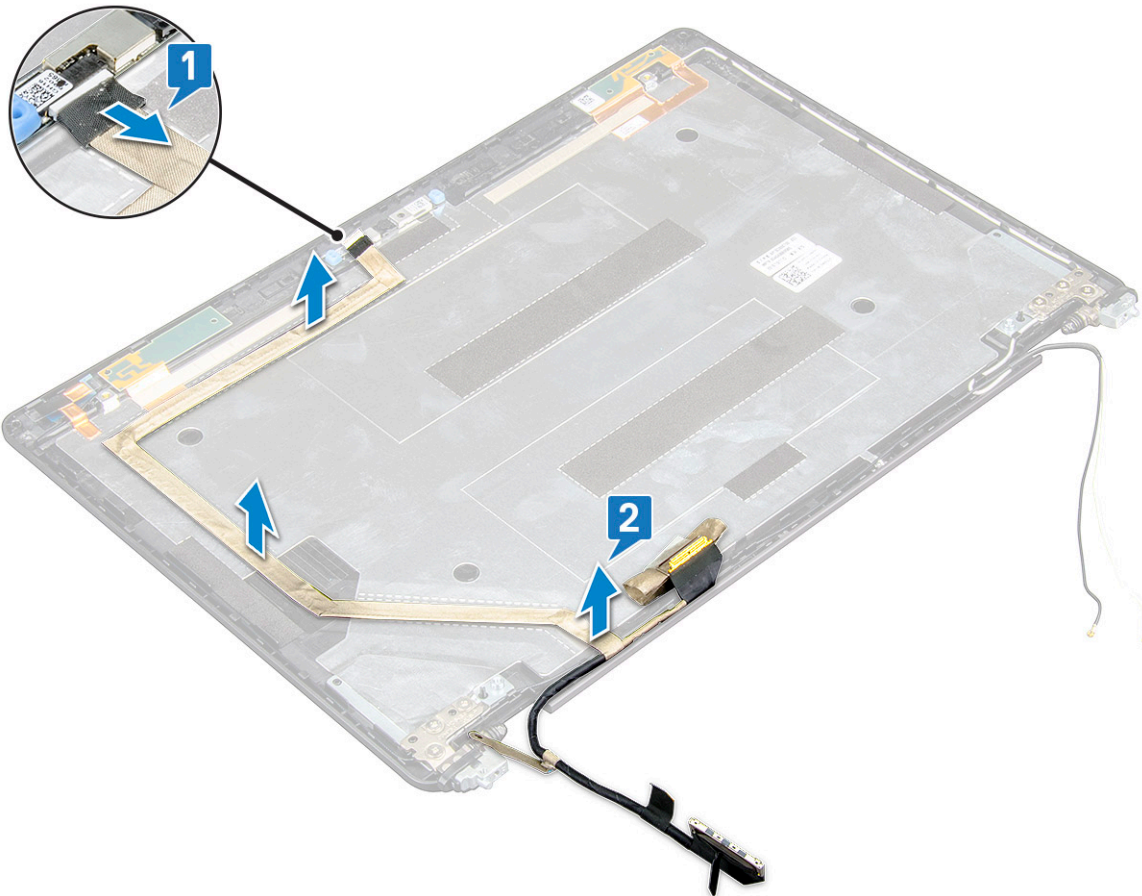
Installing display panel

- 1 Connect the display cable to the connector and affix the adhesive strip.
- 2 Affix the conductive tape to secure the display cable.
- 3 Replace the display panel to align with the screw holders on the display assembly.
- 4 Replace the four M2x3 screws to secure the display panel to the display back cover.
- 5 Install the:
 - a [display bezel](#)
 - b [display assembly](#)
 - c [display hinge cover](#)
 - d [WLAN card](#)
 - e [WWAN card \(optional\)](#)
 - f [battery](#)
 - g [base cover](#)
- 6 Follow the procedure in [After working inside your computer](#).

Display (eDP) cable

Removing display cable

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [WWAN card \(optional\)](#)
 - e [display hinge cover](#)
 - f [display assembly](#)
 - g [display bezel](#)
 - h [display panel](#)
- 3 Disconnect the camera cable from the connector on the camera module [1].
- 4 Peel the display cable to release it from adhesive and lift the display cable from the display back cover [2].



Installing display cable

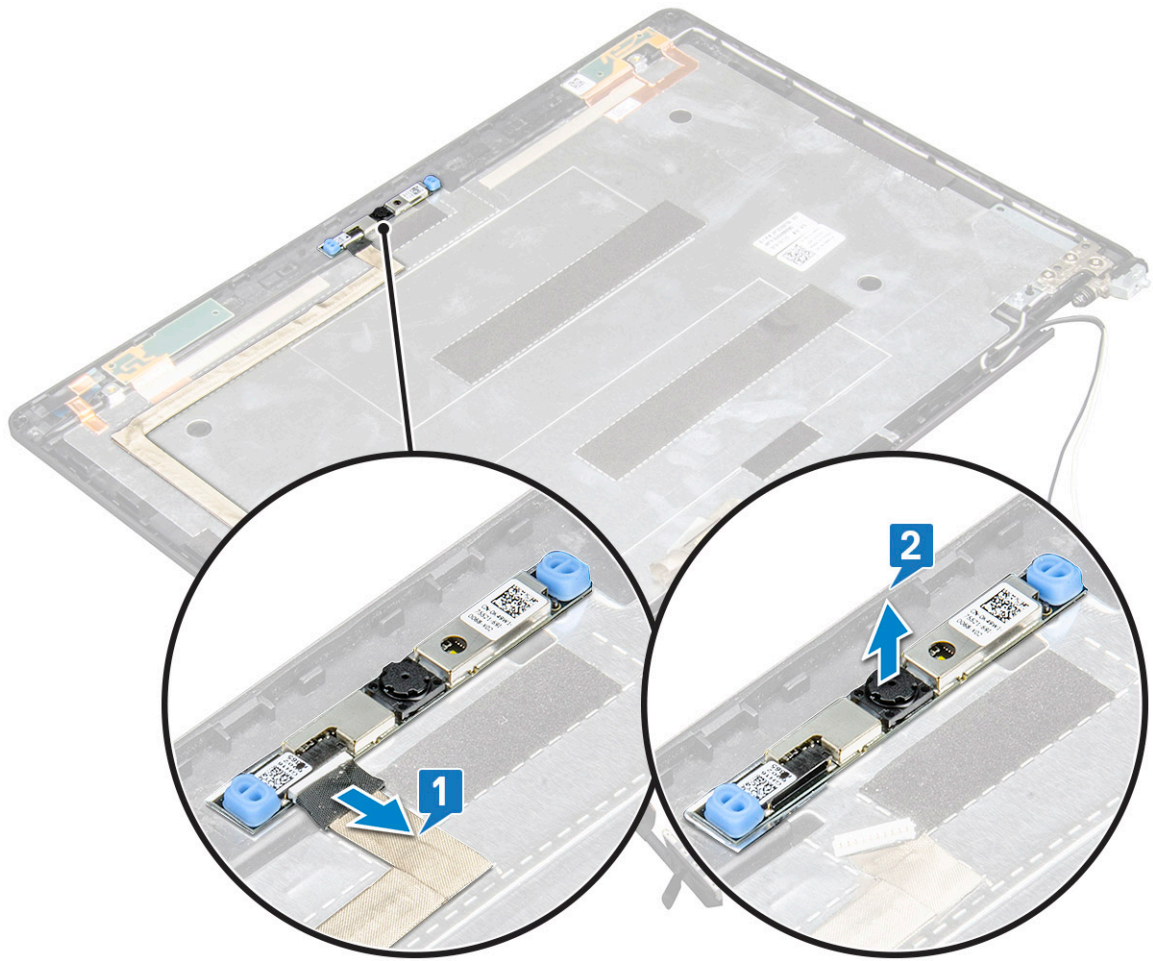
- 1 Affix the display cable to the display back cover.
- 2 Connect the camera cable to the connector on camera module.
- 3 Install the:

- a display panel
 - b display bezel
 - c display assembly
 - d display hinge cover
 - e WLAN card
 - f WWAN card (optional)
 - g battery
 - h base cover
- 4 Follow the procedure in [After working inside your computer](#).

Camera

Removing camera

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
- a base cover
 - b battery
 - c WLAN card
 - d WWAN card (optional)
 - e display hinge cover
 - f display assembly
 - g display bezel
 - h display panel
- 3 To remove the camera:
- a Disconnect the camera cable from the connector on the camera module [1].
 - b Carefully pry and lift the camera module from the display back cover [2].



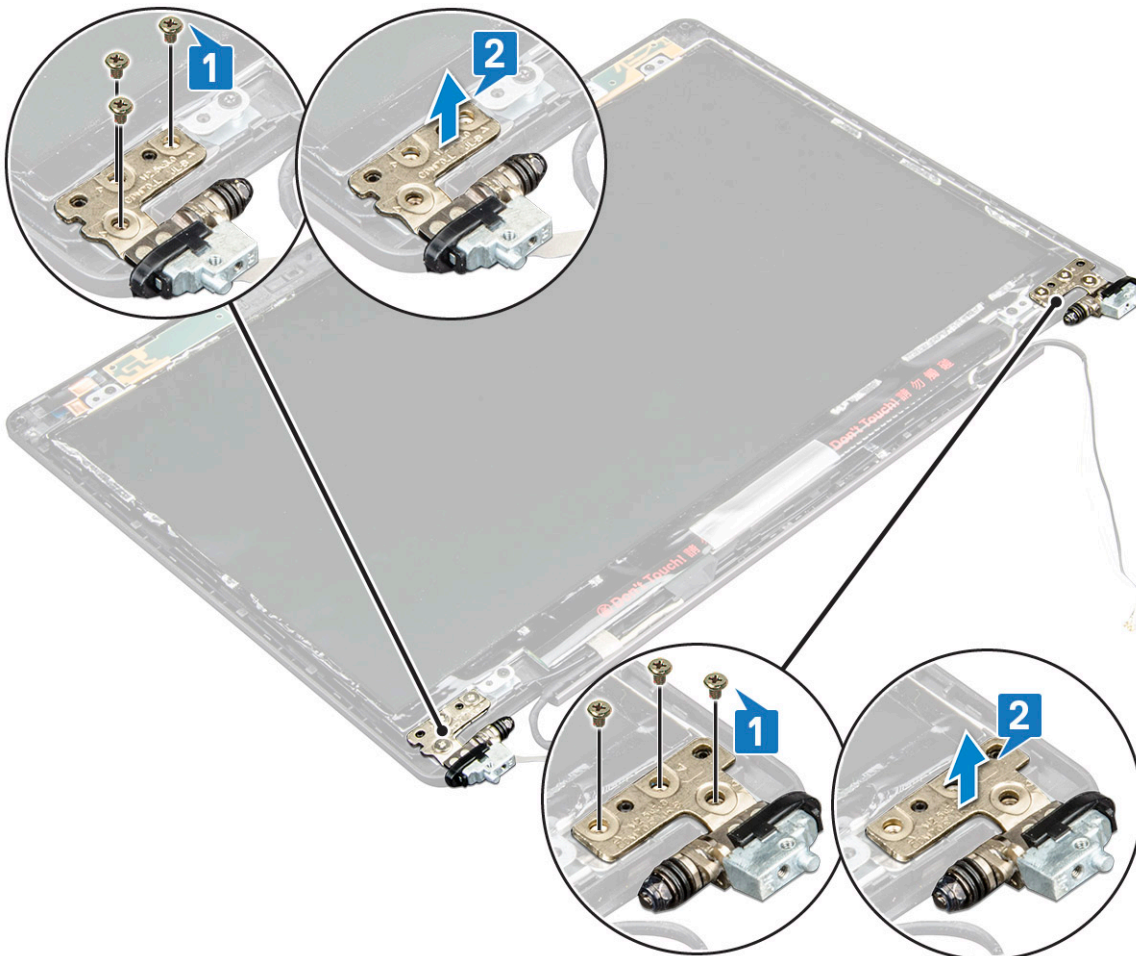
Installing camera

- 1 Insert the camera into the slot on the display back cover.
- 2 Connect the camera cable to the connector on the camera module.
- 3 Install the :
 - a [display panel](#)
 - b [display bezel](#)
 - c [display assembly](#)
 - d [display hinge cover](#)
 - e [WLAN card](#)
 - f [WWAN card \(optional\)](#)
 - g [memory module](#)
 - h [battery](#)
 - i [base cover](#)
- 4 Follow the procedure in [After working inside your computer](#).

Display hinges

Removing display hinge

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [WWAN card \(optional\)](#)
 - e [display assembly](#)
 - f [display bezel](#)
 - g [display hinge cover](#)
- 3 To remove the display hinge:
 - a Remove the 3 (M2.5x3) screws that secure the display hinge to the display assembly [1].
 - b Lift the display hinge from the display assembly [2].
 - c Repeat step a and step b to remove the other display hinge.



Installing display hinge

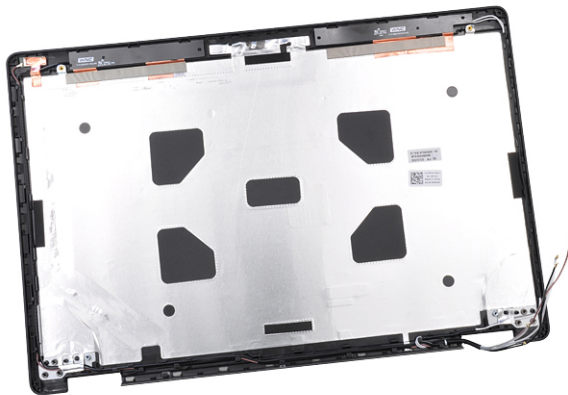
- 1 Place the display hinge on the display assembly.
- 2 Replace the 3 (M2.5x3) screws to secure the display hinge to the display assembly.
- 3 Repeat step 1 and step 2 to install the other display hinge.
- 4 Install the:
 - a [display hinge cover](#)
 - b [display bezel](#)
 - c [display assembly](#)
 - d [WLAN card](#)
 - e [WWAN card \(optional\)](#)
 - f [battery](#)
 - g [base cover](#)
- 5 Follow the procedure in [After working inside your computer](#).

Display back cover assembly

Removing the display back cover assembly

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a [base cover](#)
 - b [battery](#)
 - c [WLAN card](#)
 - d [WWAN card \(optional\)](#)
 - e [display hinge cover](#)
 - f [display assembly](#)
 - g [display bezel](#)
 - h [display panel](#)
 - i [display hinge](#)
 - j [display cable](#)
 - k [camera](#)

The display back cover assembly is the remaining component, after removing all the components.



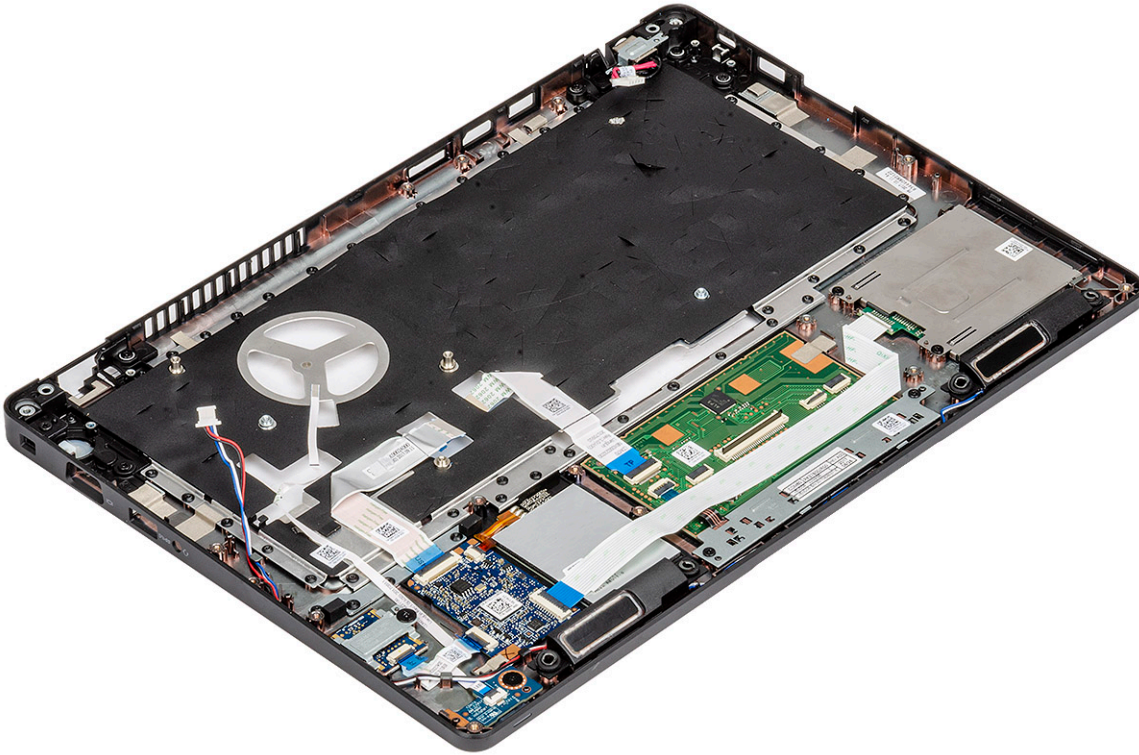
Installing the display back cover assembly

- 1 Place the display back cover assembly on a flat surface.
- 2 Install the:
 - a camera
 - b display cable
 - c display hinge
 - d display panel
 - e display bezel
 - f display assembly
 - g display hinge cover
 - h WLAN card
 - i WWAN card (optional)
 - j battery
 - k base cover
- 3 Follow the procedure in [After working inside your computer](#).

Palm rest

Removing palm rest

- 1 Follow the procedure in [Before working inside your computer](#).
- 2 Remove the:
 - a SIM card
 - b base cover
 - c battery
 - d memory module
 - e hard drive
 - f SSD card
 - g SSD frame
 - h WLAN card
 - i WWAN card (optional)
 - j keyboard lattice
 - k keyboard
 - l heat sink assembly
 - m chassis frame
 - n system board
 - o display hinge cover
 - p display assembly
- 3 The palm rest is the remaining component after removing all the components.



Installing palm rest

- 1 Place the palm rest on a flat surface.
- 2 Install the:
 - a [display assembly](#)
 - b [display hinge cover](#)
 - c [system board](#)
 - d [chassis frame](#)
 - e [heat sink assembly](#)
 - f [keyboard](#)
 - g [keyboard lattice](#)
 - h [WWAN card \(optional\)](#)
 - i [WLAN card](#)
 - j [SSD frame](#)
 - k [SSD card](#)
 - l [hard drive](#)
 - m [memory module](#)
 - n [battery](#)
 - o [base cover](#)
 - p [SIM card](#)
- 3 Follow the procedure in [After working inside your computer](#).

Technical specifications

NOTE: Offerings may vary by region. For more information regarding the configuration of your computer in:

- Windows 10, click or tap **Start**  > **Settings** > **System** > **About**.

Topics:

- [System specifications](#)
- [Processor specifications](#)
- [Memory specifications](#)
- [Storage specifications](#)
- [Audio specifications](#)
- [Video specification](#)
- [Camera specifications](#)
- [Communication specifications](#)
- [Ports and connectors specifications](#)
- [Display specifications](#)
- [Keyboard specifications](#)
- [Touch pad specifications](#)
- [Battery specifications](#)
- [AC Adapter specifications](#)
- [Physical specifications](#)
- [Environmental specifications](#)

System specifications

Feature	Specification
Processor type	AMD Ryzen 7/5/3 PRO Processors
System Chipset	Integrated with processor

Processor specifications

The Latitude 5495 system is built with AMD processors.

Table 2. Processor specifications

Supported Processor List

Ryzen 3 PRO 2300U (4 cores/4 threads/6 GPU cores/2.0 GHZ base clock/3.4 GHZ max boost clock)
Ryzen 5 PRO 2500U (4 cores/8 threads/8 GPU cores/2.0 GHZ base clock/3.6 GHZ max boost clock)
Ryzen 7 PRO 2700U (4 cores/8 threads/10 GPU cores/2.2 GHZ base clock /3.8 GHZ max boost clock)

Memory specifications

Your computer supports a maximum of 32 GB of memory.

Table 3. Memory specifications

Minimum Memory Configuration	4 GB
Maximum Memory Configuration	32 GB
Number of slots	2 SoDIMM slots
Maximum memory supported per slot	16 GB
Memory options	4 GB — 1 x 4GB 8 GB — 2 x 4 GB or 1 x 8 GB 16 GB — 2 x 8 GB or 1 x 16 GB 32 GB — 2 x 16 GB
Type	DDR4
Speed	2400 MHz

Storage specifications

Your system supports the following storage options:

- 500GB 7200RPM HDD 2.5" 7mm
- 1TB 5400RPM HDD 2.5" 7mm
- 500GB 7200RPM OPAL SED FIPS 2.5" 7mm
- 128GB SSD SATA M.2 2280 Class 20
- 256GB SSD SATA M.2 2280 Class 20
- 512GB SSD SATA M.2 2280 Class 20
- 512GB SSD OPAL SED M.2 2280 Class 20
- 256GB PCIe/NVMe SSD M.2 2280 Class 40
- 512GB PCIe/NVMe SSD M.2 2280 Class 40
- 512GB PCIe/NVMe OPAL SED M.2 2280 Class 40

Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3246
Internal interface	<ul style="list-style-type: none">• Universal Audio Jack• High Quality Speakers• Noise reducing array microphones• Volume control buttons, supports hot-key keyboard button
External interface	Stereo headset/mic combo
Speakers	Two

Feature	Specification
---------	---------------

Volume controls	Hot keys
-----------------	----------

Video specification

Integrated

Feature	Specification
---------	---------------

Type	Integrated on system board, hardware accelerated
------	--

UMA controller	AMD Radeon Vega
----------------	-----------------

Bus type	Integrated video
----------	------------------

External display support	eDP (internal), HDMI 2.0 (UMA) / HDMI 2.0 (Discrete), VGA via Optional Type-C Port (DisplayPort)
--------------------------	--

Discrete

Feature	Specification
---------	---------------

Type	Discrete
------	----------

DSC controller	AMD Radeon 540, GDDR5
----------------	-----------------------

Graphics memory	2GB – GDDR5
-----------------	-------------

Bus type	PCIe 3.0
----------	----------

Camera specifications

This topic lists out the detailed camera specifications for your system.

Table 4. Camera specifications

Camera type	HD fixed focus
IR Camera	Optional
Sensor type	CMOS sensor technology
Resolution: Motion video	Up to 1280 X 720 (1 MP)
Resolution: Still image	Up to 1280 X 720 (1 MP)
Imaging rate	Up to 30 frames per second

NOTE: The system is offered with no camera in one of the configurations.

Communication specifications

Features	Specification
----------	---------------

Network adapter	10/100/1000 Mb/s Ethernet (RJ-45)
-----------------	-----------------------------------

Wireless LAN Options	<ul style="list-style-type: none">Qualcomm QCA61x4A 802.11ac Dual Band (2x2) Wireless Adapter+ Bluetooth 4.1
----------------------	--

Features

Specification

- Qualcomm QCA61x4A Extended Range 802.11ac MU-MIMO Dual Band (2x2) Wi-Fi + Bluetooth 4.1 LE

Optional Mobile

Broadband Options

- Qualcomm® Snapdragon™ X7 LTE-A (DW5811e) (EMEA/APJ/ROW)
- Qualcomm® Snapdragon™ X7 LTE-A (DW5811e) for AT&T, Verizon & Sprint, US
- Qualcomm® Snapdragon™ X7 HSPA+ (DW5811e) (Indonesia)
- Qualcomm® Snapdragon™ X7 LTE-A (DW5816e) (Japan/ANZ/China/India)

Ports and connectors specifications

Table 5. Ports and Connectors

USB	Three USB 3.1 Gen 1 (one with PowerShare)
Video	One VGA, HDMI 2.0 (UMA) / HDMI 2.0 (Discrete)
Network	One RJ-45
Modem	NA
Expansion	SD 4.0 Memory card reader
Smart Card Reader	Yes (optional)
Touch Fingerprint Reader	Yes (optional)
Contactless card reader	Yes (optional)
Audio	Universal Audio Jack
Docking	DisplayPort over USB Type-C Noble Wedge Lock slot

Display specifications

This topic lists the supported display options.

- 14.0" FHD WVA (1920 x 1080) Anti-glare (16:9) WLED, 220 nits, Carbon Fiber Reinforced Polymer LCD Back
- 14.0" HD (1366 x 768) Anti-glare (16:9) WLED, 220 nits, Carbon Fiber Reinforced Polymer LCD Back
- 14.0" FHD WVA (1920 x 1080) Embedded Touch Display with Truelife (OTP Lite), 220 nits, Carbon Fiber Reinforced Polymer LCD Back

Keyboard specifications

Table 6. Keyboard specifications

Number of keys	82 (US), 83 (UK), 84 (BZ), 86 (JP)
Size	Full sized X= 19.05 mm key pitch Y= 19.05 mm key pitch
Backlit keyboard option	Yes (optional)

Touch pad specifications

Table 7. Touch Pad

Dimensions	Width: 99.5 mm
	Height: 53 mm
Interface	Inter-Integrated Circuit
Multi-Touch	Support 4 fingers

Battery specifications

This topic lists out the detailed battery specifications.

Table 8. Battery specifications

	3-cell 42 WHr	3-cell 51 WHr	4-cell 68 WHr	4-cell Long Cycle Life Battery
Battery Type	Li-ion/Prismatic	Li-ion/Polymer	Li-ion/Polymer	Li-polymer
Dimension:				
Length	181mm (7.126")	181mm (7.126")	233mm (9.17")	233mm (9.17")
Width	95.9mm (3.78")	95.9mm (3.78")	95.9mm (3.78")	95.9mm (3.78")
Height	7.05mm (0.28")	7.05mm (0.28")	7.05mm (0.28")	7.05mm (0.28")
Weight	0.21 Kg (0.46 lbs)	0.25 Kg (0.55 lbs)	0.34 Kg (0.75 lbs)	0.34 Kg (0.75 lbs)
Voltage	11.4VDC	11.4VDC	7.6VDC	7.6VDC
Typical Amp-hour capacity	3.684Ahr	4.473Ahr	8.947Ahr	8.947Ahr
Typical Watt-hour capacity	42 Whr	51 Whr	68 Whr	68 Whr
Operating time	<ul style="list-style-type: none"> 0°C to 35°C (32°F to 95°F) Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F) 	<ul style="list-style-type: none"> 0°C to 35°C (32°F to 95°F) Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F) 	<ul style="list-style-type: none"> 0°C to 35°C (32°F to 95°F) Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F) 	<ul style="list-style-type: none"> 0°C to 35°C (32°F to 95°F) Charge: 0 °C to 50 °C (32 °F to 122 °F) Discharge: 0 °C to 70 °C (32 °F to 158 °F)
Temperature range:Operating	Charge: 0 °C to 50 °C, 32 °F to 122 °F, Discharge: 0 °C to 70 °C, 32 °F to 158 °F			
Temperature range: Non-Operating	-20 °C to 65 °C (-4 °F to 149 °F)			
Charging time (ExpressCharge)	0~15degC: 4 hour, 16~45degC: 2 hours, 46~60degC: 3 hours			
ExpressCharge Capable	Yes	Yes	Yes	No
BATTMAN Capable	Yes			
Life span (approximate)	Standard pack : 1 year warranty for 300 cycles, LCL pack : 3 year warranty for 1000 cycles (68 Whr only)			

AC Adapter specifications

Feature	Specification	
Type	65 W and 90 W	
Input voltage	100 V AC to 240 V AC	
Input current (maximum)	65 W	1.7 A
	90 W	1.6 A
Adapter size	7.4mm	
Input frequency	50 Hz to 60 Hz	
Output current	65 W	3.34 A
	90 W	4.62 A
Rated output voltage	19.5 V DC	
Temperature range (Operating)	0°C to 40°C (32°F to 104°F)	
Temperature range (Non-Operating)	−40°C to 70°C (−40°F to 158°F)	

Physical specifications

This topic lists out the dimensions of the computer in detail.

System dimension	Non touch
Weight (pounds/ kilogram)	Start from 3.56 lb/1.62 kg
Dimensions inches:	
Height	<ul style="list-style-type: none">• Front – 20.3 mm (0.8 inch)• Back – 22.45 mm (0.9 inch)
Width	333.4 mm (13.12 inch)
Depth	228.9 mm (9.01 inch)

 **NOTE:** System weight and shipping weight is based on a typical configuration and may vary based on the actual configuration.

Environmental specifications

Temperature	Specifications
Operating	0°C to 35°C (32°F to 95°F)
Storage	−40°C to 65°C (−40°F to 149°F)

Relative humidity (maximum)	Specifications
Operating	10 % to 90 % (non condensing)
Storage	5 % to 95 % (non condensing)
Altitude (maximum)	Specifications
Operating	0 m to 3048 m (0 ft to 10,000 ft)
Non-operating	0 m to 10,668 m (0 ft to 35,000 ft)
Airborne contaminant level	G1 as defined by ISA-71.04–1985

Technology and components

This chapter details the technology and components available in the system.

Topics:

- [DDR4](#)
- [HDMI 2.0](#)
- [USB features](#)
- [USB Type-C](#)

DDR4

DDR4 (double data rate fourth generation) memory is a higher-speed successor to the DDR2 and DDR3 technologies and allows up to 512 GB in capacity, compared to the DDR3's maximum of 128 GB per DIMM. DDR4 synchronous dynamic random-access memory is keyed differently from both SDRAM and DDR to prevent the user from installing the wrong type of memory into the system.

DDR4 needs 20 percent less or just 1.2 volts, compared to DDR3 which requires 1.5 volts of electrical power to operate. DDR4 also supports a new, deep power-down mode that allows the host device to go into standby without needing to refresh its memory. Deep power-down mode is expected to reduce standby power consumption by 40 to 50 percent.

DDR4 Details

There are subtle differences between DDR3 and DDR4 memory modules, as listed below.

Key notch difference

The key notch on a DDR4 module is in a different location from the key notch on a DDR3 module. Both notches are on the insertion edge but the notch location on the DDR4 is slightly different, to prevent the module from being installed into an incompatible board or platform.

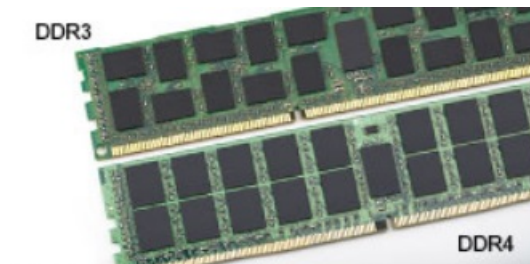


Figure 1. Notch difference

Increased thickness

DDR4 modules are slightly thicker than DDR3, to accommodate more signal layers.

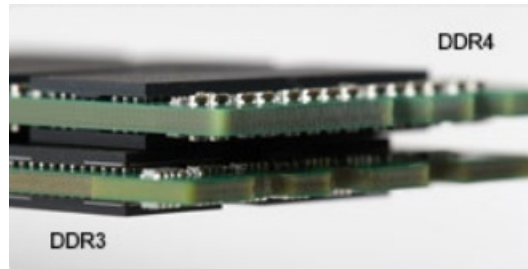


Figure 2. Thickness difference

Curved edge

DDR4 modules feature a curved edge to help with insertion and alleviate stress on the PCB during memory installation.



Figure 3. Curved edge

Memory Errors

Memory errors on the system display the new ON-FLASH-FLASH or ON-FLASH-ON failure code. If all memory fails, the LCD does not turn on. Troubleshoot for possible memory failure by trying known good memory modules in the memory connectors on the bottom of the system or under the keyboard, as in some portable systems.

HDMI 2.0

This topic explains the HDMI 2.0 and its features along with the advantages.

HDMI (High-Definition Multimedia Interface) is an industry-supported, uncompressed, all-digital audio/video interface. HDMI provides an interface between any compatible digital audio/video source, such as a DVD player, or A/V receiver and a compatible digital audio and/or video monitor, such as a digital TV (DTV). The intended applications for HDMI TVs, and DVD players. The primary advantage is cable reduction and content protection provisions. HDMI supports standard, enhanced, or high-definition video, plus multichannel digital audio on a single cable.

NOTE: The HDMI 2.0 will provide 5.1 channel audio support.

HDMI 2.0 Features

- **HDMI Ethernet Channel** - Adds high-speed networking to an HDMI link, allowing users to take full advantage of their IP-enabled devices without a separate Ethernet cable
- **Audio Return Channel** - Allows an HDMI-connected TV with a built-in tuner to send audio data "upstream" to a surround audio system, eliminating the need for a separate audio cable
- **3D** - Defines input/output protocols for major 3D video formats, paving the way for true 3D gaming and 3D home theater applications
- **Content Type** - Real-time signaling of content types between display and source devices, enabling a TV to optimize picture settings based on content type
- **Additional Color Spaces** - Adds support for additional color models used in digital photography and computer graphics

- **4K Support** - Enables video resolutions far beyond 1080p, supporting next-generation displays that will rival the Digital Cinema systems used in many commercial movie theaters
- **HDMI Micro Connector** - A new, smaller connector for phones and other portable devices, supporting video resolutions up to 1080p
- **Automotive Connection System** - New cables and connectors for automotive video systems, designed to meet the unique demands of the motoring environment while delivering true HD quality

Advantages of HDMI

- Quality HDMI transfers uncompressed digital audio and video for the highest, crispest image quality.
- Low -cost HDMI provides the quality and functionality of a digital interface while also supporting uncompressed video formats in a simple, cost-effective manner
- Audio HDMI supports multiple audio formats from standard stereo to multichannel surround sound
- HDMI combines video and multichannel audio into a single cable, eliminating the cost, complexity, and confusion of multiple cables currently used in A/V systems
- HDMI supports communication between the video source (such as a DVD player) and the DTV, enabling new functionality

USB features

Universal Serial Bus, or USB, was introduced in 1996. It dramatically simplified the connection between host computers and peripheral devices like mice, keyboards, external drives, and printers.

Let's take a quick look on the USB evolution referencing to the table below.

Table 9. USB evolution

Type	Data Transfer Rate	Category	Introduction Year
USB 2.0	480 Mbps	High Speed	2000
USB 3.0/USB 3.1 Gen 1	5 Gbps	Super Speed	2010
USB 3.1 Gen 2	10 Gbps	Super Speed	2013

USB 3.0/USB 3.1 Gen 1 (SuperSpeed USB)

For years, the USB 2.0 has been firmly entrenched as the de facto interface standard in the PC world with about 6 billion devices sold, and yet the need for more speed grows by ever faster computing hardware and ever greater bandwidth demands. The USB 3.0/USB 3.1 Gen 1 finally has the answer to the consumers' demands with a theoretically 10 times faster than its predecessor. In a nutshell, USB 3.1 Gen 1 features are as follows:

- Higher transfer rates (up to 5 Gbps)
- Increased maximum bus power and increased device current draw to better accommodate power-hungry devices
- New power management features
- Full-duplex data transfers and support for new transfer types
- Backward USB 2.0 compatibility
- New connectors and cable

The topics below cover some of the most commonly asked questions regarding USB 3.0/USB 3.1 Gen 1.

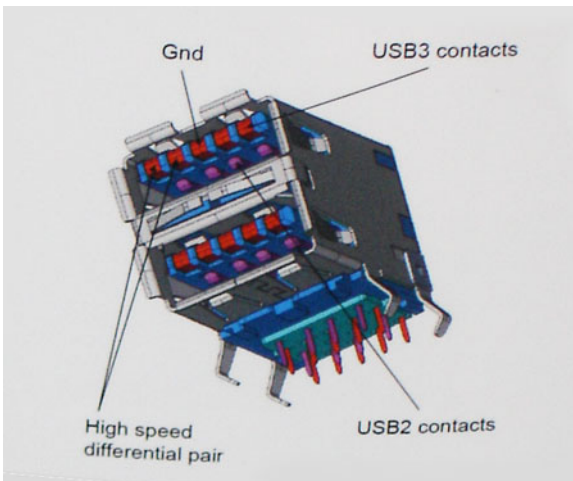


Speed

Currently, there are 3 speed modes defined by the latest USB 3.0/USB 3.1 Gen 1 specification. They are Super-Speed, Hi-Speed and Full-Speed. The new SuperSpeed mode has a transfer rate of 4.8Gbps. While the specification retains Hi-Speed, and Full-Speed USB mode, commonly known as USB 2.0 and 1.1 respectively, the slower modes still operate at 480Mbps and 12Mbps respectively and are kept to maintain backward compatibility.

USB 3.0/USB 3.1 Gen 1 achieves the much higher performance by the technical changes below:

- An additional physical bus that is added in parallel with the existing USB 2.0 bus (refer to the picture below).
- USB 2.0 previously had four wires (power, ground, and a pair for differential data); USB 3.0/USB 3.1 Gen 1 adds four more for two pairs of differential signals (receive and transmit) for a combined total of eight connections in the connectors and cabling.
- USB 3.0/USB 3.1 Gen 1 utilizes the bidirectional data interface, rather than USB 2.0's half-duplex arrangement. This gives a 10-fold increase in theoretical bandwidth.



With today's ever increasing demands placed on data transfers with high-definition video content, terabyte storage devices, high megapixel count digital cameras etc., USB 2.0 may not be fast enough. Furthermore, no USB 2.0 connection could ever come close to the 480Mbps theoretical maximum throughput, making data transfer at around 320Mbps (40MB/s) — the actual real-world maximum. Similarly, USB 3.0/USB 3.1 Gen 1 connections will never achieve 4.8Gbps. We will likely see a real-world maximum rate of 400MB/s with overheads. At this speed, USB 3.0/USB 3.1 Gen 1 is a 10x improvement over USB 2.0.

Applications

USB 3.0/USB 3.1 Gen 1 opens up the laneways and provides more headroom for devices to deliver a better overall experience. Where USB video was barely tolerable previously (both from a maximum resolution, latency, and video compression perspective), it's easy to imagine that with 5-10 times the bandwidth available, USB video solutions should work that much better. Single-link DVI requires almost 2Gbps throughput. Where 480Mbps was limiting, 5Gbps is more than promising. With its promised 4.8Gbps speed, the standard will find its way into some products that previously weren't USB territory, like external RAID storage systems.

Listed below are some of the available SuperSpeed USB 3.0/USB 3.1 Gen 1 products:

- External Desktop USB 3.0/USB 3.1 Gen 1 Hard Drives
- Portable USB 3.0/USB 3.1 Gen 1 Hard Drives
- USB 3.0/USB 3.1 Gen 1 Drive Docks & Adapters
- USB 3.0/USB 3.1 Gen 1 Flash Drives & Readers
- USB 3.0/USB 3.1 Gen 1 Solid-state Drives

- USB 3.0/USB 3.1 Gen 1 RAIDs
- Optical Media Drives
- Multimedia Devices
- Networking
- USB 3.0/USB 3.1 Gen 1 Adapter Cards & Hubs

Compatibility

The good news is that USB 3.0/USB 3.1 Gen 1 has been carefully planned from the start to peacefully co-exist with USB 2.0. First of all, while USB 3.0/USB 3.1 Gen 1 specifies new physical connections and thus new cables to take advantage of the higher speed capability of the new protocol, the connector itself remains the same rectangular shape with the four USB 2.0 contacts in the exact same location as before. Five new connections to carry receive and transmitted data independently are present on USB 3.0/USB 3.1 Gen 1 cables and only come into contact when connected to a proper SuperSpeed USB connection.

Windows 8/10 will be bringing native support for USB 3.1 Gen 1 controllers. This is in contrast to previous versions of Windows, which continue to require separate drivers for USB 3.0/USB 3.1 Gen 1 controllers.

Microsoft announced that Windows 7 would have USB 3.1 Gen 1 support, perhaps not on its immediate release, but in a subsequent Service Pack or update. It is not out of the question to think that following a successful release of USB 3.0/USB 3.1 Gen 1 support in Windows 7, SuperSpeed support would trickle down to Vista. Microsoft has confirmed this by stating that most of their partners share the opinion that Vista should also support USB 3.0/USB 3.1 Gen 1.

Advantages of Displayport over USB Type-C

- Full DisplayPort audio/video (A/V) performance (up to 4K at 60Hz)
- SuperSpeed USB (USB 3.1) data
- Reversible plug orientation and cable direction
- Backwards compatibility to VGA, DVI with adaptors
- Supports HDMI 2.0a and is backwards compatible with previous versions

USB Type-C

USB Type-C is a new, tiny physical connector. The connector itself can support various exciting new USB standard like USB 3.1 and USB power delivery (USB PD).

Alternate Mode

USB Type-C is a new connector standard that's very small. It's about a third the size of an old USB Type-A plug. This is a single connector standard that every device should be able to use. USB Type-C ports can support a variety of different protocols using "alternate modes," which allows you to have adapters that can output HDMI, VGA, DisplayPort, or other types of connections from that single USB port

USB Power Delivery

The USB PD specification is also closely intertwined with USB Type-C. Currently, smartphones, tablets, and other mobile devices often use a USB connection to charge. A USB 2.0 connection provides up to 2.5 watts of power — that'll charge your phone, but that's about it. A laptop might require up to 60 watts, for example. The USB Power Delivery specification ups this power delivery to 100 watts. It's bi-directional, so a device can either send or receive power. And this power can be transferred at the same time the device is transmitting data across the connection.

This could spell the end of all those proprietary laptop charging cables, with everything charging via a standard USB connection. You could charge your laptop from one of those portable battery packs you charge your smartphones and other portable devices from today. You

could plug your laptop into an external display connected to a power cable, and that external display would charge your laptop as you used it as an external display — all via the one little USB Type-C connection. To use this, the device and the cable have to support USB Power Delivery. Just having a USB Type-C connection doesn't necessarily mean they do.

USB Type-C and USB 3.1

USB 3.1 is a new USB standard. USB 3's theoretical bandwidth is 5 Gbps, while USB 3.1 Gen2 is 10 Gbps. That's double the bandwidth, as fast as a first-generation Thunderbolt connector. USB Type-C isn't the same thing as USB 3.1. USB Type-C is just a connector shape, and the underlying technology could just be USB 2 or USB 3.0. In fact, Nokia's N1 Android tablet uses a USB Type-C connector, but underneath it's all USB 2.0 — not even USB 3.0. However, these technologies are closely related.

Software

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

Topics:

- [Operating system configurations](#)
- [Downloading Windows drivers](#)

Operating system configurations

This topic lists the operating system supported by your system.

Table 10. Operating systems

Microsoft Windows	Windows 10 Pro 64-bit
	Windows 10 Home 64-bit
Other	Ubuntu 16.04 LTS 64-bit

Downloading Windows drivers

- 1 Turn on the notebook.
- 2 Go to **Dell.com/support**.
- 3 Click **Product Support**, enter the Service Tag of your notebook, and then click **Submit**.

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

- 4 Click **Drivers and Downloads**.
- 5 Select the operating system installed on your notebook.
- 6 Scroll down the page and select the driver to install.
- 7 Click **Download File** to download the driver for your notebook.
- 8 After the download is complete, navigate to the folder where you saved the driver file.
- 9 Double-click the driver file icon and follow the instructions on the screen.

Chipset driver

The chipset driver helps the system identify the components and install necessary drivers accurately. Verify that the chipset was installed in the system by checking the below controllers. Many of the common devices are visible under Other Devices if no drivers are installed. The unknown devices disappear once you install the chipset driver.

Make sure to install the following drivers, some of them may exist by default.

- AMD Audio CoProcessor
- AMD GPIO Controller
- AMD High Definition Audio Controller

Serial IO driver

Verify if the drivers for Touchpad, IR camera, and keyboard are installed.

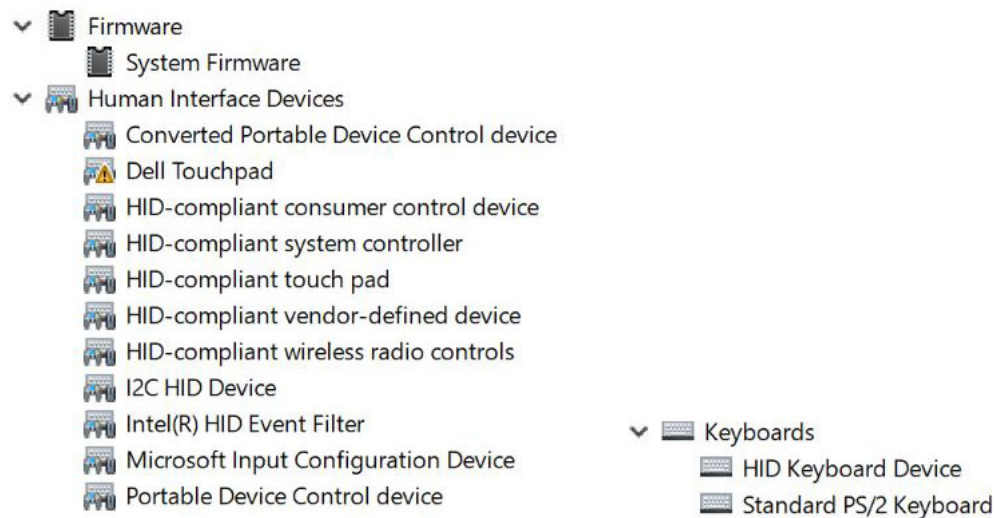


Figure 4. Serial IO driver

Graphics controller driver

Verify if the graphics controller drivers are already installed in the computer.

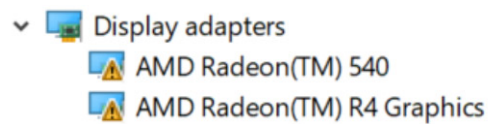












Figure 5. Graphics controller driver

USB drivers

Verify if the USB drivers are already installed in the computer.

- ▼  Universal Serial Bus controllers
 -  AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
 -  AMD USB 3.10 eXtensible Host Controller - 1.10 (Microsoft)
 -  Generic USB Hub
 -  UCSI USB Connector Manager
 -  USB Composite Device
 -  USB Composite Device
 -  USB Composite Device
 -  USB Root Hub (USB 3.0)
 -  USB Root Hub (USB 3.0)




Network drivers














Install the WLAN and Bluetooth drivers from the Dell support site.

Table 11. Network drivers

Before installation

After installation

- ▼  Network adapters
 -  Bluetooth Device (Personal Area Network)
 -  Bluetooth Device (RFCOMM Protocol TDI)

- ▼  Network adapters
 -  Bluetooth Device (Personal Area Network)
 -  Bluetooth Device (RFCOMM Protocol TDI)
 -  Broadcom NetXtreme Gigabit Ethernet
 -  Qualcomm QCA61x4A 802.11ac Wireless Adapter
 -  WAN Miniport (IKEv2)
 -  WAN Miniport (IP)
 -  WAN Miniport (IPv6)
 -  WAN Miniport (L2TP)
 -  WAN Miniport (Network Monitor)
 -  WAN Miniport (PPPOE)
 -  WAN Miniport (PPTP)
 -  WAN Miniport (SSTP)

Audio drivers

Verify if audio drivers are already installed in the computer.

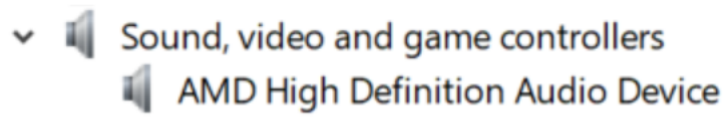


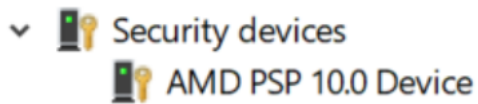
Figure 6. Audio drivers

Security drivers

This section lists the security devices in the Device Manager.

Security device drivers

Verify if the security device drivers are installed in the computer.



System setup options

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

Topics:

- [Boot Sequence](#)
- [Navigation keys](#)
- [System Setup overview](#)
- [Accessing System Setup](#)
- [General screen options](#)
- [System Configuration screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Performance screen options](#)
- [Power Management screen options](#)
- [POST Behavior screen options](#)
- [Virtualization support screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [Updating the BIOS in Windows](#)
- [Updating your system BIOS using a USB flash drive](#)
- [System and setup password](#)

Boot Sequence

Boot Sequence allows you to bypass the System Setup–defined boot device order and boot directly to a specific device (for example: optical drive or hard drive). During the Power-on Self Test (POST), when the Dell logo appears, you can:

- Access System Setup by pressing F2 key
- Bring up the one-time boot menu by pressing F12 key

The one-time boot menu displays the devices that you can boot from including the diagnostic option. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive

NOTE: XXX denotes the SATA drive number.

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

NOTE: Choosing Diagnostics, will display the ePSA diagnostics screen.

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

Navigation keys

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

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.
	NOTE: For the standard graphics browser only.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restarts the system.

System Setup overview

System Setup allows you to:

- Change the system configuration information after you add, change, or remove any hardware in your computer.
- Set or change a user-selectable option such as the user password.
- Read the current amount of memory or set the type of hard drive installed.

Before you use System Setup, it is recommended that you write down the System Setup screen information for future reference.

CAUTION: Unless you are an expert computer user, do not change the settings for this program. Certain changes can cause your computer to work incorrectly.

Accessing System Setup

- 1 Turn on (or restart) your computer.
- 2 After the white Dell logo appears, press F2 immediately.
The System Setup page is displayed.

NOTE: If you wait too long and the operating system logo appears, wait until you see the desktop. Then, shut down or restart your computer and try again.

NOTE: After the Dell logo appears, you can also press F12 and then select BIOS setup.

General screen options


This section lists the primary hardware features of your computer.

Option	Description
System Information	This section lists the primary hardware features of your computer. <ul style="list-style-type: none">• System Information: Displays Product Name, BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, and the Express Service Code, signed firmware update.• Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology, DIMM A Size, DIMM B Size,





Option	Description
	<ul style="list-style-type: none"> Processor Information: Displays Processor Type, Core Count, Processor ID, Microcode Version, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, Simultaneous Multi-Threading Capable, and 64-Bit Technology. Device Information: Displays Primary Hard Drive, MiniCard SSD Device, LOM MAC Address, Audio controller, Wi-fi Device, Cellular Device, Bluetooth Device. Video Device Information: Video controller, video BIOS version, Video Memory, Panel type, and Native Resolution
Battery Information	Displays the battery status and health of the battery connected to the computer.
Date/Time	Allows you to change the date and time.
Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system. <ul style="list-style-type: none"> Diskette Drive Internal HDD USB Storage Device CD/DVD/CD-RW Drive Onboard NIC
Advanced Boot Options	This option allows you the legacy option ROMs to load. By default, the Enable Legacy Option ROMs is disabled.
BIOS Setup Advanced mode	This option enables you to select the "BIOS Setup Advanced mode" option

System Configuration screen options

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. The options are: <ul style="list-style-type: none"> Disabled Enabled Enabled with PXE: This option is enabled by default.
SATA Operation	Allows you to configure the internal SATA hard-drive controller. The options are: <ul style="list-style-type: none"> Disabled AHCI: This option is enabled by default.
Drives	Allows you to configure the drives on board. All drives are enabled by default. The options are: <ul style="list-style-type: none"> SATA (default) M.2 PCIe SSD (default)
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the SMART (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. <ul style="list-style-type: none"> Enable SMART Reporting
USB Configuration	<p>This is an optional feature.</p> <p>This field configures the integrated USB controller. If Boot Support is enabled, the system is allowed to boot any type of USB Mass Storage Devices (HDD, memory key, floppy).</p>

Option	Description
	<p>If USB port is enabled, device attached to this port is enabled and available for OS.</p> <p>If USB port is disabled, the OS cannot see any device attached to this port.</p> <p>The options are:</p> <ul style="list-style-type: none"> • Enable USB Boot Support: This option is enabled by default. • Enable External USB Port: This option is enabled by default. <p> NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.</p>
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port. The option "Enable USB Power Share" is not enabled by default.
Touch Screen	This option is enabled by default.
Audio	<p>All the options under are selected by default:</p> <ul style="list-style-type: none"> • Enable Audio • Enable Microphone • Enable Internal Speaker
Keyboard Illumination	<p>The options are:</p> <ul style="list-style-type: none"> • Disabled • DIM • Bright (default)


Security screen options

Option	Description
Admin Password	<p>Allows you to set, change, or delete the administrator (admin) password.</p> <p> NOTE: You must set the admin password before you set the system or hard drive password. Deleting the admin password automatically deletes the system password and the hard drive password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
System Password	<p>Allows you to set, change or delete the system password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
SATA	<p>Allows you to set, change, or delete the SATA password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
Strong Password	Allows you to enforce the option to always set strong passwords.

Option	<p>Description</p> <p>Default Setting: Enable Strong Password is not selected.</p> <p>NOTE: If Strong Password is enabled, Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least 8 characters long.</p>
Password Configuration	Allows you to determine the minimum and maximum length of Administrator and System passwords.
Password Bypass	<p>Allows you to enable or disable the permission to bypass the System and the Internal HDD password, when they are set. The options are:</p> <ul style="list-style-type: none"> • Disabled • Reboot bypass <p>Default setting: Disabled</p>
Password Changes	<p>Allows you to enable the disable permission to the System and Hard Drive passwords when the admin password is set.</p> <p>Default setting: Enable Non-Admin Password Changes is selected.</p>
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password. The option "Allow Wireless Switch changes" is disabled by default
UEFI Capsule Firmware Updates	<p>Allows you to control whether this system allows BIOS updates via UEFI capsule update packages.</p> <ul style="list-style-type: none"> • Enable UEFI Capsule Firmware Updates (enabled by default)
Computrace	<p>Allows you to activate or disable the optional Computrace software The options are:</p> <ul style="list-style-type: none"> • Deactivate computrace • Disable computrace • Activate computrace <p>NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed</p>
Enable Admin Setup Lockout	<p>Allows you to prevent users from entering Setup when an Administrator password is set.</p> <p>Default Setting: Disabled</p>

Secure Boot screen options


Option	Description
Secure Boot	The option Enable Secure Boot is selected by default.
Expert Key Management	<p>Allows you to manipulate the security key databases only if the system is in Custom Mode. The Enable Custom Mode option is disabled by default. The options are:</p> <ul style="list-style-type: none"> • PK • KEK (default) • db (default) • dbx (default) <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p>


Option	Description
	<ul style="list-style-type: none"> • Save to File—Saves the key to a user-selected file • Replace from File—Replaces the current key with a key from a user-selected file • Append from File—Adds a key to the current database from a user-selected file • Delete—Deletes the selected key • Reset All Keys—Resets to default setting • Delete All Keys—Deletes all the keys
	<p> NOTE: If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.</p>

Performance screen options

Option	Description
C-States support	<p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> • Enable C-State control <p>Default setting: The option is enabled.</p>
AMD Turbo Core Technology	<p>Allows you to enable or disable the AMD Turbo Core Technology.</p> <ul style="list-style-type: none"> • Enable AMD Turbo Core Technology <p>Default setting: The option is enabled.</p>



Power Management screen options

Option	Description
AC Behavior	<p>Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected.</p> <p>Default setting: Wake on AC is not selected.</p>
Auto On Time	<p>Allows you to set the time at which the computer must turn on automatically. The options are:</p> <ul style="list-style-type: none"> • Disabled • Every Day • Weekdays • Select Days <p>Default setting: Disabled</p>
USB Wake Support	<p>Allows you to enable USB devices to wake the system from Standby.</p> <p> NOTE: This feature is only functional when the AC power adapter is connected. If the AC power adapter is removed during Standby, the system setup removes power from all the USB ports to conserve battery power.</p> <ul style="list-style-type: none"> • Enable USB Wake Support (default) • Wake on Dell USB-C Dock (default)
Wireless Radio Control	<p>Allows you to enable or disable the feature that automatically switches from wired or wireless networks without depending on the physical connection.</p>

Option	Description <ul style="list-style-type: none"> Control WLAN Radio Control WWAN Radio <p>Default setting: The options are disabled.</p>
Wake on LAN/WLAN	<p>Allows you to enable or disable the feature that powers on the computer from the Off state when triggered by a LAN signal.</p> <ul style="list-style-type: none"> Disabled LAN Only WLAN Only LAN or WLAN LAN with PXE Boot <p>Default setting: Disabled</p>
Block Sleep	<p>This option lets you block entering to sleep in operating system environment.</p> <p>Block Sleep</p> <p>Default setting: This option is disabled</p>
Peak Shift	<p>The <i>Enable Peak Shift</i> option enables you to minimize the AC power consumption during the peak power times of day. After you enable this option, your system runs only in battery even if the AC is attached.</p>
Advanced Battery Charge Configuration	<p>The <i>Enable Advanced Battery Charge Configuration</i> option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health.</p> <p>Disabled</p> <p>Default setting: Disabled</p>
Primary Battery Charge Configuration	<p>Allows you to select the charging mode for the battery. The options are:</p> <ul style="list-style-type: none"> Adaptive (default) Standard — Fully charges your battery at a standard rate. ExpressCharge — The battery charges over a shorter period of time using Dell's fast charging technology. This option is enabled by default. Primarily AC use Custom <p>If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop.</p> <p> NOTE: All charging mode may not be available for all the batteries. To enable this option, disable the Advanced Battery Charge Configuration option.</p>

POST Behavior screen options


Option	Description
Adapter Warnings	<p>Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters.</p> <p>Default setting: Enable Adapter Warnings</p>

Option	Description
Keypad (Embedded)	<p>Allows you to choose one of two methods to enable the keypad that is embedded in the internal keyboard.</p> <ul style="list-style-type: none"> • Fn Key Only: This option is enabled by default. • By Numlock <p> NOTE: When setup is running, this option has no effect. Setup works in Fn Key Only mode.</p>
Numlock Enable	<p>Allows you to enable the Numlock option when the computer boots.</p> <p>Enable Numlock. This option is enabled by default.</p>
Fn Lock Options	<p>Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. The available options are:</p> <ul style="list-style-type: none"> • Fn Lock (default) • Lock Mode Disable/Standard (default) • Lock Mode Enable/Secondary
Fastboot	<p>Allows you to speed up the boot process by bypassing some of the compatibility steps. The options are:</p> <ul style="list-style-type: none"> • Minimal (default) • Thorough • Auto
Extended BIOS POST Time	<p>Allows you to create an additional preboot delay. The options are:</p> <ul style="list-style-type: none"> • 0 seconds. This option is enabled by default. • 5 seconds • 10 seconds
Full Screen Logo	<p>This option will display full screen logo if your image match screen resolution</p> <ul style="list-style-type: none"> • Full Screen Logo
Warnings and Error	<p>This option will cause the boot process to only pause when warnings or errors are detected.</p> <ul style="list-style-type: none"> • Prompt on Warnings and Errors This option is enabled by default. • Continue on Warnings • Continue on Warnings and Errors <p> NOTE: Error deemed critical to the operation of the system hardware will always halt the system.</p>
Mouse/Touchpad	<p>Options:</p> <ul style="list-style-type: none"> • Serial Mouse • PS/2 Mouse • Touchpad and PS/2 Mouse (default)
Sign of Life	<p>The option Early Keyboard Backlight is selected by default.</p>

Virtualization support screen options

Option	Description
AMD-V Technology	The option Enable AMD-V Technology is selected by default.
AMD-Vi Technology	The option Enable AMD-Vi Technology is selected by default.

Wireless screen options

Option	Description
Wireless Switch	<p>Allows to set the wireless devices that can be controlled by the wireless switch. The options are:</p> <ul style="list-style-type: none">• WWAN• GPS on WWAN Module• WLAN• Bluetooth <p>All the options are enabled by default.</p> <p> NOTE: For WLAN and WiGig enable or disable controls are tied together and they cannot be enabled or disabled independently.</p>
Wireless Device Enable	<p>Allows you to enable or disable the internal wireless devices.</p> <ul style="list-style-type: none">• WWAN/GPS• WLAN• Bluetooth <p>All the options are enabled by default.</p>

Maintenance screen options

Option	Description
Service Tag	Displays the Service Tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	<p>This controls flashing of the system firmware to previous revisions.</p> <ul style="list-style-type: none">• Allows BIOS Downgrade (enabled by default)
Data Wipe	This field allows users to erase the data securely from all internal storage devices. The following is list of devices affected. The option Start Data wipe is not selected by default.
BIOS Recovery	<p>This field allows you to recover from certain corrupted BIOS conditions from a recover file on the user primary hard drive or an external USB key.</p> <ul style="list-style-type: none">• BIOS Recovery from Hard Drive (enabled by default)• BIOS Auto-Recovery• Always perform Integrity Check

Updating the BIOS in Windows

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

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

- 1 Restart the computer.
- 2 Go to **Dell.com/support**.
 - Enter the **Service Tag** or **Express Service Code** and click **Submit**.
 - Click **Detect Product** and follow the instructions on screen.
- 3 If you are unable to detect or find the Service Tag, click **Choose from all products**.
- 4 Choose the **Products** category from the list.

NOTE: Choose the appropriate category to reach the product page

- 5 Select your computer model and the **Product Support** page of your computer appears.
- 6 Click **Get drivers** and click **Drivers and Downloads**.
The Drivers and Downloads section opens.
- 7 Click **Find it myself**.
- 8 Click **BIOS** to view the BIOS versions.
- 9 Identify the latest BIOS file and click **Download**.
- 10 Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.
- 11 Click **Save** to save the file on your computer.
- 12 Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

Updating your system BIOS using a USB flash drive

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

NOTE: You will need to use a bootable USB Flash drive. Please refer to the following article for further details: <http://www.dell.com/support/article/sln143196>

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

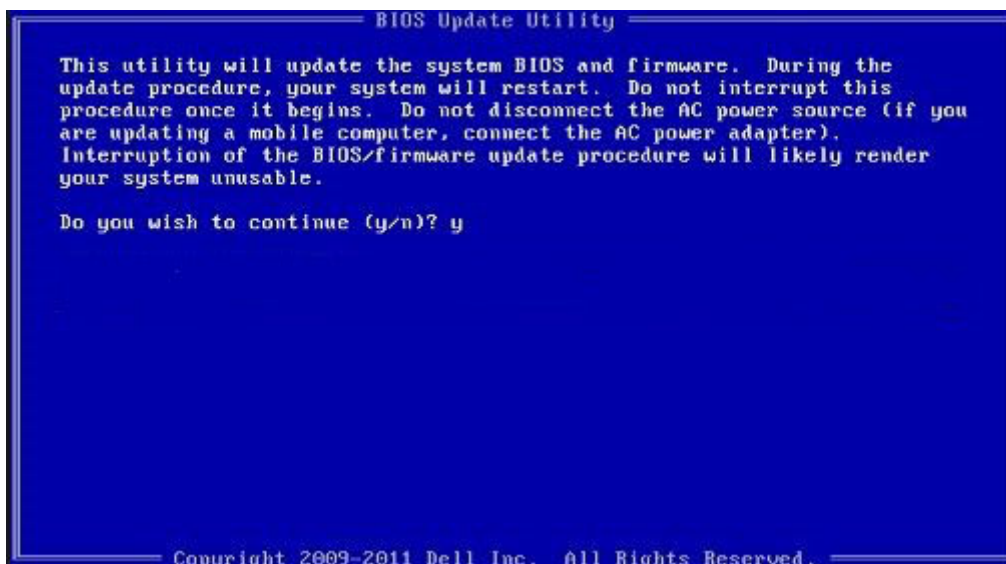


Figure 7. DOS BIOS Update Screen

System and setup password

Table 12. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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

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

CAUTION: Anyone can access the data stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system setup password

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

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


- In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
- Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (,), (-), (.), (/), (:), ([), (\), (]), (`).

- 3 Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
- 4 Press Esc and a message prompts you to save the changes.
- 5 Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system setup password

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

- 1 In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
- 2 In the **System Security** screen, verify that **Password Status** is **Unlocked**.
- 3 Select **System Password**, alter or delete the existing system password and press Enter or Tab.
- 4 Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

 **NOTE:** If you change the System and/or Setup password, re-enter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

- 5 Press Esc and a message prompts you to save the changes.
- 6 Press Y to save the changes and exit from System Setup.
The computer reboot.

Troubleshooting

Dell Enhanced Pre-Boot System Assessment — ePSA Diagnostic 3.0

You can invoke the ePSA diagnostics by either of the following ways :

- Press the F12 key when the system posts and choose **ePSA or Diagnostics** option on One Time Boot Menu.
- Press and hold Fn(Function key on keyboard) and **Power On** (PWR) the system.

Running the ePSA Diagnostics

Invoke diagnostics boot by either of the methods that are suggested below:

- 1 Power on the computer.
- 2 As the computer boots, press the F12 key when the Dell logo is displayed.
- 3 In the boot menu screen, use Up/Down arrow key to select the **Diagnostics** option and then press **Enter**.

NOTE: The Enhanced Pre-boot System Assessment window displays, listing all devices detected in the computer. The diagnostics starts running the tests on all the detected devices.

- 4 Press the arrow in the lower-right corner to go to the page listing.
The detected items are listed and tested.
- 5 To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
- 6 Select the device from the left pane and click **Run Tests**.
- 7 If there are any issues, error codes are displayed.
Note the error code and contact Dell.
or
- 8 Shut down the computer.
- 9 Press and hold the Fn key, while pressing the power button, and then release both.
- 10 Repeat steps 3–7 above.

Real Time Clock reset

The Real Time Clock (RTC) reset function allows you to recover your Dell system from **No POST/No Boot/No Power** situations. To initiate the RTC reset on the system make sure system is in a power-off state and is connected to power source . Press and hold the power button for 25 seconds and then release the power button. Go to [how to reset real time clock](#).

NOTE: If AC power is disconnected from the system during the process or the power button is held longer than 40 seconds, the RTC reset process is aborted.

The RTC reset will reset the BIOS to Defaults, un-provision Intel vPro and reset the system date and time. The following items are unaffected by the RTC reset:

- Service Tag
- Asset Tag
- Ownership Tag

- Admin Password
- System Password
- HDD Password
- TPM on and Active
- Key Databases
- System Logs

The following items may or may not reset based on your custom BIOS setting selections:

- The Boot List
- Enable Legacy OROMs
- Secure Boot Enable
- Allow BIOS Downgrade