

Latitude 3190

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

Safety instructions


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


 **WARNING:** Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.


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

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

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

 **CAUTION:** You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that is shipped with the product or at www.dell.com/regulatory_compliance.

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

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

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

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

 **NOTE:** The color of your computer and certain components may appear differently than shown in this document.

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.

Entering Service Mode

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

To enter **Service Mode**:

1. Shut down your computer and disconnect the AC adapter.
2. Hold **** key on the keyboard and press the power button for 3 seconds or until the Dell logo appears on the screen.
3. Press any key to continue.



NOTE: If the power adapter has not been disconnected, a message prompting you to remove the AC adapter appears on the screen. Remove the AC adapter and then press any key to continue the **Service Mode** procedure.



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

4. When the ready-to-proceed message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.

Once the computer shuts down, you may perform the replacement procedures without disconnecting the battery cable from the system board.

Exiting Service Mode

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

To exit **Service Mode**:

1. Connect the AC adapter to the power-adapter port on your computer.
2. Press the power button to turn on the computer. Your computer will automatically return to normal functioning mode.

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.

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.

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.


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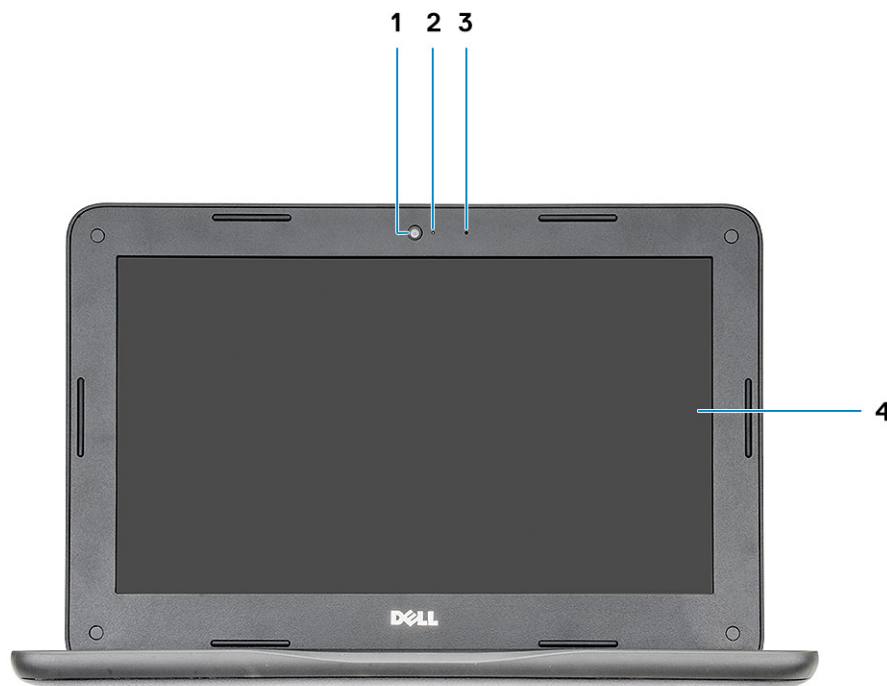
3. Connect your computer and all attached devices to their electrical outlets.
4. Turn on your computer.

Chassis view

Topics:

- Front open view
- Left view
- Right view
- Palm rest view
- Bottom view
- Major components of your system

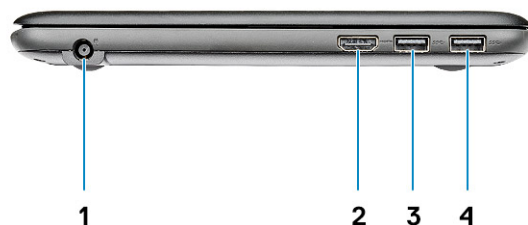
Front open view



1. Camera
2. Camera status light
3. Microphone

4. Display

Left view



- 1. Power connector port
- 3. USB 3.1 Gen 1 port

- 2. HDMI port
- 4. USB 3.1 Gen 1 port

Right view



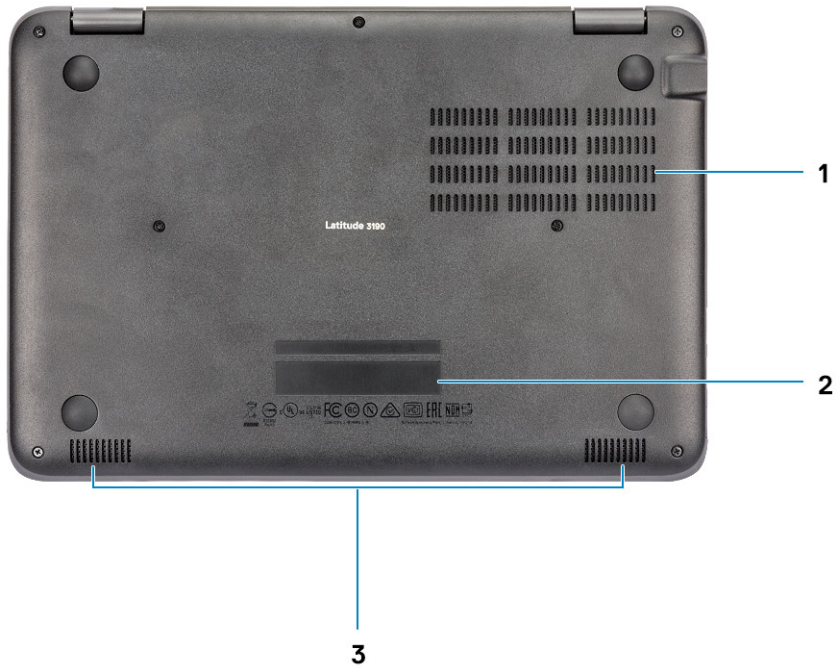
- 1. Universal audio jack
- 2. Battery status light
- 3. Noble wedge lock slot

Palm rest view



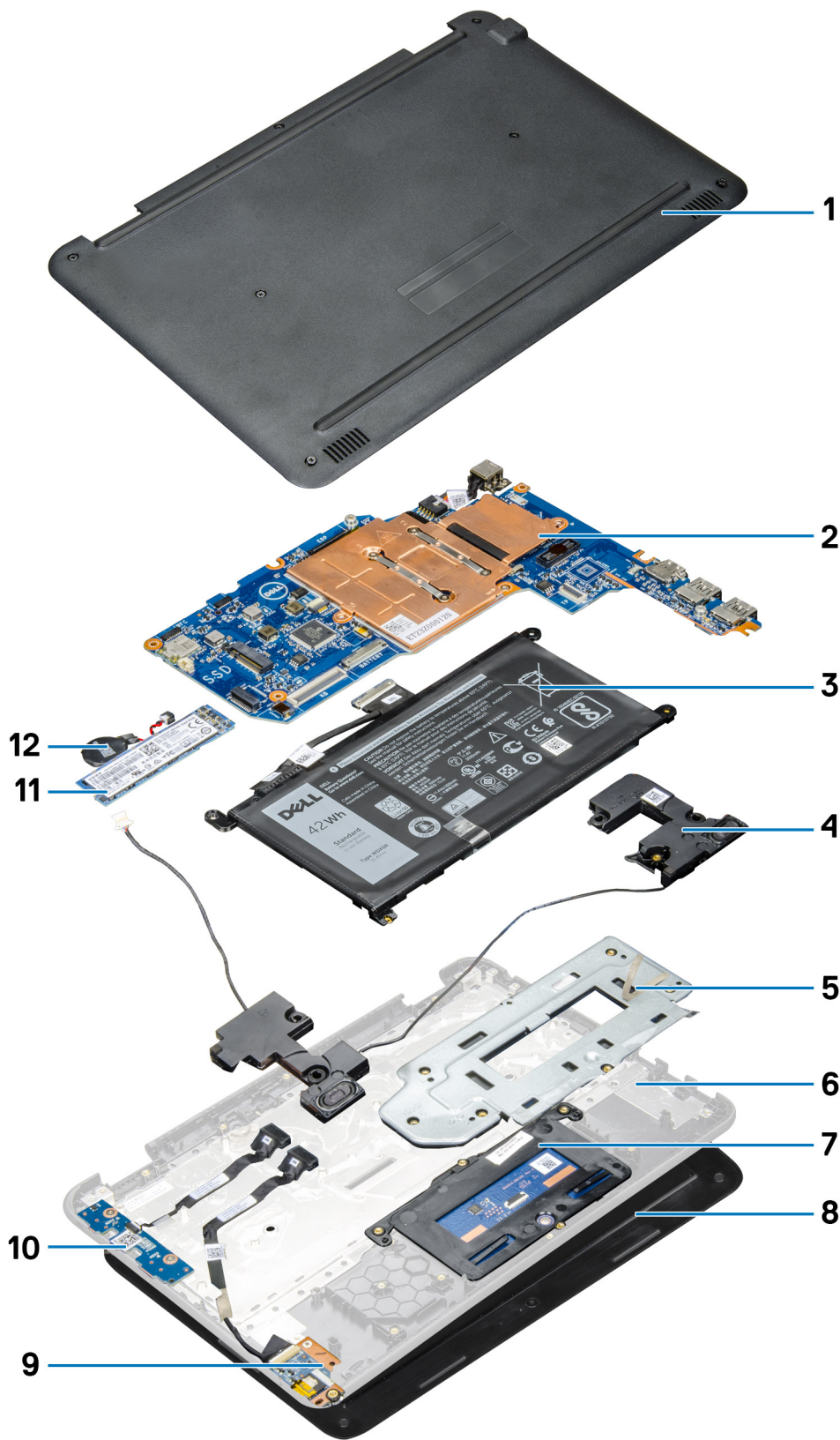
1. Power button/power status light
2. keyboard
3. Touchpad

Bottom view




1. Air vents
2. Service tag location
3. Speakers

Major components of your system



1. Base cover

2. System board
3. Battery
4. Speakers
5. Touchpad metal bracket
6. Palmrest
7. Touchpad
8. Display assembly
9. Audio board
10. Power switch board
11. M.2 Solid State Drive
12. Coin cell

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

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:

- Processor
- Memory
- Storage
- Operating system
- Audio specifications
- Video
- Camera
- Communications
- Ports and connectors
- Display
- Keyboard
- Touchpad
- Battery
- Power adapter
- Dimensions and weight
- Environmental specifications
- Support policy

Processor

Global Standard Products (GSP) are a subset of Dell's relationship products that are managed for availability and synchronized transitions on a worldwide basis. They ensure the same platform is available for purchase globally. This allows customers to reduce the number of configurations managed on a worldwide basis, thereby reducing their costs. They also enable companies to implement global IT standards by locking in specific product configurations worldwide. The following GSP processors identified below will be made available to Dell customers.

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

Table 1. Processor specifications

Type	UMA Graphics
Intel Pentium Processor N5000 (6W, 4M cache, up to 2.7 GHz)	Intel HD Graphics 605
Intel Celeron Processor N4100 (6W, 4M cache, up to 2.4 GHz)	Intel HD Graphics 600

Memory

Table 2. Memory specifications

Features	Specifications
Minimum memory configuration	4 GB
Maximum memory configuration	8 GB
Type	DDR4 (on-board memory)
Speed	2400 MHz

Storage

Table 3. Storage specifications

Primary/Boot drive	Secondary drive	Interface	Security option	Capacity
M.2 SSD		SATA	YES	Up to 256 GB
eMMC	M.2 2230	MMC	YES	64 GB

Operating system

Your Latitude 3190 supports the following operating systems:

- Windows 10 Pro, 64-bit

Audio specifications

Feature	Specification
Types	High-definition audio
Controller	Realtek ALC3246
Stereo conversion	Digital audio-out through HDMI—up to 7.1 compressed and uncompressed audio
Internal interface	High-definition audio codec
External interface	Stereo headset/mic combo
Speakers	Two
Internal speaker amplifier	2 W (RMS) per channel
Volume controls	Hot keys

Video

Table 4. Video

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel UHD Graphics 605	UMA	Pentium N5000	Integrated	Shared system memory(Upto 8 GB)	HDMI 1.4 eDP(Internal)	HDMI 1.4 (UMA): 4096x2160 @ 30 Hz
Intel UHD Graphics 600	UMA	Celeron N4100	Integrated	Shared system memory(Upto 8 GB)	HDMI 1.4 eDP(Internal)	HDMI 1.4 (UMA): 4096x2160 @ 30 Hz

Camera

Table 5. Camera specifications

Features	Specifications
Resolution	Camera: <ul style="list-style-type: none">Still image: 1 megapixelsVideo: 1280x720 at 30 fps
Diagonal viewing angle	74 degrees

Communications

Table 6. Communications

Features	Specifications
Network adapter	Intel Dual Band Wireless-AC 8265 802.11AC 2x2 Wi-Fi + BT 4.2 LE Solder Down Card

Ports and connectors

Table 7. Ports and connectors

Features	Specifications
USB	Two USB 3.1 Gen 1
Security	Noble wedge lock slot
Audio	<ul style="list-style-type: none">Universal audio jackNoise reduction array microphones
Video	HDMI 1.4

Display

Table 8. Display specifications

Display specification	
Type	HD Anti Glare, non touch
Height (Active area)	5.67 inch (144 mm)
Width (Active area)	10.08 inch (256.12 mm)
Diagonal	11.6 inch (294.64 mm)
Diagonal	HD 1366 x 768
Luminance/Brightness (typical)	HD 220 nits
Refresh rate	60 Hz
Horizontal viewing angle (min)	+40/-40 degrees
Vertical viewing angle (min)	+10/-30 degrees

Keyboard

Table 9. Keyboard specifications

Features	Specifications
Number of keys	<ul style="list-style-type: none">• 82 (US)• 83 (Europe)• 84(Brazil)• 86 (Japan)
Size	Full sized <ul style="list-style-type: none">• X= 19.05 mm key pitch• Y= 18.05 mm key pitch
Backlit keyboard	NA
Layout	QWERTY/AZERTY/Kanji

Touchpad

The following table lists the touchpad specifications of your Latitude 3190.

Table 10. Touchpad specifications

Description		Values
Touchpad resolution:		
	Horizontal	1221
	Vertical	661
Touchpad dimensions:		

Table 10. Touchpad specifications (continued)

Description		Values
	Horizontal	3.93 inch (100 mm)
	Vertical	2.16 inch (55 mm)
Touchpad gestures		For more information about touchpad gestures available on Windows, see the Microsoft knowledge base article 4027871 at support.microsoft.com .

Battery

Table 11. Battery Specifications

Features	Specifications
Type	42 WHr, 3 Cell, Li-ion/Polymer, ExpressCharge Capable Battery
Dimension	<ul style="list-style-type: none"> Length: 184 mm (7.24 inches) Width: 97 mm (3.82 inches) Height: 5.9 mm (0.232 inches)
Weight (maximum)	0.185 kg (0.4 lb)
Voltage	11.4 VDC
Life span	300 discharge/recharge cycles(Standard) and 1000discharge/recharge cycles(Long cycle)
Charging time when the computer is off (approximate)	2-4 hours
Operating time	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions
Temperature range: Operating	<ul style="list-style-type: none"> Charge: 0 °C to 35 °C (32 °F to 95 °F) Discharge: - 40 °C to 65 °C (- 40 °F to 149 °F)
Temperature range: Storage	-40 °C to 65 °C (-4 °F to 149 °F)
Coin-cell battery	ML1220

Power adapter

Table 12. Power adapter specifications

Features	Specifications
Type	65 W adapter
Input Voltage	100 to 240 VAC
Input current (maximum)	65 W - 1.7 A
Adapter size	7.4 mm Barrel Type
Input frequency	50 Hz to 60 Hz

Table 12. Power adapter specifications (continued)

Features	Specifications
Output current	3.34 A (continuous)
Rated output voltage	19.5 VDC
Temperature range (Operating)	0 °C to 40 °C (32 °F to 104 °F)
Temperature range (Non-Operating)	-40° to 70° C (-40° to 158° F)

Dimensions and weight

Table 13. Dimensions and weight

Dimensions	Vectors
Height	<ul style="list-style-type: none"> Front height - 0.817 inch (20.75 mm) Back height - 0.817 inch (20.75 mm)
Width	11.94 inch (303.3 mm)
Depth	8.11 inch (206 mm)
Weight	Starting 2.79 lbs (1.27 kg)

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 Specifications

(maximum)

Operating 10 % to 90 % (non condensing)

Storage 5 % to 95 % (non condensing)

Altitude Specifications

(maximum)

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

Support policy

For more information on support policy, see the knowledge base articles [000181418](#), [000043920](#) and [000046323](#).

Disassembly and reassembly


Topics:

- Recommended tools
- Screw size list
- Base cover
- Battery
- Solid State Drive
- Keyboard lattice and Keyboard
- Audio board
- Power connector port
- Coin-cell battery
- Speaker
- Touchpad
- System board
- Display assembly
- Display bezel
- Display panel
- Camera
- Display hinges
- Palm rest

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 size list

Table 14. Screw size list













Component	M2.5x7 	M2x3 	M2.5x 2.5 Big Head 	M2X2 Big Head 	M2.5x5 	M2.5X3.5 
Base cover	7					
Battery		3				
System board		5				
M.2 SSD card		1				
Audio board		1				
Power connector port		2				


Table 14. Screw size list (continued)

Component	M2.5x7 	M2x3 	M2.5x 2.5 Big Head 	M2X2 Big Head 	M2.5x5 	M2.5X3.5 
Touchpad		1		5		
Display cable bracket		2				
IO bracket		2				
WLAN bracket		1				
Display assembly					5	
Display panel		4				
Display hinges			4			
Display bezel						4

Base cover

Removing base cover

- Follow the procedure in [Before working inside your computer](#).
- To remove the base cover:
 - Loosen the 7 M2.5x7 captive screws that secure the base cover to the computer [1] .
 - Pry the base cover from the recesses at the top edges and continue throughout the system [2].

 **NOTE:** Use a plastic scribe to pry the base cover from the recesses at the top edges.



3. Lift the base cover away from the computer.



Installing base cover

1. Place the base cover to align with the screw holders on the system.
2. Press the edges of the cover until it clicks into place.

3. Replace the 7 M2.5x7 screws to secure the base cover to the computer.
4. Follow the procedure in [After working inside your computer](#).

Battery

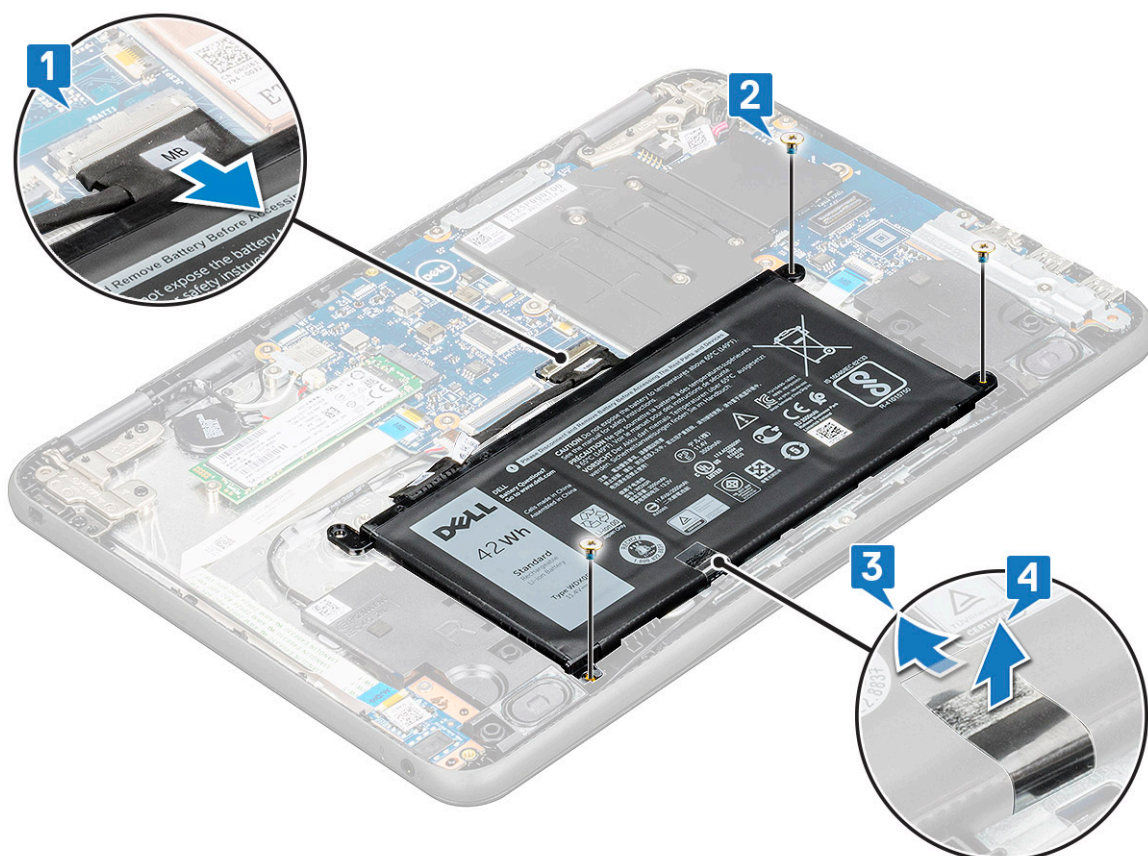
Lithium-ion battery precautions

CAUTION:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any kind to pry on or against the battery.
- Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.
- If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.
- Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.
- Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen Lithium-ion batteries, see [Handling swollen Lithium-ion batteries](#).

Removing battery

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
3. To remove the battery:
 - a. Disconnect the battery cable from the connector on the system board [1].
 - b. Remove the three M2x3 screws that secure the battery to the computer [2].
 - c. Peel off the adhesive tape that secures the battery to the system [3].
 - d. slightly hold the tape and lift the battery to release it from the adhesive beneath it [4].



- e. Lift the battery from the computer.



Installing battery

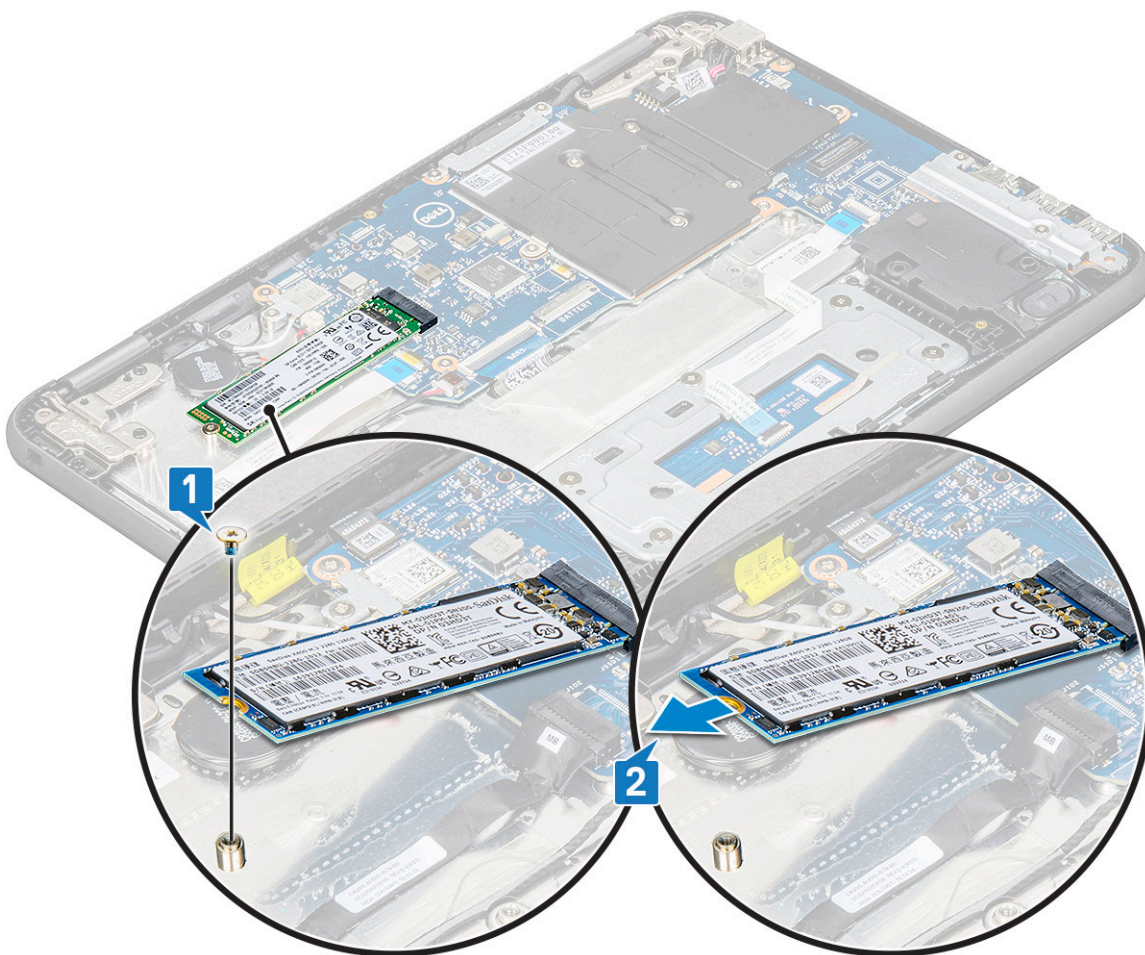
1. Insert the battery into the slot on the computer.

2. Affix the adhesive tapes to secure the battery to the system.
3. Connect the battery cable to the connector on the battery.
4. Replace the three M2x3 screws to secure the battery to the computer.
5. Install the:
 - a. [base cover](#)
6. Follow the procedure in [After working inside your computer](#).

Solid State Drive

Removing M.2 Solid State Drive

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
3. To remove the SSD:
 - a. Remove the M2x3 screw that secures the SSD card [1].
The SSD pops up.
 - b. Slide and lift the SSD card from the system board [2].



Installing M.2 Solid State Drive

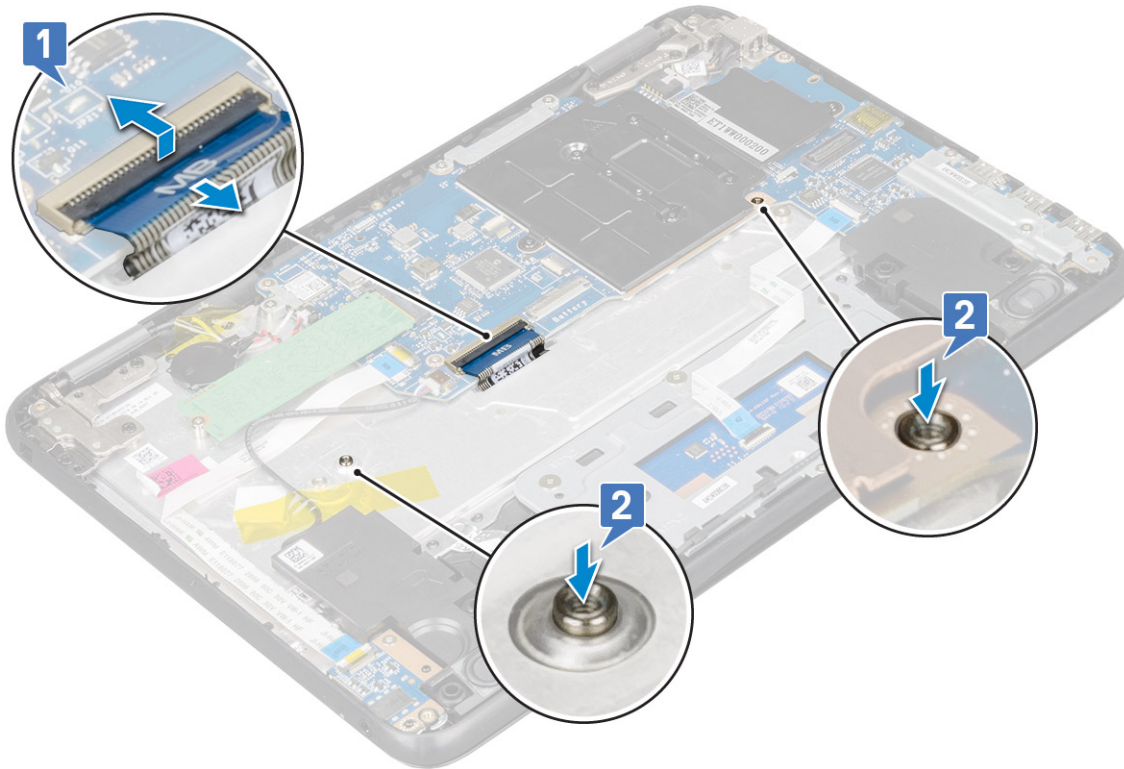
1. Align the notch on the SSD card with the tab on the SSD card connector and slide the card into the slot.

2. Align the screw hole on the SSD card with the screw hole on the system board.
3. Replace the M2x3 screw that secures the SSD card to the system board.
4. Install the:
 - a. [battery](#)
 - b. [base cover](#)
5. Follow the procedure in [After working inside your computer](#).

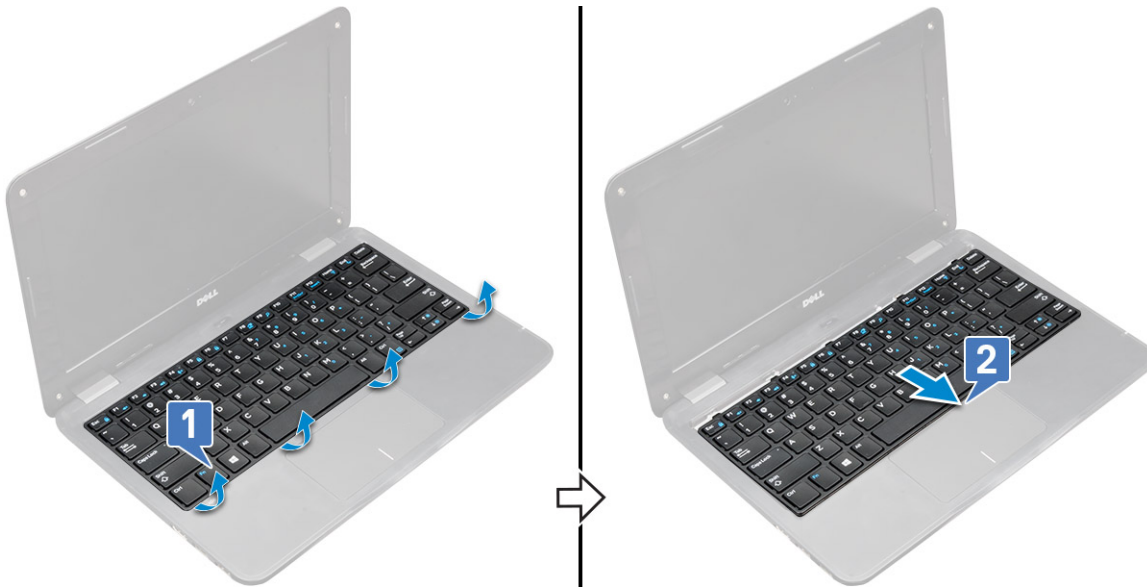
Keyboard lattice and Keyboard

Removing keyboard

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
3. Disconnect the keyboard cable from the connector on the system board [1].
4. Hold the sides of the palm rest securely while pushing into the two release holes using a plastic scribe or screwdriver [2].



5. Pry the bottom of the keyboard using a plastic scribe to release the keyboard [1] and slide the keyboard outwards to remove it [2].



Installing keyboard

- NOTE:** Insert the keyboard connector through the gap in the palm rest.
- NOTE:** When installing the keyboard of Latitude 3190 the keyboard FPC must be inserted through the gap carefully at the top side of the palm rest before securing the keyboard onto the system. Improper reassembly of the keyboard FPC before replacing the keyboard results in inability to connect the keyboard FPC to the system board or damage to the FPC.

1. Align the keyboard trim with the tabs on the computer, and press it until it clicks into place.
The image shows the press points on the



keyboard.

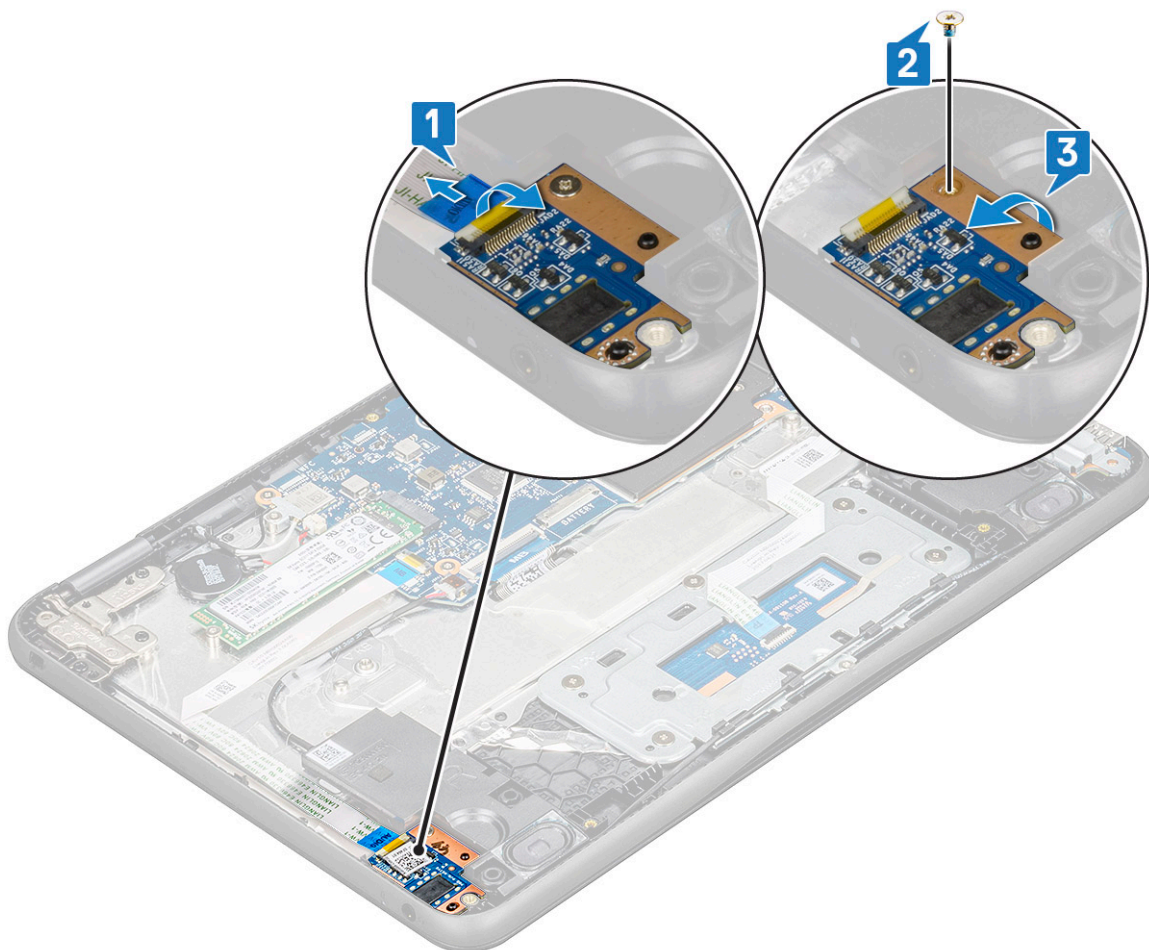
2. Connect the keyboard cable on the system board.
3. Install the:
 - a. [battery](#)

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

Audio board

Removing audio board

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
3. To remove the audio board:
 - a. Lift the latch and disconnect the audio cable from the connector on the audio board [1].
 - b. Remove the M2x3 screw that secures the audio board to the system [2].
 - c. Slide and lift the audio board from the system [3].



Installing audio board

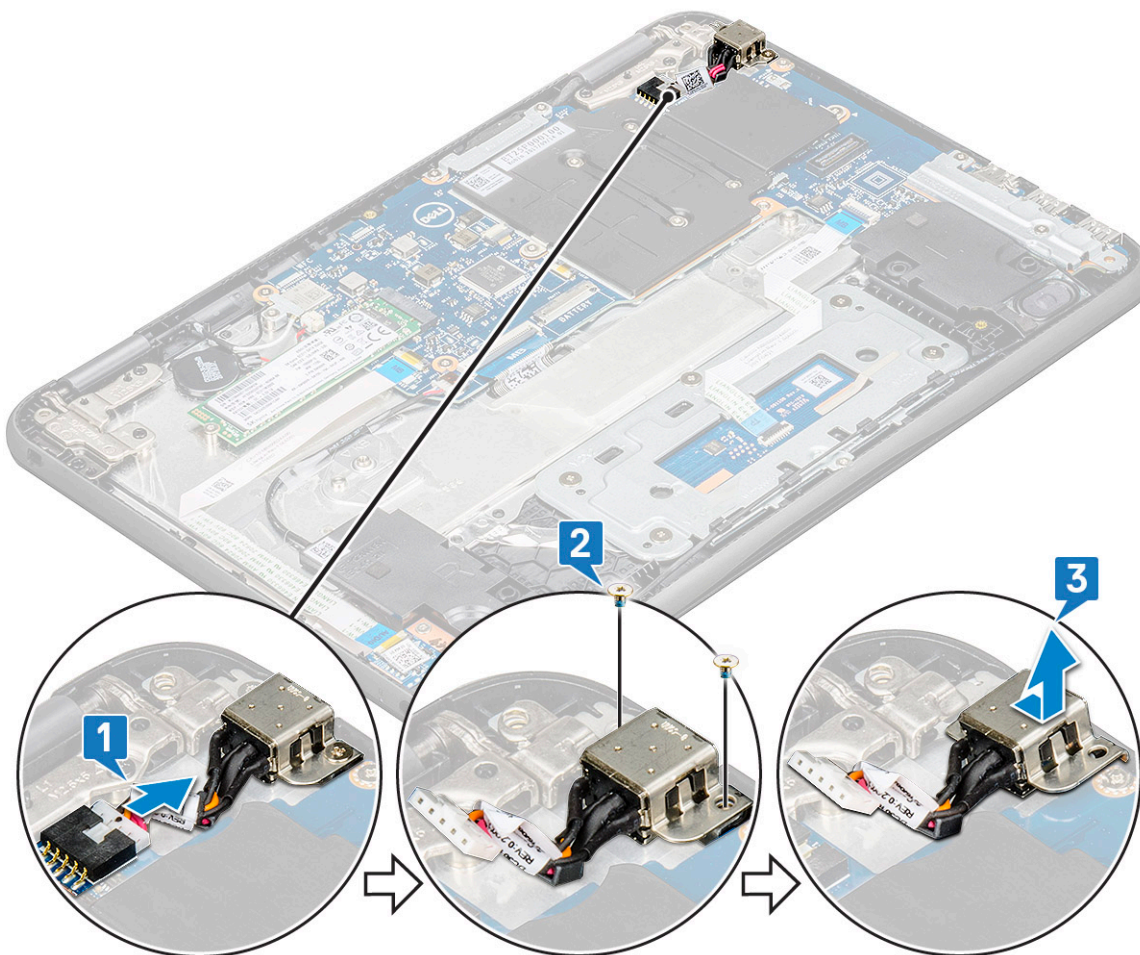
1. Insert the audio board into the slot on the computer.
2. Replace the M2x3 screw that secure the audio board to the computer.
3. Connect the audio cable to the connector on the audio board.
4. Install the:
 - a. [battery](#)

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

Power connector port

Removing 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. Disconnect the power connector cable from the connector on the system board [1].
 - b. Remove the two M2x3 screws that secure the power connector port on the computer [2].
 - c. Slide and lift the power connector port from the computer [3].



Installing power connector port

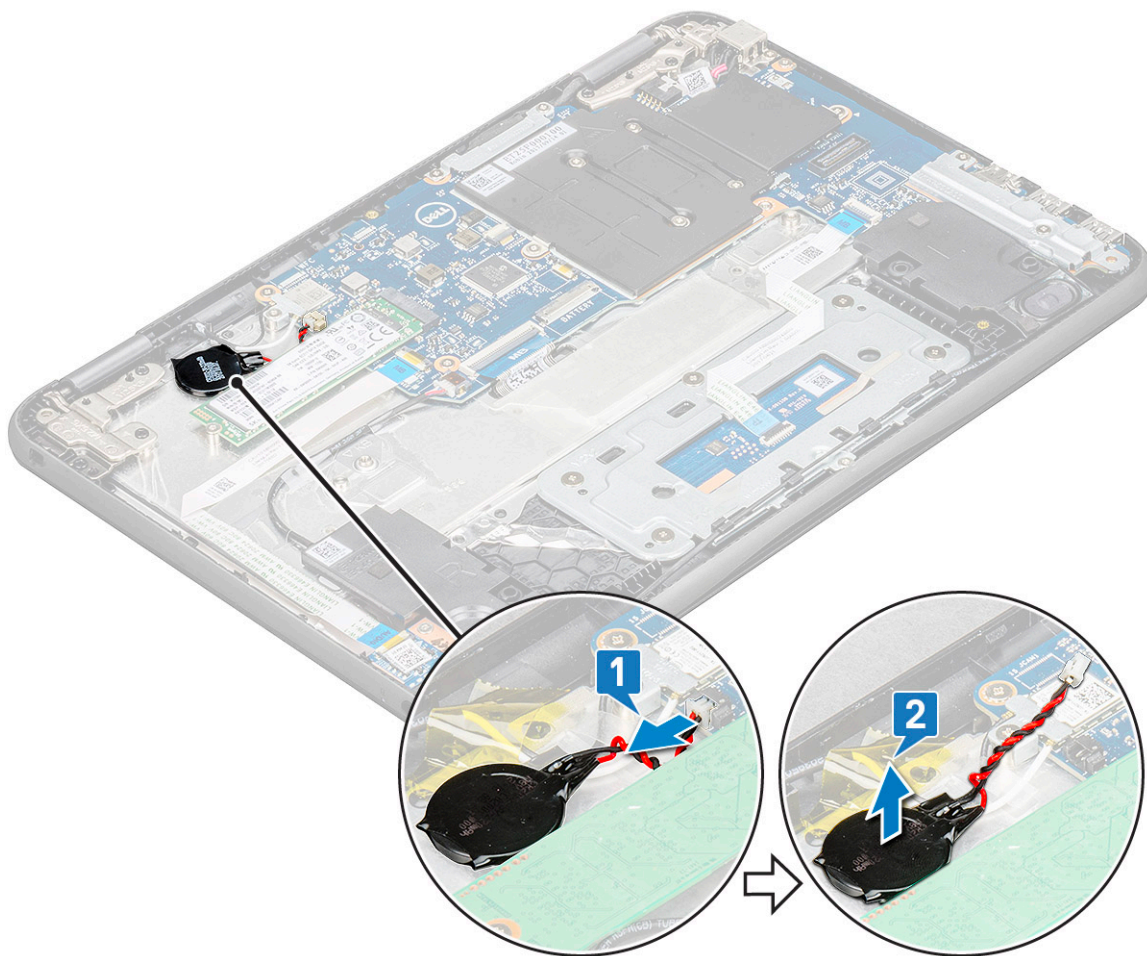
1. Insert the power connector port into the slot on the computer.
2. Replace the two M2x3 screws that secure the power connector port to the computer.
3. Connect the power connector cable to the connector on the system board.
4. Install the:
 - a. [battery](#)

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

Coin-cell battery

Removing 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. Pry the coin cell battery to release it from the adhesive and lift it from the computer [2].



Installing coin cell battery

1. Place the coin cell battery into the slot on the computer.
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](#).

Speaker

Removing speakers

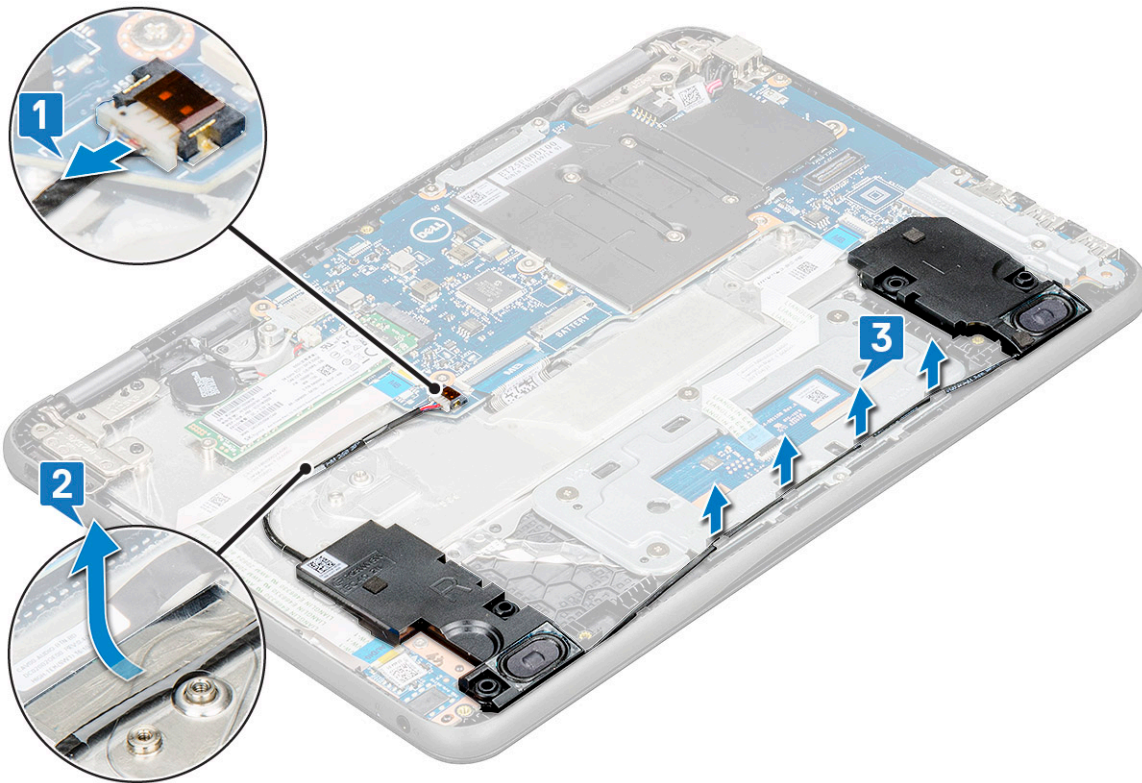
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
3. To remove the speaker:

i NOTE: When removing the speaker, the audio daughter board FFC must be disconnected from the system board and then peeled back from the palm rest to unpeel the pieces of clear tape.

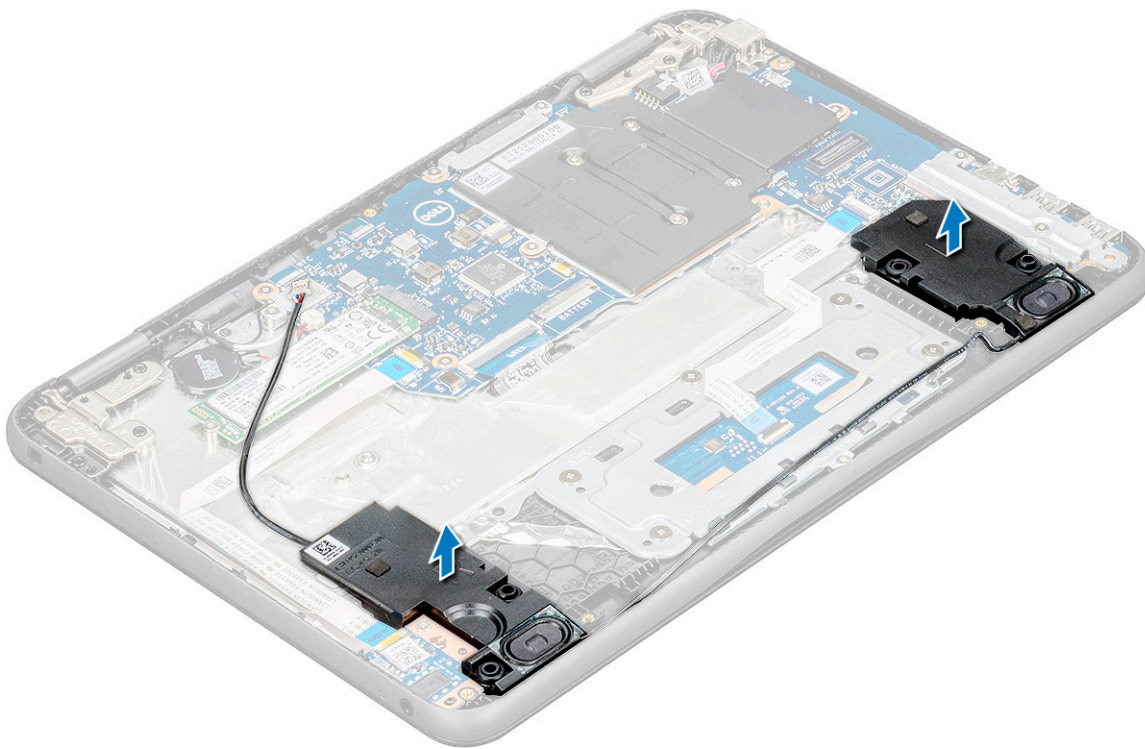
 - a. Disconnect the speaker cable from the connector on the system board [1].
 - b. Remove the adhesive tapes that secure the speaker cable to the computer [2].

i NOTE: Use plastic scribe and your hands to remove the adhesive tapes.

 - c. Unroute the speaker cable from the routing channel [3].



4. Lift the speakers from the computer.



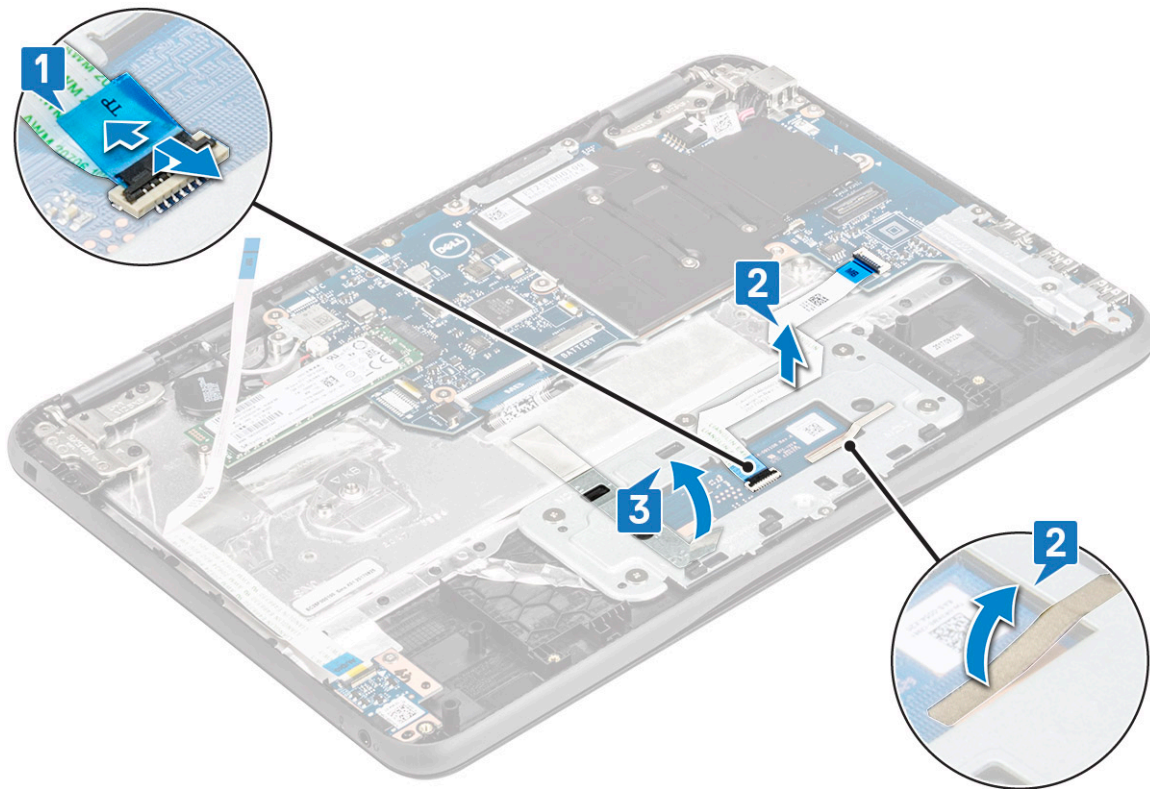
Installing speakers

1. Place the speakers into the slots on the computer.
2. Route the speaker cable through the retention clips through routing channel.
3. Affix the adhesive tape to secure the speaker cable on the computer.
4. Connect the speaker cable to the connector on the system board.
5. Install the:
 - a. [battery](#)
 - b. [base cover](#)
6. Follow the procedure in [After working inside your computer](#).

Touchpad

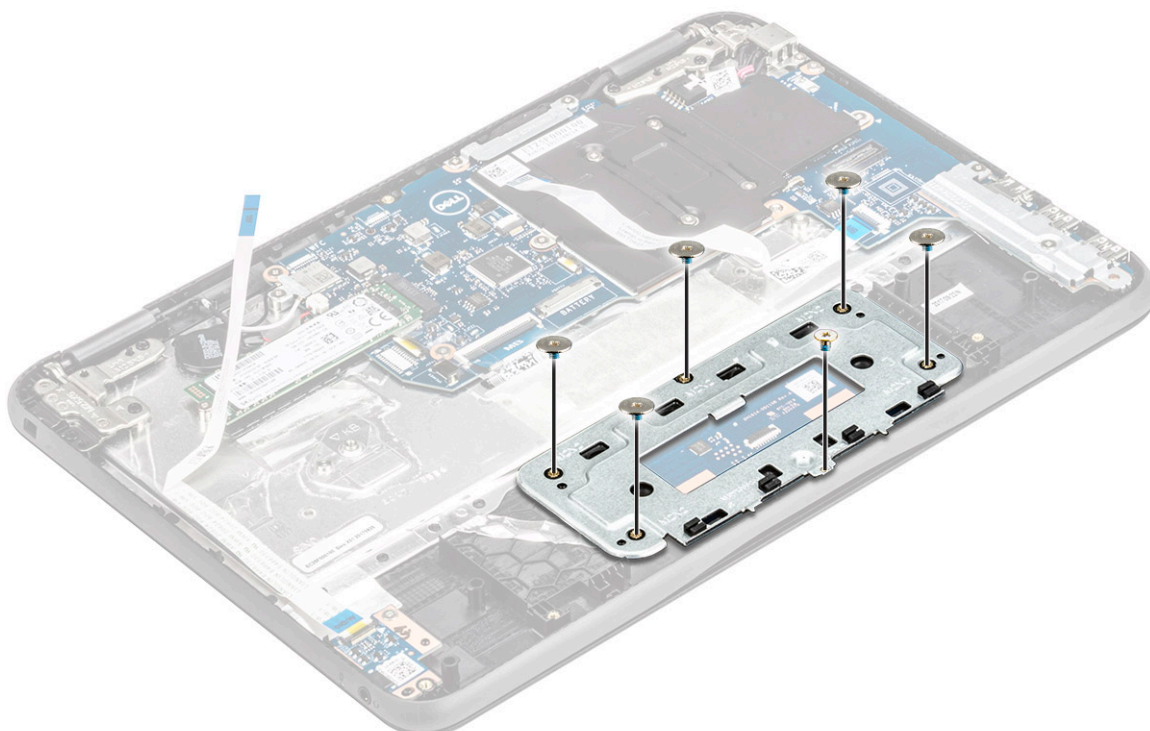
Removing touchpad

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
 - c. [speaker](#)
3. To remove the touchpad cable:
 - a. Lift the latch, and disconnect the touchpad cable from the connector on the touchpad [1].
 - b. Peel off the adhesive-backed cable to release it from the touchpad [2].
 - c. Remove the adhesive tape that secures the touchpad bracket to the touchpad [3].

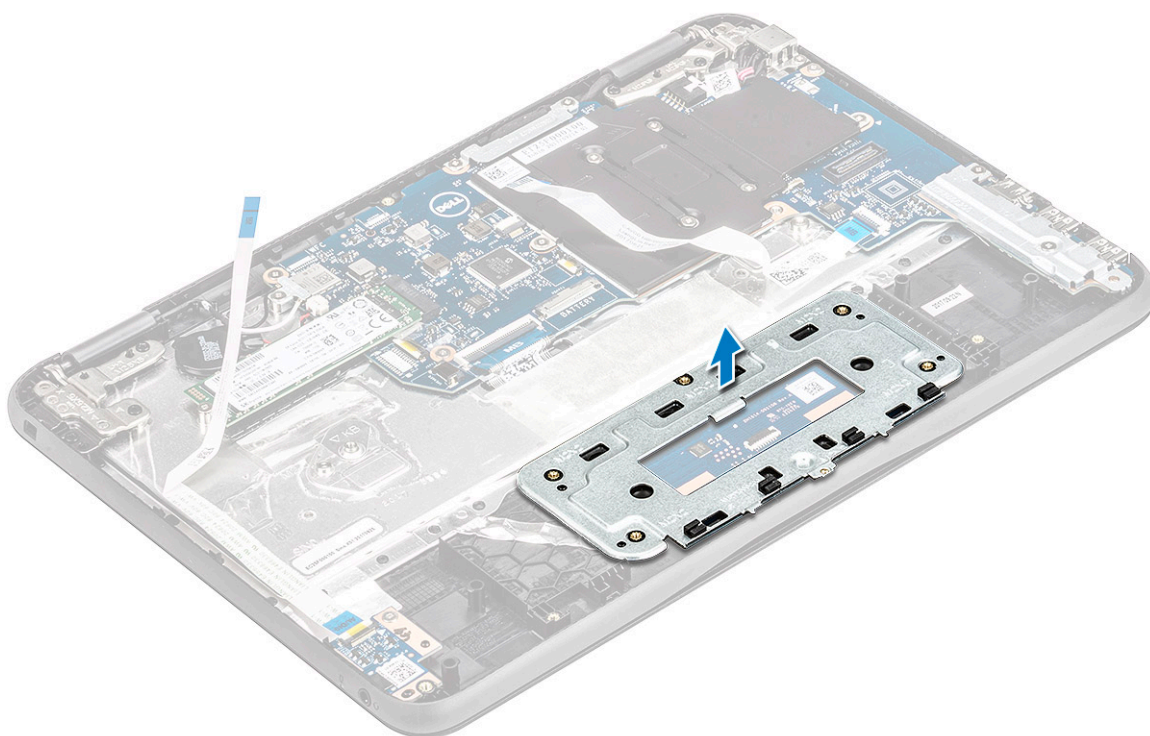


4. To remove touchpad metal bracket:

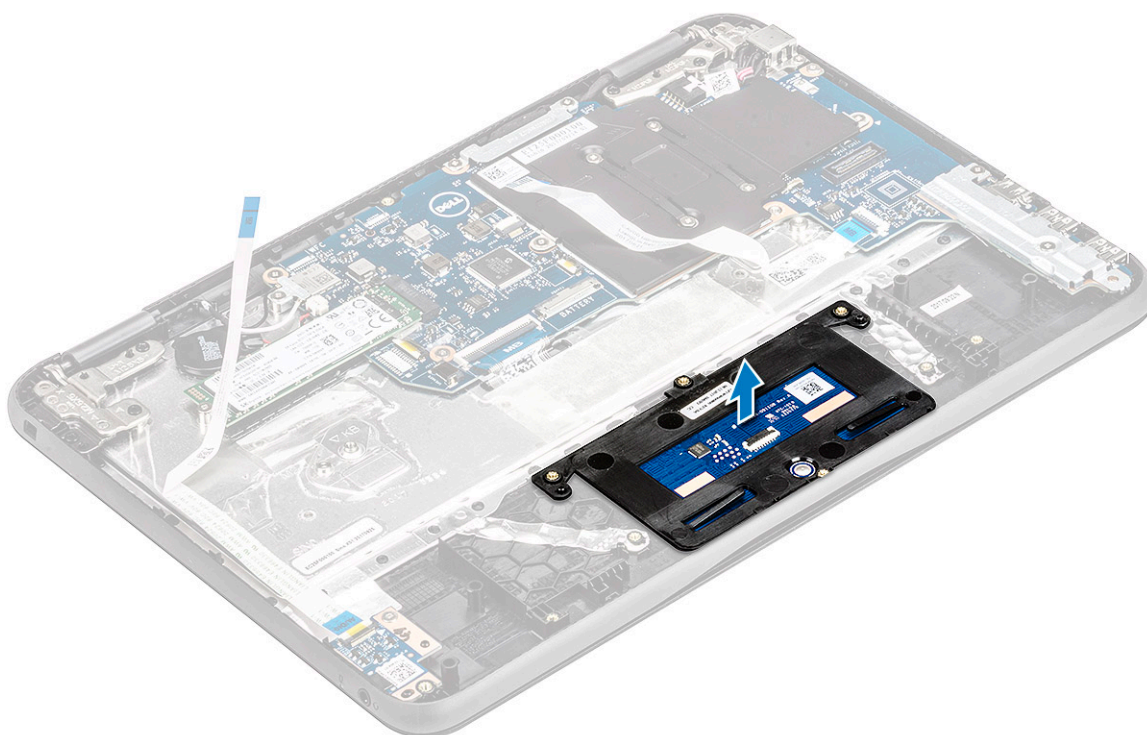
- a. Remove the 5 M2X2 screws and one M2x3 screw that secure the metal bracket to the system.



- b. Lift the metal bracket away from the system [3]



5. Remove the touchpad from the computer.





Installing the touchpad

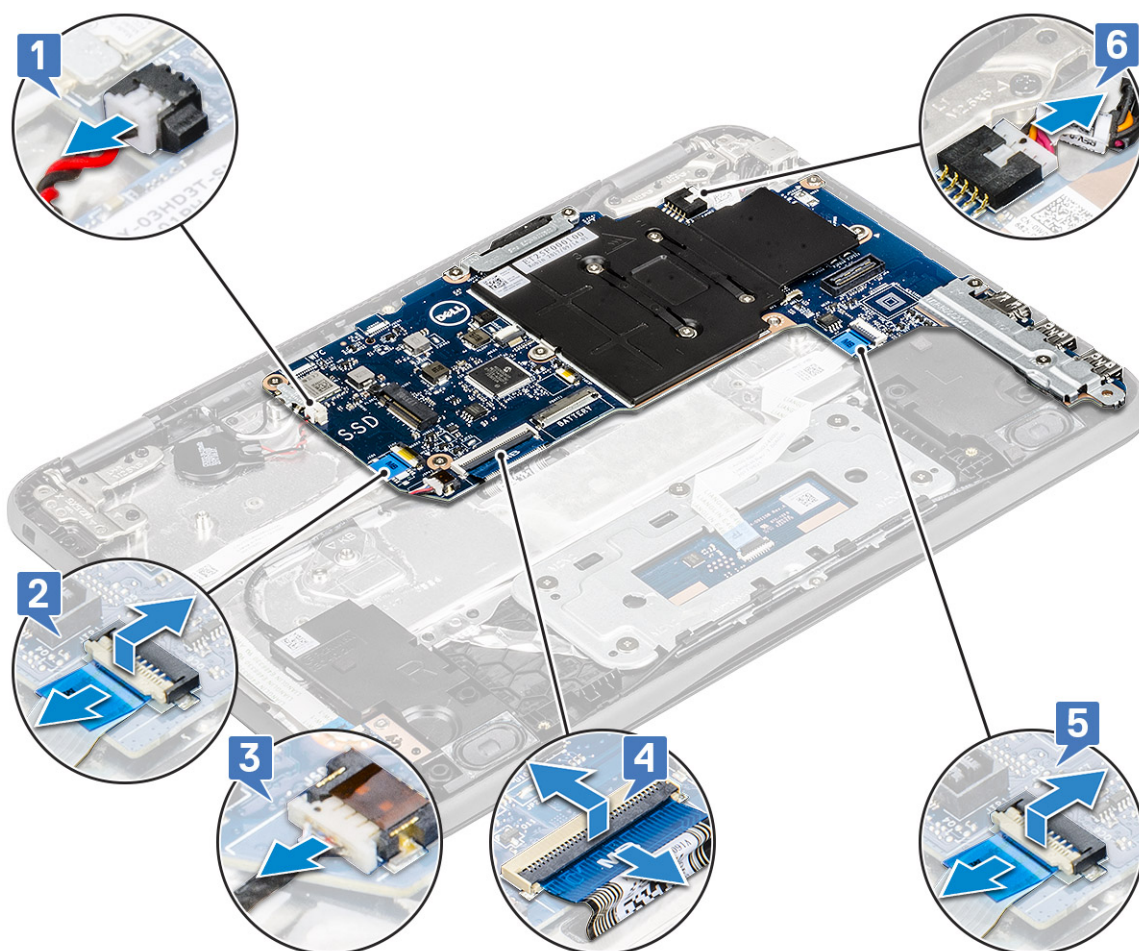
1. Place the touchpad into the slot on the system.
2. Align and place touchpad bracket over the plastic hold down and replace the five M2X2 screws and one M2x3 to secure it to the system.

3. Affix the adhesive tape to secure the touchpad bracket to the touchpad.
4. Connect the touchpad cable to the connector and affix the adhesive—backed cable to secure it to the touchpad.
5. Install the:
 - a. [speaker](#)
 - b. [battery](#)
 - c. [base cover](#)
6. Follow the procedure in [After working inside your computer](#).

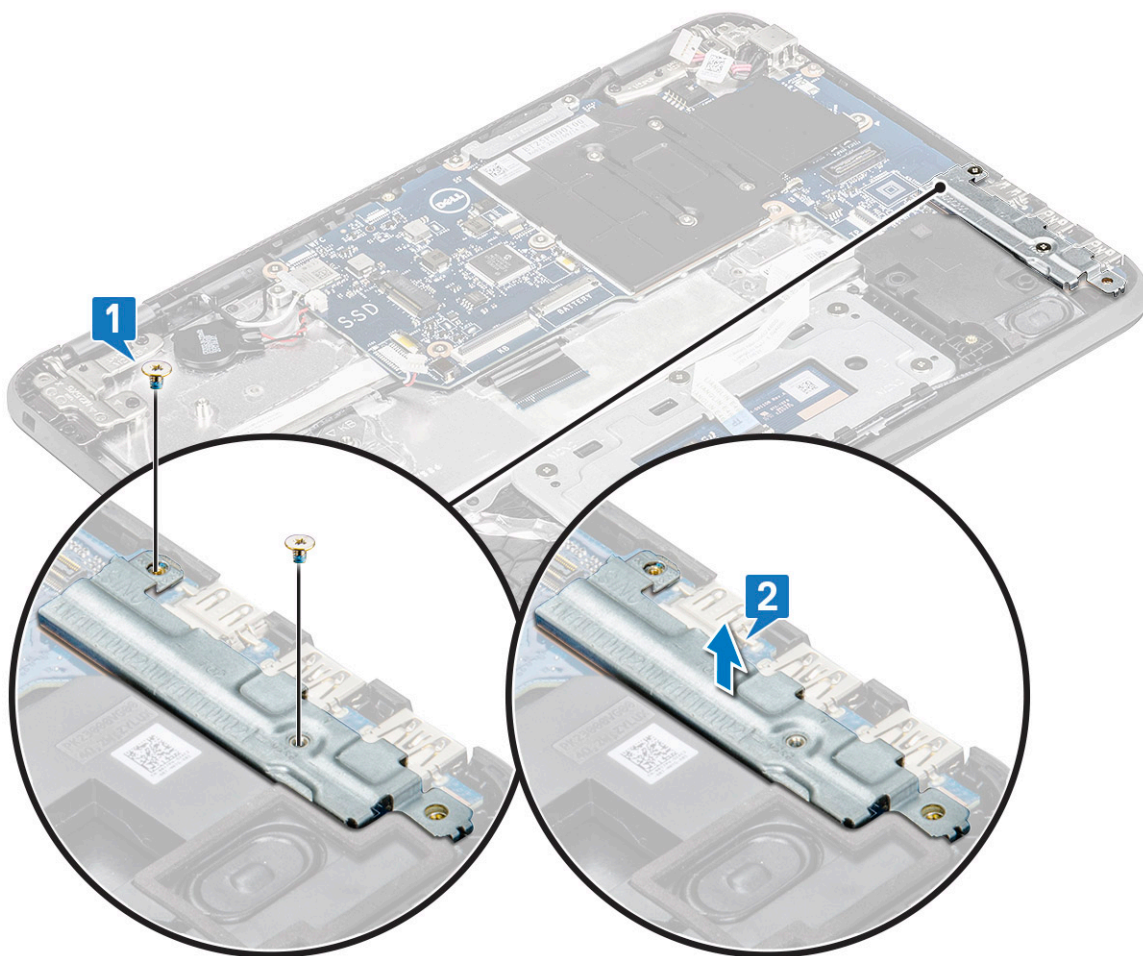
System board

Removing system board

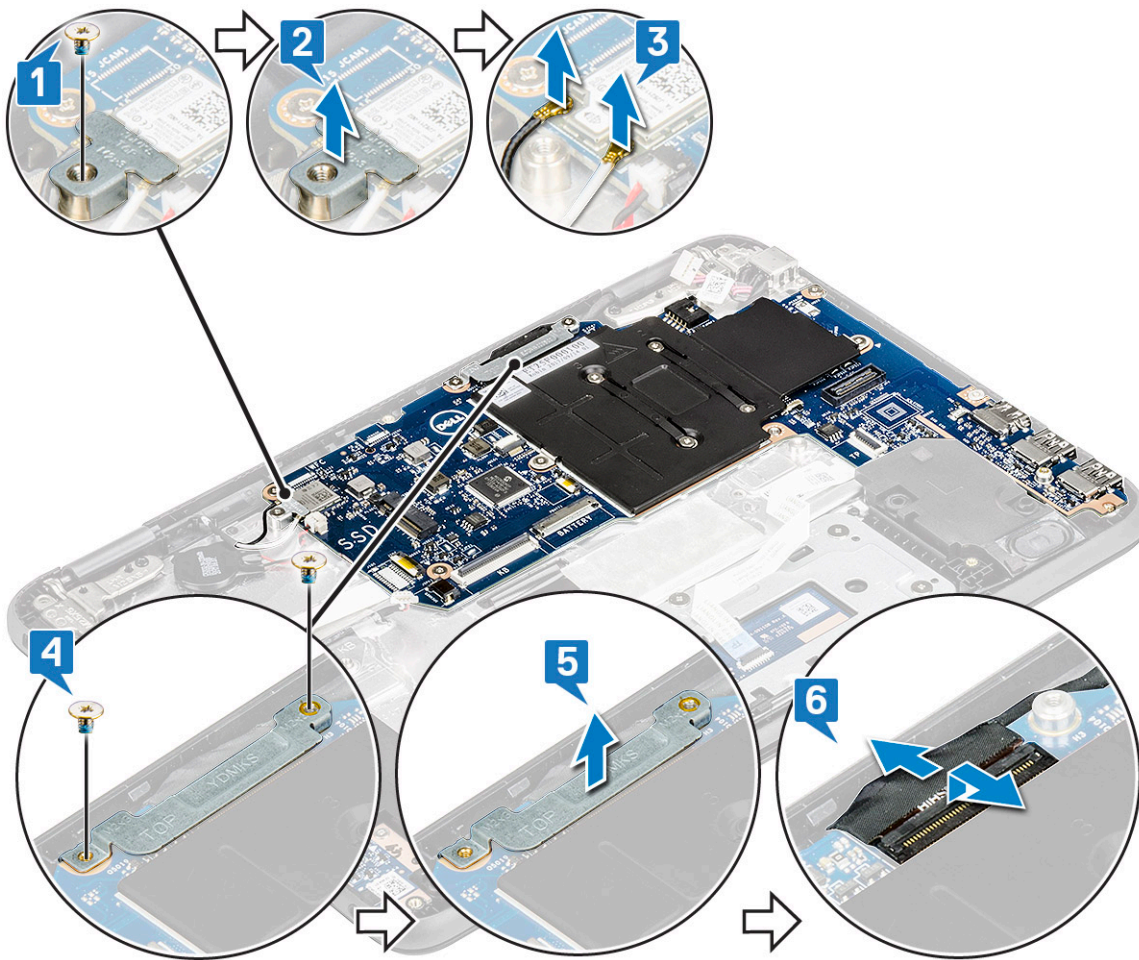
1. Follow the procedure in [Before working inside your computer](#).
 -  **NOTE:** For Latitude 3190, the system board is secured to the palm rest with five M2x3 screws. Technicians should take note that the four M2x3 screws that secure the thermal plate to the system board do not have to be removed to remove the system board from the system
 -  **NOTE:** The latitude 3190 does not have a heat sink and fan assembly. However, the CPU is covered by a thermal plate and aluminum shielding which should not be disassembled from the system board.
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
 - c. [SSD card](#)
3. Disconnect the following cables:
 - a. coin cell battery cable [1]
 - b. Audio cable [2]
 - c. speaker cable [3]
 - d. keyboard cable [4]
 - e. touch pad cable [5]
 - f. power connector cable [6]



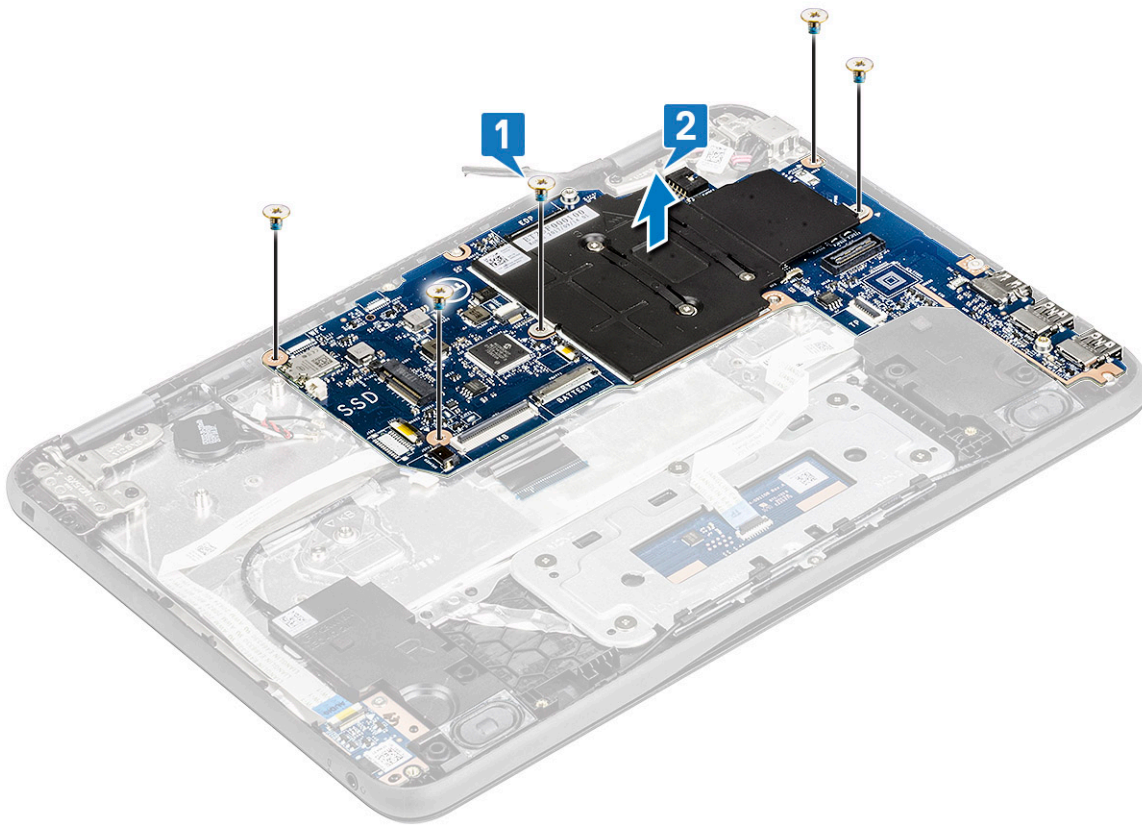
4. To remove metal bracket on the system board:
 - a. Remove the two M2x3 screws that secure the IO bracket to the system board [1].
 - b. Lift the IO bracket from the system board [2].



5. To remove the metal bracket (WLAN and display cable):
 - a. Remove the M2x3 screw and lift the metal bracket that secures the WLAN card on the system board [1, 2]
 - b. Disconnect the WLAN cables [3].
 - c. Remove the two M2.0 x 3.0 screws and lift the metal bracket that secures the display cable on the computer [4, 5]
 - d. Lift the latch, and disconnect the display cable [6]



6. To remove the system board:
 - a. Remove the five M2x3 screws that secure the system board on the palm rest assembly [1].
 - b. Lift the system board off the palm- rest assembly [2].



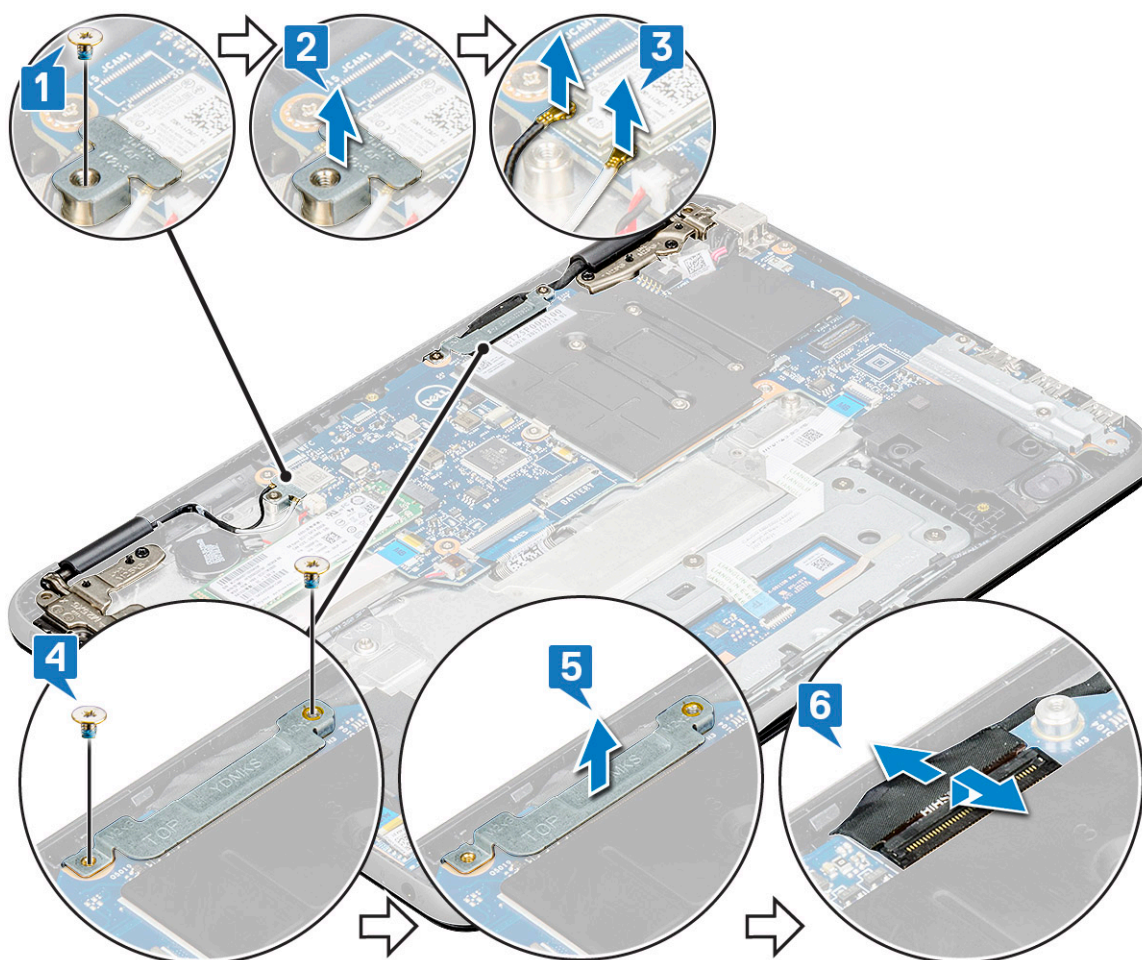
Installing system board

1. Align the system board with the screw holders on the palm rest assembly.
2. Replace the five M2x3 screws to secure the system board to the palm rest assembly.
3. Connect the display cable to the connector on the system board.
4. Place the metal bracket over the connector, and replace two M2x3 screws to secure the display cable to the system board.
5. Connect the WLAN cables.
6. Place the metal bracket on the WLAN card, and replace M2x3 screw to secure the WLAN cable on the WLAN card.
7. Place the metal bracket on the system board and replace two M2x3 screws to secure on the system board.
8. Connect the following cables:
 - a. power connector cable
 - b. touchpad cable
 - c. keyboard cable
 - d. speaker cable
 - e. Audio cable
 - f. coin cell battery cable
9. Install the:
 - a. [SSD card](#)
 - b. [battery](#)
 - c. [base cover](#)
10. Follow the procedure in [After working inside your computer](#).

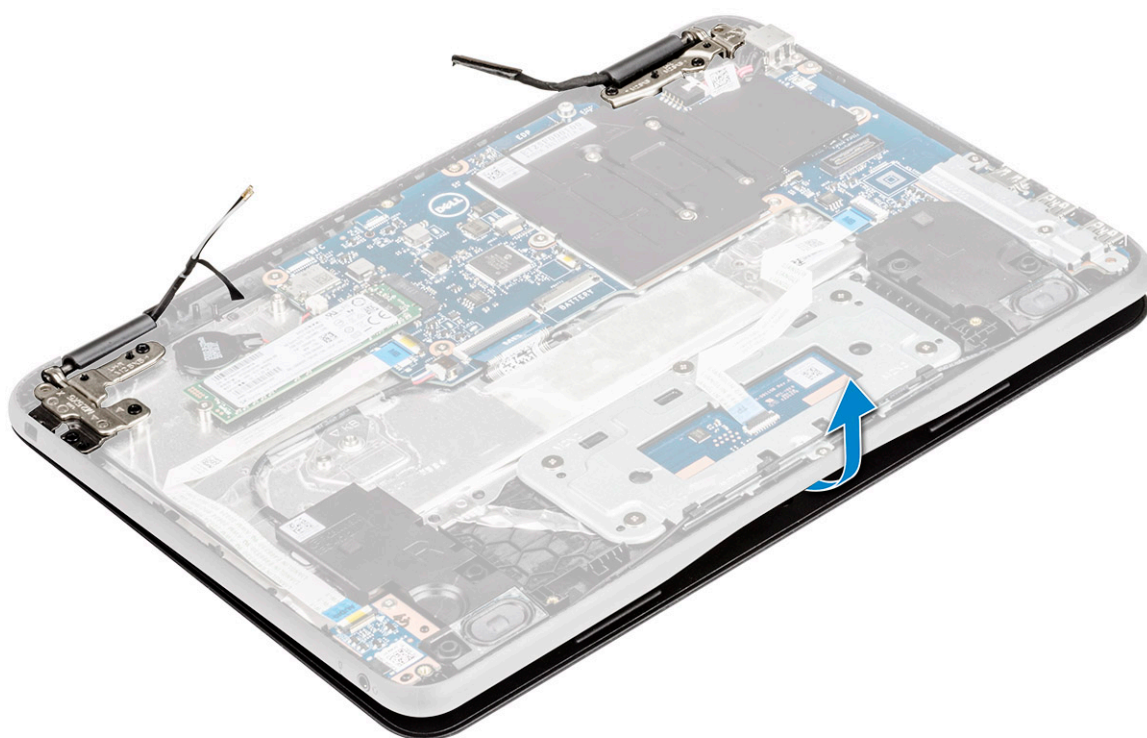
Display assembly

Removing display assembly

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
3. To remove cables:
 - a. Remove the M2x3 screw [1] and lift the metal bracket that secures the WLAN card on the system board [2].
 - b. Disconnect the WLAN cables [3].
 - c. Remove the two M2x3 screws [4] and lift the metal bracket that secures the display cable on the computer [5].
 - d. Lift the latch, and disconnect the cable [6].



4. Open the palm rest, turn over the system and place it at 90 degree angle with the keyboard facing the table [2].



5. To remove the display assembly:

- a. Remove the five M2.5x5 screws that secure the display assembly to the computer [1].
- b. Lift the display assembly from the computer [2].



NOTE:

Hold the display assembly firmly when you place the display assembly at a 90 degree angle to the palm rest, to avoid damaging the display assembly

Installing display assembly

1. Place the display assembly to align with the screw holders on the computer at 90 degree with keyboard facing the table.
2. Replace the five M2.5x5 screws that secure the display hinges to the palm-rest assembly.
3. Flip over the computer.
4. Connect the display cable to the connector on the system board.
5. Place the display cable bracket over the display cable connector, and replace the two M2x3 screws to secure the display cable to the computer.
6. Connect the WLAN cables.
7. Place the metal bracket on WLAN card, and replace the M2x3 screw to secure the metal bracket on the system board.
8. Install the:
 - a. [battery](#)
 - b. [base cover](#)
9. Follow the procedure in [After working inside your computer](#).

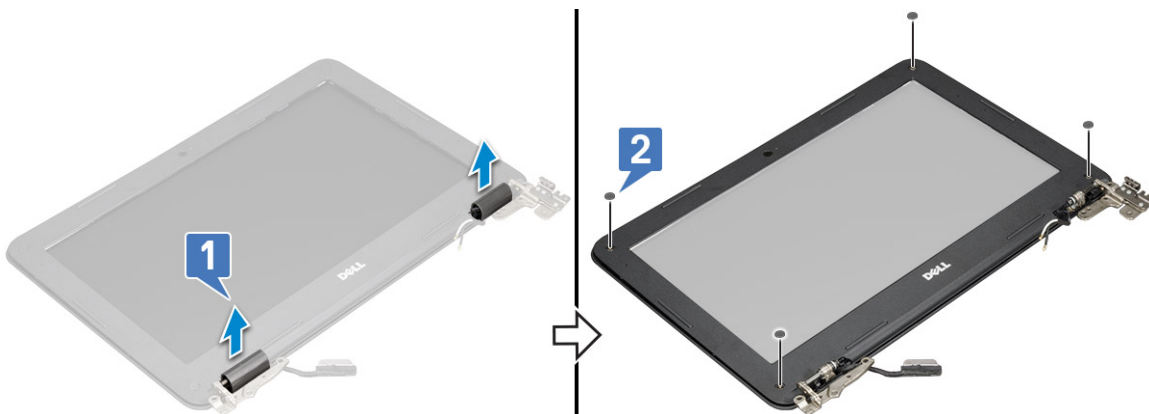
Display bezel

Removing display bezel

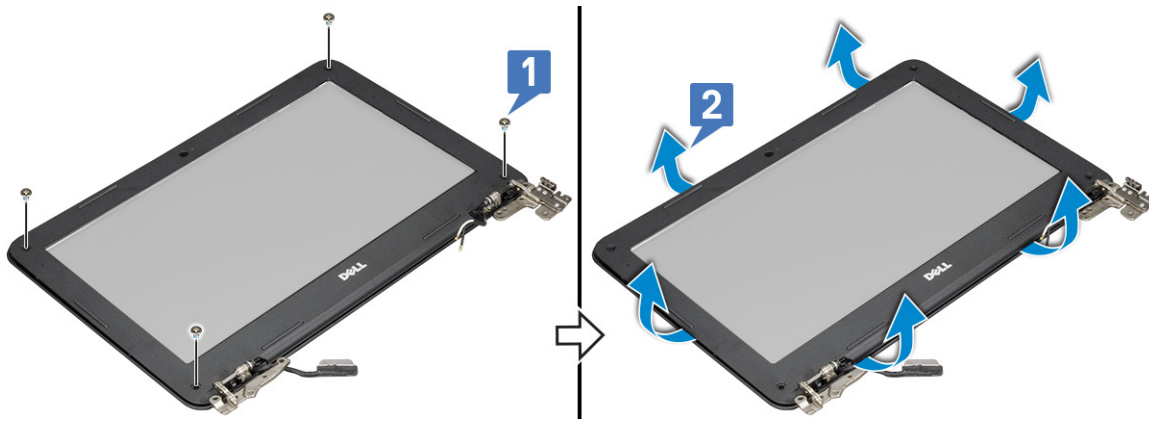
1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:

NOTE: The display bezel of Latitude 3190 is a disposable service part that should be replaced with a new display bezel anytime it is removed from the system. This also applies to removal of the bezel during the replacement of the display panel, and display back-cover and antenna assembly.

- a. [base cover](#)
 - b. [battery](#)
 - c. [display assembly](#)
3. Remove the hinge cap and the mylar cap that secures the display bezel to the display assembly [1].



4. Remove the four M2.5x3.5 screws and pry the edges to release the display bezel from the display assembly [2,3].



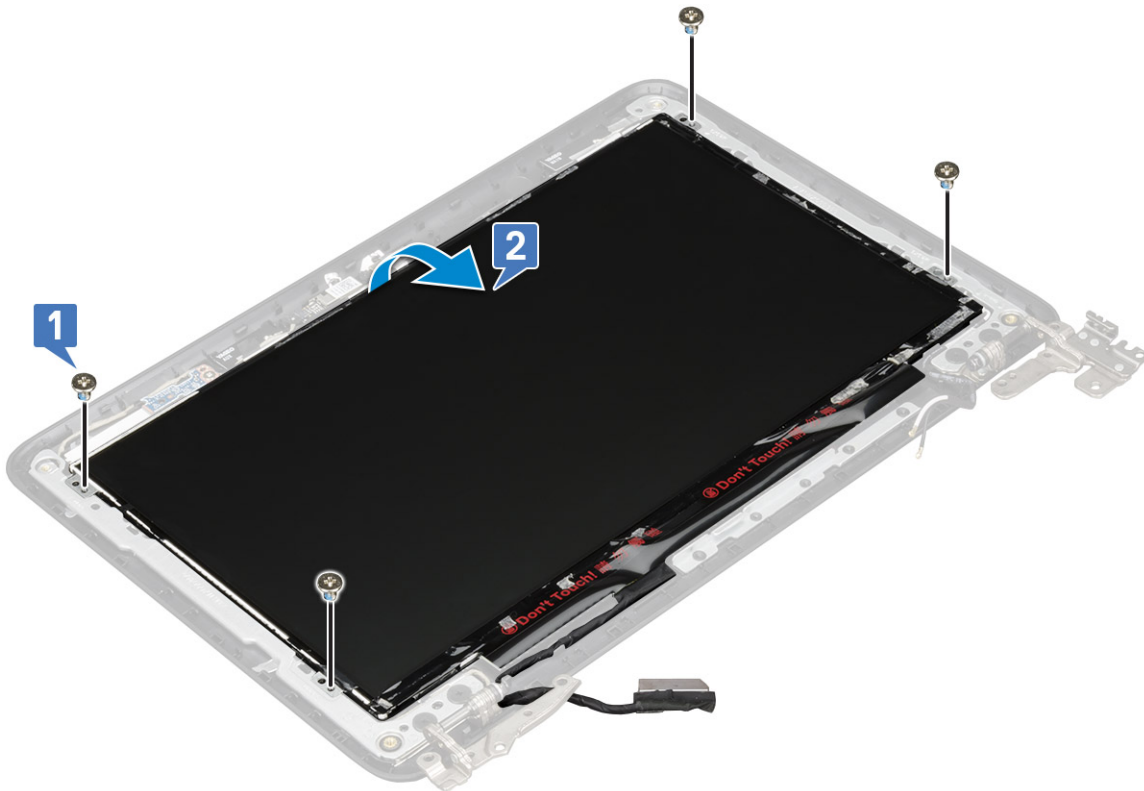
Installing display bezel

1. Place the display bezel on the display assembly.
2. Starting from the top corner, press on the display bezel and work around the entire bezel until it clicks on to the display assembly.
3. Replace the four M2.5X3.5 screws to secure the display bezel to the display assembly.
4. Affix the hinge cap.
5. Install the:
 - a. [display assembly](#)
 - b. [battery](#)
 - c. [base cover](#)
6. Follow the procedure in [After working inside your computer](#)

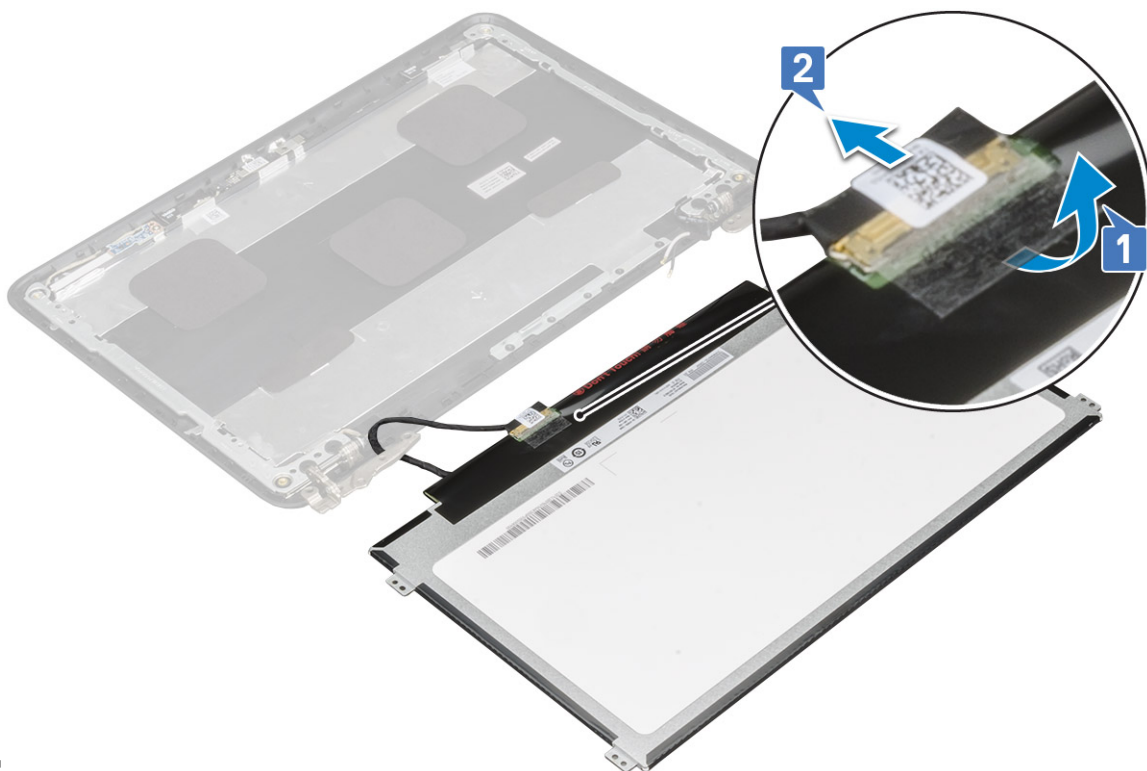
Display panel

Removing display panel

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
 - c. [display assembly](#)
 - d. [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 display panel:
 - a. Peel off the adhesive tape [1].
 - b. Disconnect the display cable from the connector on the display panel [2].





Installing display panel

1. Connect the display cable to the connector, and affix the tape.

2. Replace the display panel to align with the screw holders on the display assembly.
3. Replace the four M2x3 screws to secure the display panel to the display assembly.
4. Install the:
 - a. [display bezel](#)
 - b. [display assembly](#)
 - c. [battery](#)
 - d. [base cover](#)
5. Follow the procedure in [After working inside your computer](#)

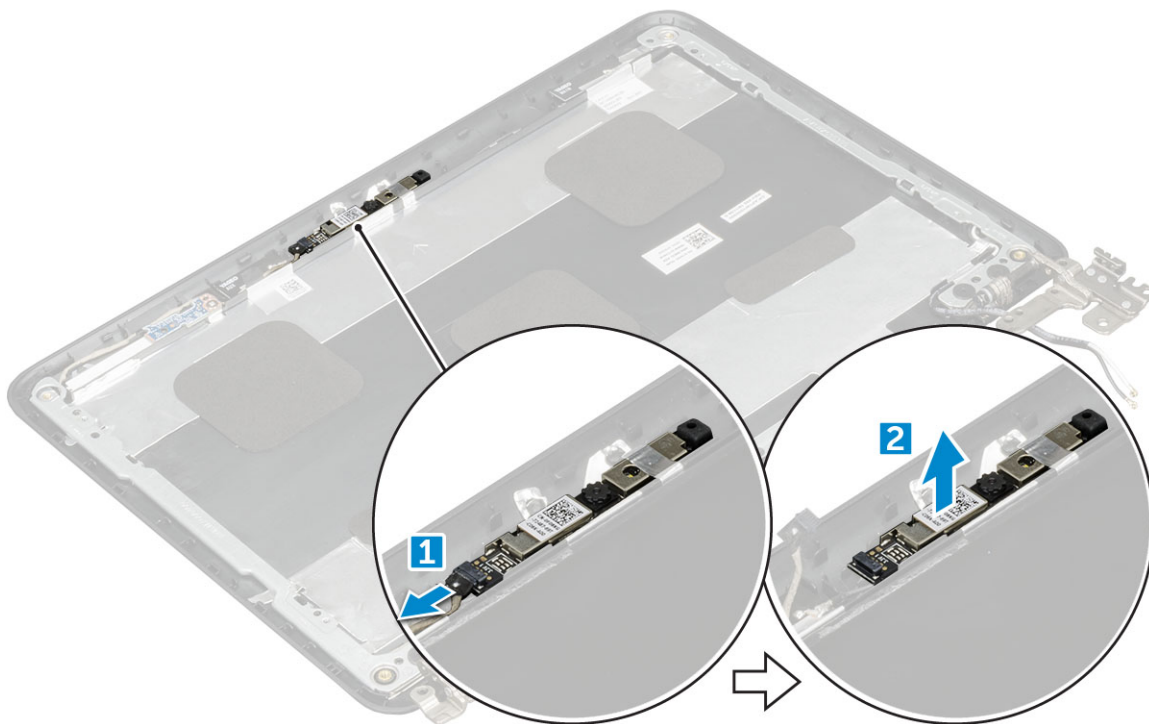
Camera

Removing camera

1. Follow the procedure in [Before working inside your computer](#).
2.  **NOTE:** When replacing the display cable onto the display back- cover of the Latitude 3190, on-site technicians must first disconnect the cable from the camera module, and carefully peel back the pieces of aluminum foil securing the display cable to the display back-cover, and then re-adhere the foil after replacing the display cable, as indicated in the image below.
-  **NOTE:** Technicians should note that the display hinges, display cable, and camera are also separate service parts that can be individually replaced

Remove the:

- a. [base cover](#)
 - b. [battery](#)
 - c. [display assembly](#)
 - d. [display bezel](#)
 - e. [display panel](#)
3. To remove camera:
 - a. Disconnect the camera cable from the connector [1].
 - b. Lift the camera from the display back cover [2].





Installing camera

1. Place the camera on the display back cover .
2. Connect the camera cable to the connector on the display assembly.
3. Install the:
 - a. [display panel](#)
 - b. [display bezel](#)
 - c. [display assembly](#)
 - d. [battery](#)
 - e. [base cover](#)
4. Follow the procedure in [After working inside your computer](#)

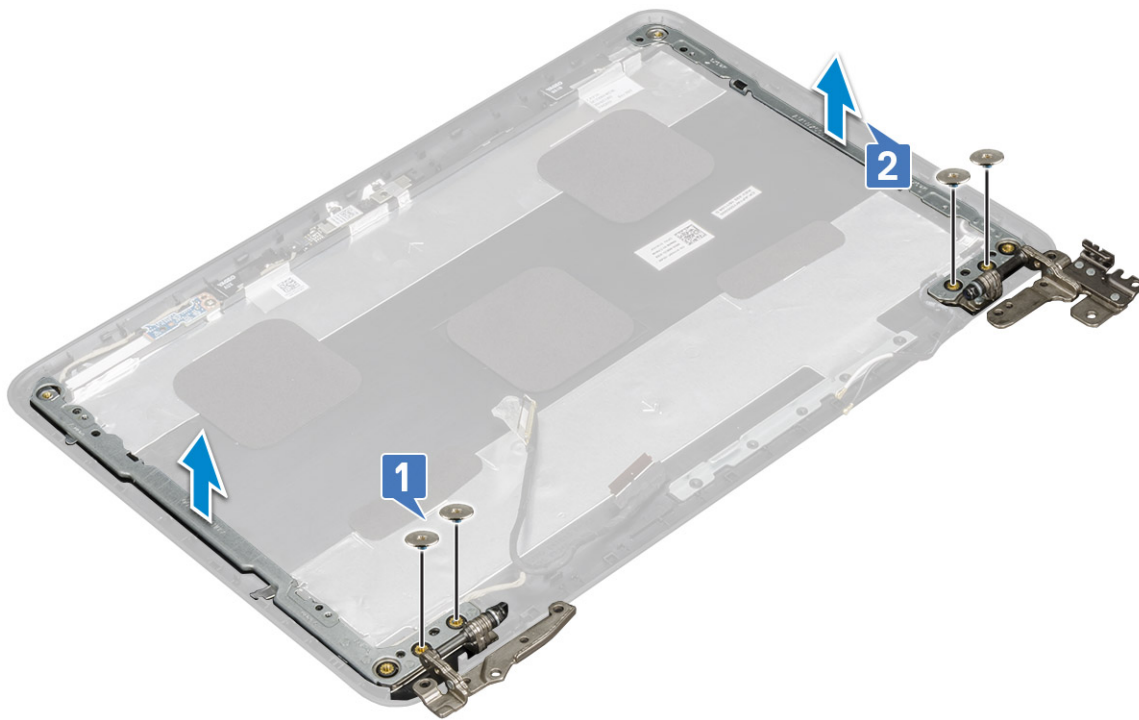
Display hinges

Removing display hinges

1. Follow the procedure in [Before working inside your computer](#).
2.  **NOTE:** When replacing the display cable onto the display back- cover of the Latitude 3190, on-site technicians must first disconnect the cable from the camera module, and carefully peel back the pieces of aluminum foil securing the display cable to the display back-cover, and then re-adhere the foil after replacing the display cable, as indicated in the image below.
 **NOTE:** Technicians should note that the display hinges, display cable, and camera are also separate service parts that can be individually replaced

Remove the:

- a. [base cover](#)
 - b. [battery](#)
 - c. [display assembly](#)
 - d. [display bezel](#)
 - e. [display panel](#)
3. To remove display hinges:
 - a. Remove the four M2.5x2.5 screws that secure the display hinges to the display back cover [1].
 - b. Lift the display hinges from the display back cover [2].



Installing display hinges

1. Place the display hinges on the display back cover.
2. Replace the four M2.5x2.5 screws to secure the display hinges to the display back cover. .
3. Install the:
 - a. [display panel](#)
 - b. [display bezel](#)
 - c. [display assembly](#)
 - d. [battery](#)
 - e. [base cover](#)
4. Follow the procedure in [After working inside your computer](#)

Palm rest

Replacing palm rest

1. Follow the procedure in [Before working inside your computer](#).
2. Remove the:
 - a. [base cover](#)
 - b. [battery](#)
 - c. [keyboard](#)
 - d. [system board](#)
 - e. [Solid State Drive card](#)
 - f. [audio](#)
 - g. [power connector](#)
 - h. [coin cell battery](#)
 - i. [speaker](#)
 - j. [display assembly](#)

NOTE:

Touchpad is not a standalone component and is assembled along with the palm rest.

NOTE: The component you are left with is the palm rest.



3. Install the following components on the new palm rest:
 - a. [display assembly](#)
 - b. [speaker](#)
 - c. [coin cell battery](#)
 - d. [power connector](#)
 - e. [audio](#)
 - f. [keyboard](#)
 - g. [system board](#)
 - h. [SSD card](#)
 - i. [battery](#)
 - j. [base cover](#)
4. Follow the procedure in [After working inside your computer](#).

Technology and components

NOTE: Instructions provided in this section are applicable on computers shipped with Windows operating system. Windows is factory-installed with this computer.

Topics:

- [DDR4](#)
- [USB features](#)
- [HDMI 1.4](#)

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.

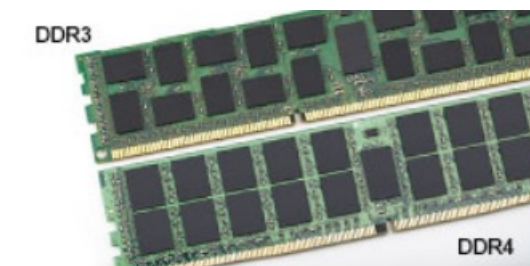


Figure 1. Notch difference

Increased thickness

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

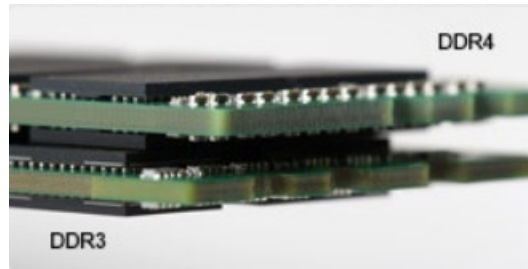


Figure 2. Thickness difference

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.

NOTE: The DDR4 memory is imbedded in board and not a replaceable DIMM as shown and referred.

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 drivers, and printers.

Table 15. 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	SuperSpeed	2010
USB 3.1 Gen 2	10 Gbps	SuperSpeed	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.

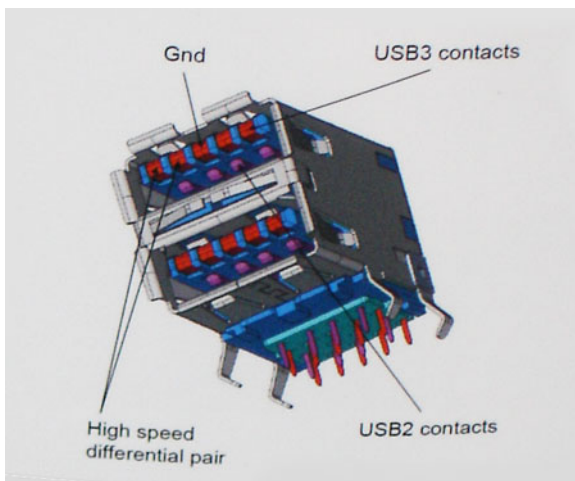


Speed

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 4.8 Gbps. 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 480 Mbps and 12 Mbps 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 320 Mbps (40 MB/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.

HDMI 1.4

This topic explains the HDMI 1.4 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 1.4 will provide 5.1 channel audio support.

HDMI 1.4 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

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](#)
- [Video screen options](#)
- [Security screen options](#)
- [Secure Boot screen options](#)
- [Intel Software Guard Extensions screen options](#)
- [Performance screen options](#)
- [Power management screen options](#)
- [POST behavior screen options](#)
- [Virtualization support screen options](#)
- [Wireless screen options](#)
- [Maintenance screen options](#)
- [System logs screen options](#)
- [SupportAssist system resolution](#)
- [Updating the BIOS](#)
- [System and setup password](#)


Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive


 **NOTE:** XXXX denotes the SATA drive number.

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

 **NOTE:** Choosing **Diagnostics**, displays the **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.
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	<p>This section lists the primary hardware features of your computer.</p> <ul style="list-style-type: none">• System Information: Displays BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date, Express Service Code, the Signed Firmware update—enabled by default• Memory Information: Displays Memory Installed, Memory Available, Memory Speed, Memory Channels Mode, Memory Technology• Processor Information: Displays Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, HT Capable, and 64-Bit Technology

Option	Description
	<ul style="list-style-type: none"> • Device Information: Primary hard drive, SATA, Passthrough MAC address, Video Controller, Video BIOS Version, Video Memory, Panel Type, Native Resolution, Audio Controller, Wi-Fi Device, Bluetooth Device
Battery Information	Displays the battery status health and whether the AC adapter is installed.
Boot Sequence	<p>Allows you to change the order in which the computer attempts to find an operating system.</p> <ul style="list-style-type: none"> • Windows Boot Manager (Default) • Boot List Option <ul style="list-style-type: none"> ◦ Legacy ◦ UEFI (System Default)
Advanced Boot Options	This option allows the legacy option ROMs to load. By default, the Enable Legacy Option ROMs and Enable UEFI Network Stack is disabled. Enable Attempt Legacy Boot is enabled by default.
UEFI boot path security	<ul style="list-style-type: none"> • Always, except internal HDD (Default) • Always • Never
Date/Time	Allows you to change the date and time.






System Configuration screen options


Option	Description
Drives	<p>Allows you to enable or disable the drives on board.</p> <ul style="list-style-type: none"> • SATA-0— default • eMMC— default
Smart Reporting	The option is disabled by default
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> <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 Boot Support—enabled by default • Enable External USB Port—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. This option is disabled by default.
Audio	<p>This field enables or disables the integrated audio controller. By default, the Enable Audio option is selected. The options are:</p> <ul style="list-style-type: none"> • Enable Microphone— default • Enable Internal Speaker—default
Miscellaneous Devices	<p>Allows you to enable or disable various on board devices:</p> <ul style="list-style-type: none"> • Enable camera (default enabled)

Video screen options


Option	Description
LCD Brightness	Allows you to set the display brightness depending up on the power source—On Battery and On AC. The LCD brightness is independent for battery and AC adapter. It can be set using the slider.

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>
Internal HDD-0 Password	<p>Allows you to set, change, or delete the administrator password.</p> <p> NOTE: Successful password changes take effect immediately.</p> <p>Default setting: Not set</p>
Strong Password	<p>Allows you to enforce the option to always set strong passwords.</p> <p>Default Setting: Enable Strong Password is not selected.</p> <p> NOTE: If Strong Password is enabled, the Admin and System passwords must contain at least one uppercase character, one lowercase character and be at least eight characters long.</p>
Password Configuration	<p>Allows you to specify the minimum and max password lengths of the Administrator and System passwords.</p> <ul style="list-style-type: none">• min-4—by default, if you want to change you can increase the number.• max-32—you can decrease the number.
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 —enabled by default• Reboot bypass
Password Change	<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: Allow Non-Admin Password Changes is selected.</p>
Non-Admin Setup Changes	<p>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.</p> <p>Option "Allow Wireless Switch Changes" is not selected by default.</p>
UEFI Capsule Firmware Updates	<p>Allows you to enable or disable. This option controls whether this system allows BIOS updated via UEFI capsule update packages. The options are:</p> <ul style="list-style-type: none">• Enable UEFI Capsule Firmware Update—enabled by default
PTT Security	<p>This option lets you control whether the Platform Trust Technology feature (PTT) is visible on the operating system.</p> <ul style="list-style-type: none">• PTT On—enabled by default

Option	Description
	<ul style="list-style-type: none"> • Clear • PPI Bypass for Clear Commands
Computrace	<p>Allows you to activate or disable the optional Computrace software. The options are:</p> <ul style="list-style-type: none"> • Deactivate • Disable • Activate—enabled by default <p> NOTE: The Activate and Disable options will permanently activate or disable the feature and no further changes will be allowed.</p>
CPU XD Support	<p>Allows you to enable the Execute Disable mode of the processor.</p> <p>Enable CPU XD Support—enabled by default</p>
Admin Setup Lockout	<p>Allows you to prevent users from entering Setup when an Administrator password is set.</p> <p>Default Setting: This option is disabled</p>
Master password lockout	<p>This option is not enabled by default</p>
SIMM Security Mitigation	<p>This option enables or disables additional UEFI SMM Mitigation protections. The option is disabled by default.</p>

Secure Boot screen options

Option	Description
Secure Boot Enable	<p>This option enables or disables the Secure Boot feature.</p> <ul style="list-style-type: none"> • Disabled • Enabled (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—enabled by default • KEK • db • dbx <p>If you enable the Custom Mode, the relevant options for PK, KEK, db, and dbx appear. The options are:</p> <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 are erased and the keys restore to default settings.</p>

Intel Software Guard Extensions screen options


Option	Description
Intel SGX Enable	<p>This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. The options are:</p> <ul style="list-style-type: none"> • Disabled • Enabled • Software Controlled (default)


Option	Description
Enclave Memory Size	<p>This option sets SGX Enclave Reserve Memory Size. The options are:</p> <ul style="list-style-type: none"> • 32 MB • 64 MB • 128 MB

Performance screen options

Option	Description
Intel SpeedStep	<p>Allows you to enable or disable the Intel SpeedStep feature.</p> <ul style="list-style-type: none"> • Enable Intel SpeedStep <p>Default setting: The option is enabled.</p>
C-States Control	<p>Allows you to enable or disable the additional processor sleep states.</p> <ul style="list-style-type: none"> • C states <p>Default setting: The option is enabled.</p>
Intel TurboBoost	<p>Allows you to enable or disable the Intel TurboBoost mode of the processor.</p> <ul style="list-style-type: none"> • Enable Intel TurboBoost <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 <p>Default setting: The option is disabled.</p>
Wake on 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 (default) • WLAN Only
Block Sleep	<p>This option lets you block entering to sleep in operating system environment.</p> <p>Default setting: This option is disabled</p>
Peak Shift	<p>This 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>

Option	Description
	<ul style="list-style-type: none"> • Enable peak shift • Set battery threshold (15% to 100%) - 15 % (enabled by default)
Advanced Battery Charge Configuration	<p>This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques during the nonwork hours to improve the battery health.</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—enabled by default • Standard—Fully charges your battery at a standard rate. • ExpressCharge—The battery charges over a shorter 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>
Numlock Enable	<p>Allows you to enable the Numlock option when the computer boots.</p> <p>Enable Network. This option is enabled by default.</p>
Keypad (Embedded)	<p>This option lets you choose one of two methods to enable the keypad that is embedded in the internal keyboard;</p> <p>options:</p> <ul style="list-style-type: none"> • Fn Key Only (default) • By Numlock
Mouse/Touchpad	<p>This option defines how the system handles mouse or touchpad input.</p> <p>Touchpad/PS-2 Mouse (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"> • Lock Mode Disable/Standard—enabled by 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—enabled by default • Thorough • Auto
Extended BIOS POST Time	<p>Allows you to create an extra preboot delay. The options are:</p> <ul style="list-style-type: none"> • 0 seconds—enabled by default. • 5 seconds • 10 seconds
Full Screen Logo	<p>The option is disabled by default.</p>

Virtualization support screen options

Option	Description
Virtualization	Allows you to enable or disable the Intel Virtualization Technology. Enable Intel Virtualization Technology: This option is enabled by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by Intel® Virtualization technology for direct I/O. Enable VT for Direct I/O: This option is enabled by default.

Wireless screen options

Option	Description
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. <ul style="list-style-type: none">• WLAN• Bluetooth All the options are enabled by default.

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	This controls flashing of the system firmware to previous revisions. Option 'Allow BIOS downgrade' is enabled by default.
Data Wipe	This field allows users to erase the data securely from all internal storage devices. Option 'Wipe on Next boot' is not enabled by default. The following is list of devices affected: <ul style="list-style-type: none">• Internal SATA HDD/SSD• Internal M.2 SATA SDD• Internal M.2 PCIe SSD• Internal eMMC
BIOS Recovery	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. <ul style="list-style-type: none">• BIOS Recovery from Hard Drive—enabled by default• BIOS Auto-Recovery

System logs screen options


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


SupportAssist system resolution

Option	Description
Auto OS Recovery Threshold	<p>The Auto OS Recovery Threshold setup option controls the automatic boot flow for SupportAssist System Resolution Console and for Dell OS Recovery Tool.</p> <ul style="list-style-type: none">• OFF• 1• 2 (default)• 3

Updating the BIOS

Updating the BIOS in Windows


 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
For more information, see knowledge base article [000124211](https://www.dell.com/support/article/000124211) at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

To update the system BIOS on a computer that is installed with Linux or Ubuntu, see the knowledge base article [000131486](https://www.dell.com/support/article/000131486) at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

1. Follow the procedure from step 1 to step 6 in [Updating the BIOS in Windows](#) to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article [000145519](https://www.dell.com/support/article/000145519) at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.

- Restart the computer and press **F12**.
- Select the USB drive from the **One Time Boot Menu**.
- Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
- Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: <https://www.dell.com/support/article/sln153694>

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

NOTE: Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

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

Perform the following steps to perform the BIOS update flash process from the F12 menu:

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

- From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
- Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.
The flash BIOS menu is displayed.
- Click **Flash from file**.
- Select external USB device.
- Select the file and double-click the flash target file, and then click **Submit**.
- Click **Update BIOS**. The computer restarts to flash the BIOS.
- The computer will restart after the BIOS update is completed.

System and setup password

Table 16. System and setup password

Password type	Description
System password	Password that you must enter to log on to your system.


Table 16. System and setup password (continued)

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

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

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

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

 **NOTE:** System and setup password feature is disabled.

Assigning a system setup password

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


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

1. In the **System BIOS** or **System Setup** screen, select **Security** and press **Enter**.
The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to assign the system password:
 - A password can have up to 32 characters.
 - The password can contain the numbers 0 through 9.
 - Only lower case letters are valid, upper case letters are not allowed.
 - Only the following special characters are allowed: space, ("), (+), (.), (-), (.), (/), (:), ([), (\), (]), (`).
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and a message prompts you to save the changes.
5. Press Y to save the changes.
The computer reboots.

Deleting or changing an existing system setup password

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

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

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press **Enter**.
The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, alter or delete the existing system password and press **Enter** or Tab.
4. Select **Setup Password**, alter or delete the existing setup password and press **Enter** or Tab.
 **NOTE:** If you change the System and/or Setup password, re enter the new password when prompted. If you delete the System and Setup password, confirm the deletion when prompted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
The computer restarts.

Software

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

Topics:

- [Drivers and downloads](#)
- [Operating system configurations](#)
- [Downloading drivers](#)

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ [000123347](#).


Operating system configurations

This topic lists the operating system supported by Latitude 3190.

Table 17. Operating systems

Features	Specifications
Microsoft	Windows 10 Pro 64 bit RS4

Downloading 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.

Troubleshooting

Topics:

- [Handling swollen Lithium-ion batteries](#)
- [Enhanced Pre-Boot System Assessment — ePSA diagnostics](#)
- [Recovering the operating system](#)

Handling swollen Lithium-ion batteries

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

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

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

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

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


Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, see [Dell Laptop Battery - Frequently Asked Questions](#).

Enhanced Pre-Boot System Assessment — ePSA diagnostics

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


The ePSA diagnostics can be initiated by the FN+PWR buttons while powering on the computer.

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

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

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

Recovering the operating system

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

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled in all Dell computers installed with Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, or restore your computer to its factory state.

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



For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Getting help and contacting Dell

Self-help resources


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


Table 18. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
My Dell app	
Tips	
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	www.dell.com/support/windows
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	<p>Your Dell computer is uniquely identified by a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at www.dell.com/support.</p> <p>For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.</p>
Dell knowledge base articles for a variety of computer concerns	<ol style="list-style-type: none"> 1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select Support > Knowledge Base. 3. In the Search field on the Knowledge Base page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see www.dell.com/contactdell.

 **NOTE:** Availability varies by country/region and product, and some services may not be available in your country/region.

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