

Inspiron Chromebook 7486

Service 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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Before working inside your computer

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

Before you begin

- 1 Save and close all open files and exit all open applications.
- 2 Shut down your computer. Click **Start** >  **Power** > **Shut down**.

 **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

- 3 Disconnect your computer and all attached devices from their electrical outlets.
- 4 Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.
- 5 Remove any media card and optical disc from your computer, if applicable.

After working inside your computer

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

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

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and ensure your personal safety.

- ⚠ **WARNING:** Before working inside your computer, read the safety information that shipped with your computer. For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.
- ⚠ **WARNING:** Disconnect 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 to the electrical outlet.
- ⚠ **CAUTION:** To avoid damaging the computer, ensure that the work surface is flat and clean.
- ⚠ **CAUTION:** To avoid damaging the components and cards, handle them by their edges, and avoid touching pins and 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 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 on its connector or on its pull tab, not on the cable itself. Some cables have connectors with locking tabs or thumb-screws that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending any connector pins. When connecting cables, ensure that the ports and connectors are correctly oriented and aligned.
- ⚠ **CAUTION:** Press and eject any installed card from the media-card reader.

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.

Lifting equipment

Adhere to the following guidelines when lifting heavy weight equipment:

 **CAUTION: Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.**

- 1 Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
- 2 Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
- 3 Lift with your legs, not your back.
- 4 Keep the load close. The closer it is to your spine, the less force it exerts on your back.
- 5 Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
- 6 Follow the same techniques in reverse to set the load down.

Recommended tools

The procedures in this document may require the following tools:

- Philips screwdriver #1
- Flat-head screwdriver
- Plastic scribe

Screw list

NOTE: Screw color may vary with the configuration ordered.

Table 1. Screw list

Component	Secured to	Screw type	Quantity	Screw image
Base cover	Palm-rest and keyboard assembly	M2x6	7	
Battery	Palm-rest and keyboard assembly	M2x3	4	
Battery-cable bracket	System board	M2x4	2	
Fan	Palm-rest and keyboard assembly	M2x4	2	
I/O board	Palm-rest and keyboard assembly	M2x4	1	
USB Type-C bracket	I/O board	M2x4	2	
Wireless-card bracket	System board	M2x3	1	
Display hinges	Palm-rest and keyboard assembly	M2.5x5	4	
Display hinges	Display-panel and antenna assembly	M2.5x2.5	6	
Display hinges	Display-panel and antenna assembly	M2x3	2	
Display-cable bracket	System board	M2x4	2	
Camera	Display-panel and antenna assembly	M2x3	2	
USB Type-C bracket	System board	M2x4	2	
System board	Palm-rest and keyboard assembly	M2x3	2	

Removing the base cover

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Procedure

- 1 Loosen the three captive screws that secure the base cover to the palm-rest and keyboard assembly.
- 2 Remove the seven screws (M2x6) that secure the base cover to the palm-rest and keyboard assembly.



- 3 Using your fingertips, pry up the base cover to release the tabs from the slots on the palm-rest and keyboard assembly.

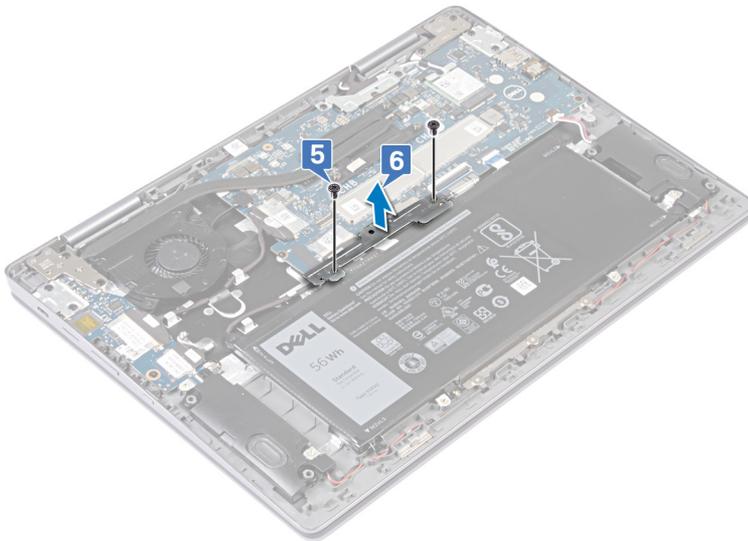


4 Remove the base cover carefully off the palm-rest and keyboard assembly.

NOTE: The following steps are applicable only if you want to further remove any other component from your computer.

5 Remove the two screws (M2x4) that secure the battery-cable bracket to the palm-rest and keyboard assembly.

6 Remove the battery-cable bracket from the palm-rest and keyboard assembly.



7 Using the pull-tab disconnect the battery cable from the system board.



Replacing the base cover

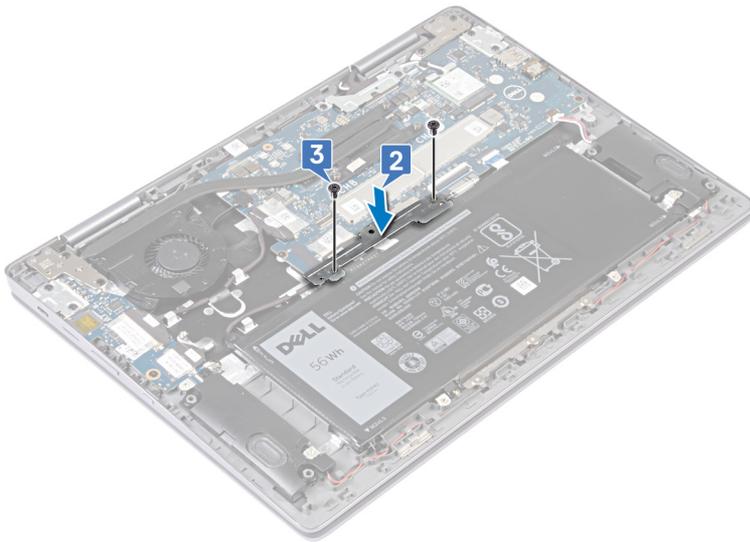
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Procedure

- 1 Connect the battery cable to the system board, if applicable.



- 2 Align the screw holes on the battery-cable bracket with the screw holes on the palm-rest and keyboard assembly.
- 3 Replace the two screws (M2x4) that secure the battery-cable bracket to the palm-rest and keyboard assembly.



- 4 Align the base cover with the palm-rest and keyboard assembly.
- 5 Carefully snap the base cover onto the palm-rest and keyboard assembly.



- 6 Replace the six screws (M2x6) that secure the base cover to the palm-rest and keyboard assembly.
- 7 Tighten the three captive screws that secure the base cover to the palm-rest and keyboard assembly.



Removing the battery

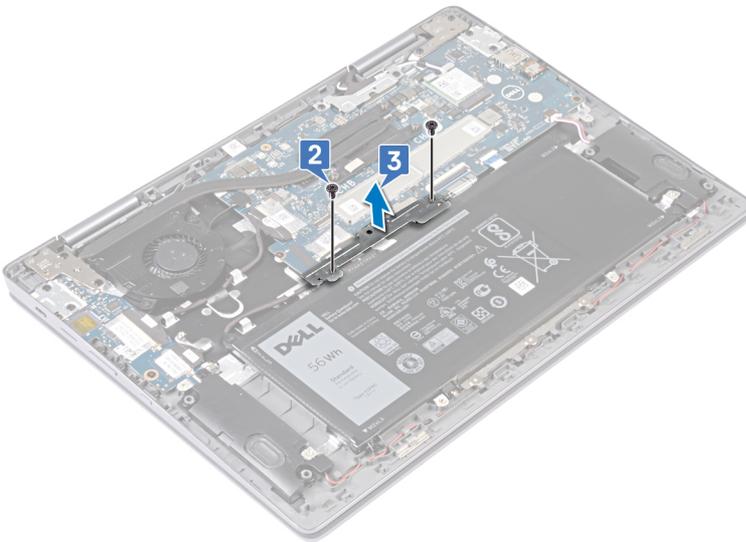
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Prerequisites

Remove the [base cover](#).

Procedure

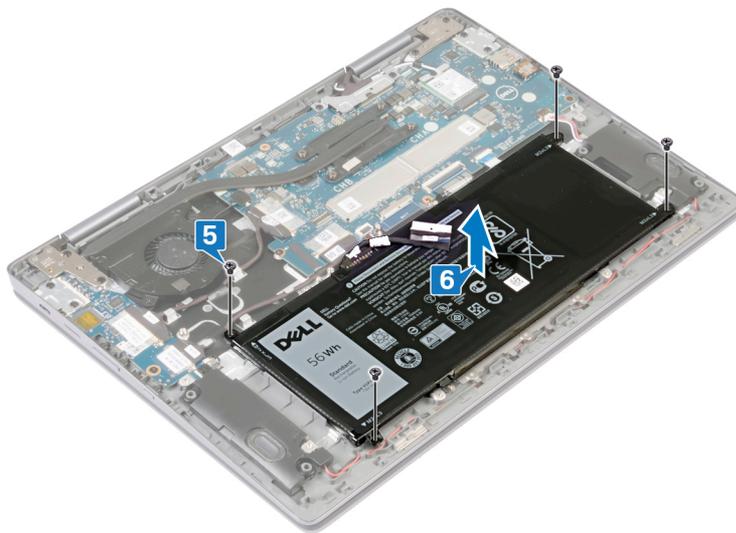
- 1 Disconnect the battery cable from the system board (applicable only if not disconnected earlier).
- 2 Remove the two screws (M2x4) that secure the battery-cable bracket to the palm-rest and keyboard assembly.
- 3 Remove the battery-cable bracket from the palm-rest and keyboard assembly.



- 4 Disconnect the battery cable from the system board.



- 5 Remove the four screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.
- 6 Lift the battery off the palm-rest and keyboard assembly.



- 7 Press and hold the power button for five seconds to ground the computer and drain the flea power.

Replacing the battery

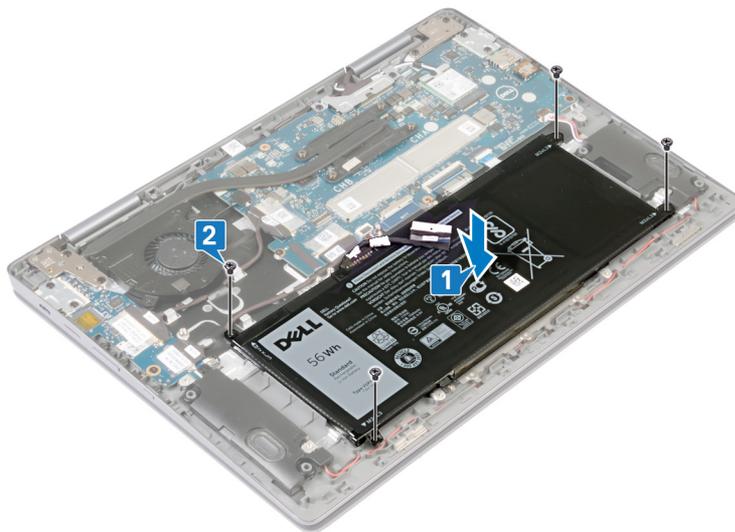
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Post-requisites

Replace the [base cover](#).

Procedure

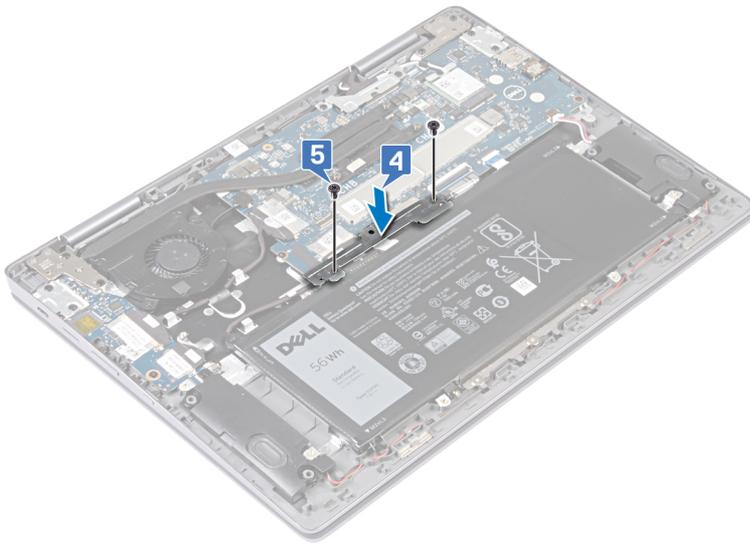
- 1 Align the screw holes on the battery with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the four screws (M2x3) that secure the battery to the palm-rest and keyboard assembly.



- 3 Connect the battery cable to the system board.



- 4 Align the screw holes on the battery-cable bracket with the screw holes on the palm-rest and keyboard assembly.
- 5 Replace the two screws (M2x4) that secure the battery-cable bracket to the palm-rest and keyboard assembly.



Removing the fan

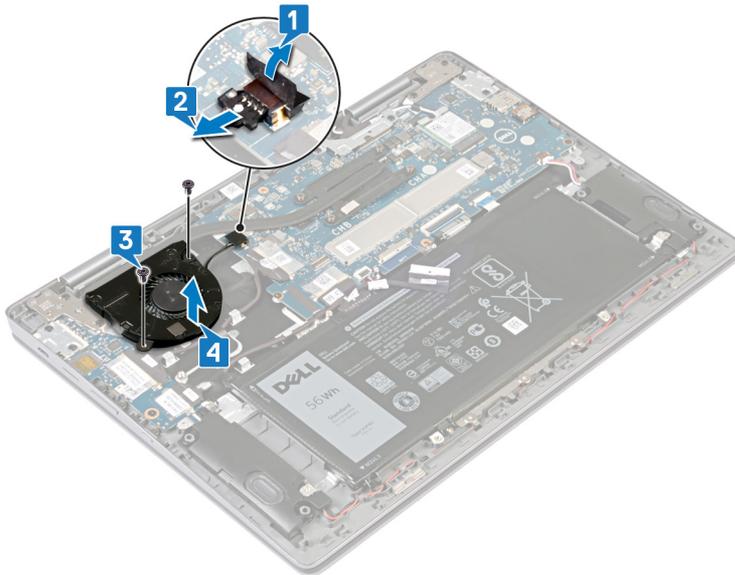
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Prerequisites

Remove the [base cover](#).

Procedure

- 1 Peel off the tape that secures the fan cable to the system board.
- 2 Disconnect the fan cable from the system board.
- 3 Remove the two screws (M2x4) that secure the fan to the palm-rest and keyboard assembly.
- 4 Lift the fan off the palm-rest and keyboard assembly.

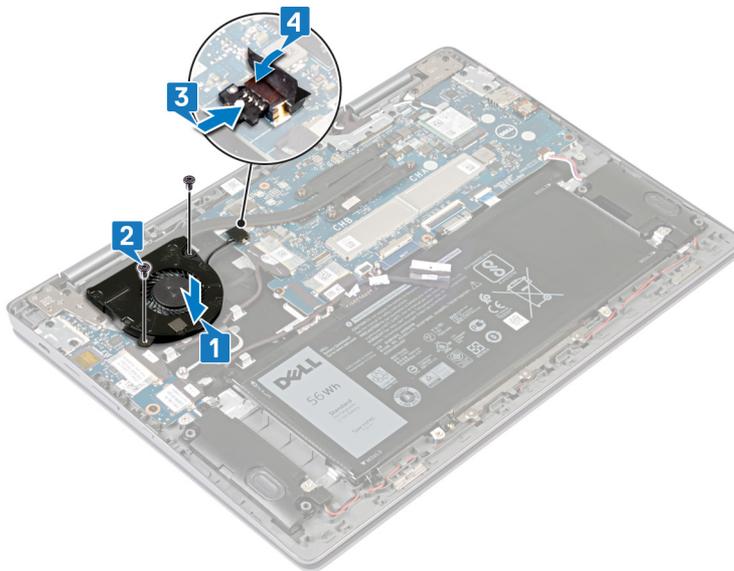


Replacing the fan

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Procedure

- 1 Align the screw holes on the fan with the screw holes on the palm-rest and antenna assembly.
- 2 Replace the two screws (M2x4) that secure the fan to the palm-rest and antenna assembly.
- 3 Connect the fan cable to the system board.
- 4 Adhere the tape that secures the fan cable to the system board.



Post-requisites

Replace the [base cover](#).

Removing the heat sink

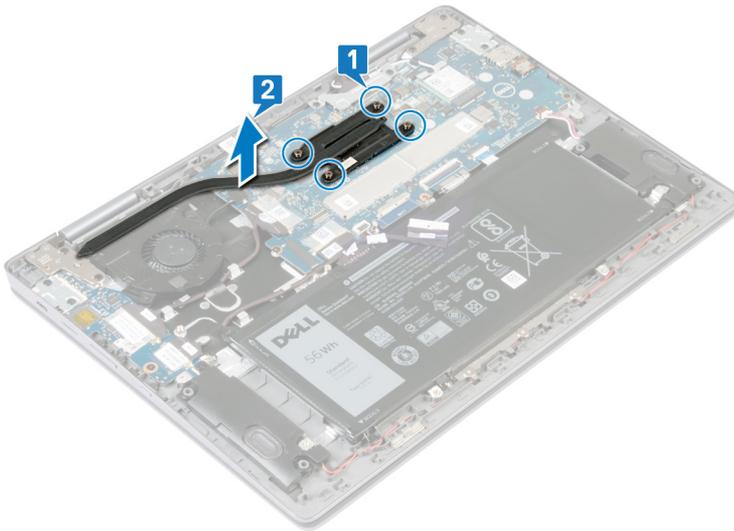
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- ⚠ WARNING:** The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.
- ⚠ CAUTION:** For maximum cooling of the processor, do not touch the heat transfer areas on the heat sink. The oils in your skin can reduce the heat transfer capability of the thermal grease.

Prerequisites

Remove the [base cover](#).

Procedure

- 1 In reverse order (as indicated on the heat sink), loosen the captive screws that secure the heat sink to the system board.
- 2 Lift the heat sink off the system board.



Replacing the heat sink

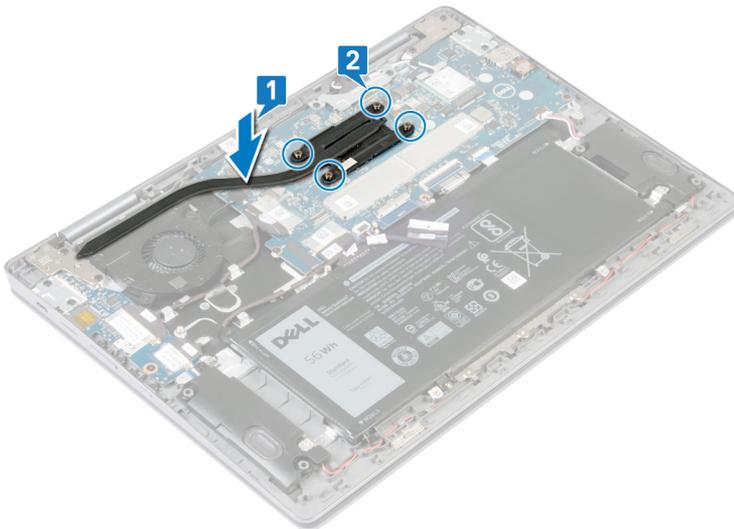
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⚠ CAUTION: Incorrect alignment of the heat sink can damage the system board and processor.

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

Procedure

- 1 Align the screw holes on the heat sink with the screw holes on the system board.
- 2 In sequential order (as indicated on the heat sink), tighten the captive screws that secure the heat sink to the system board.



Post-requisites

Replace the [base cover](#).

Removing the I/O board

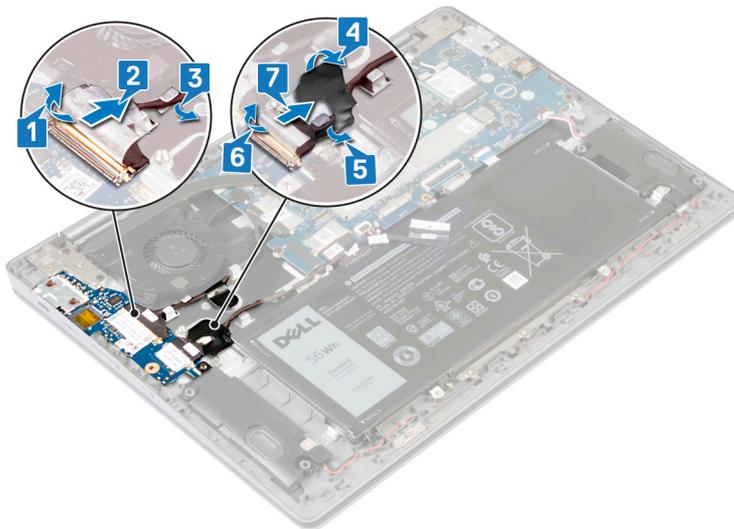
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Prerequisites

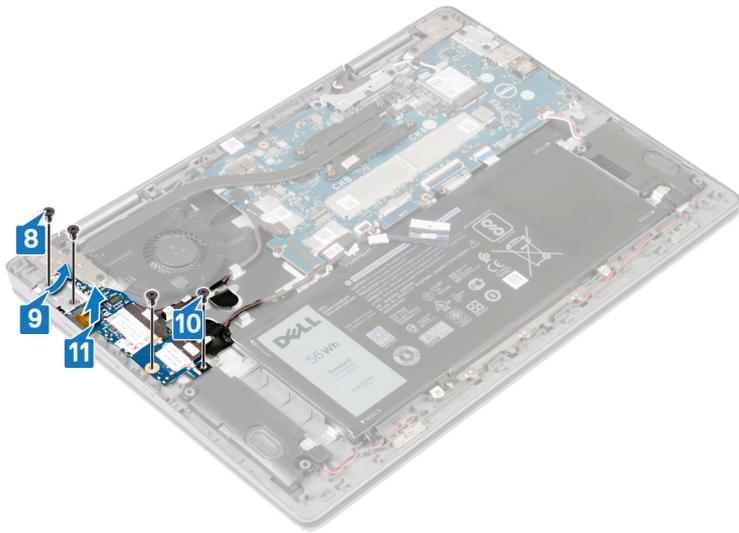
Remove the [base cover](#).

Procedure

- 1 Peel the tape that secures the I/O-board cable to its connector on the I/O board.
- 2 Disconnect the I/O-board cable from its connector on the I/O board.
- 3 Remove the I/O-board cable from the routing guides on the palm-rest and keyboard assembly.
- 4 Peel the tape that secures the I/O-board cable to the palm-rest and keyboard assembly.
- 5 Remove the I/O-board cable from the routing guide on the palm-rest and keyboard assembly.
- 6 Peel the tape that secures the I/O-board cable to its connector on the I/O board.
- 7 Disconnect the I/O-board cable from its connector on the I/O board.



- 8 Remove the two screws that secure the USB Type-C bracket to the I/O board.
- 9 Remove the USB Type-C bracket from the I/O board.
- 10 Remove the two screws (M2x4) that secure the I/O board to the palm-rest and keyboard assembly.
- 11 Lift the I/O board off the palm-rest and keyboard assembly.

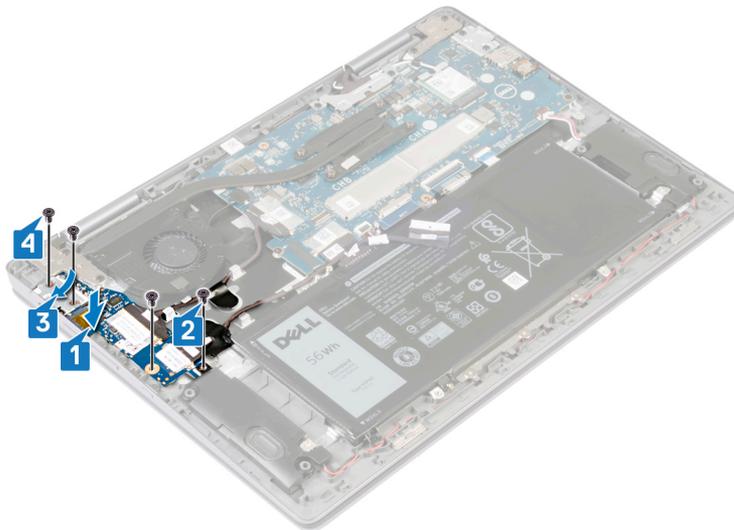


Replacing the I/O board

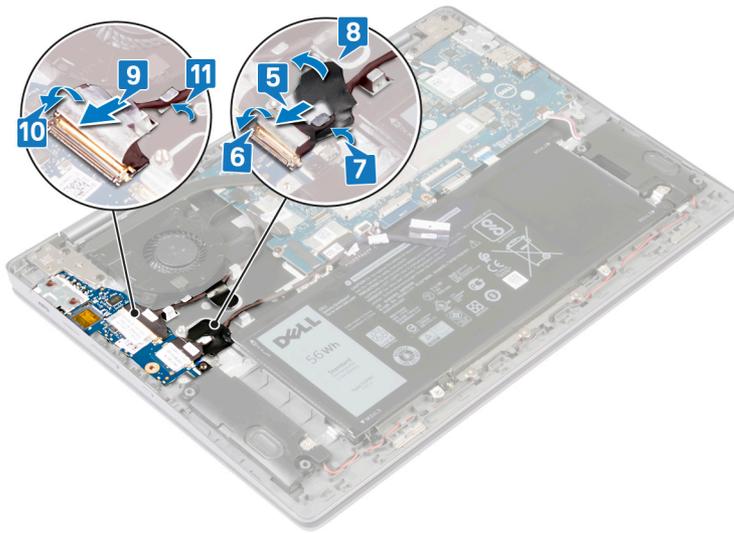
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Procedure

- 1 Align the screw holes on the I/O board with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the two screws (M2x4) that secure the I/O board to the palm-rest and keyboard assembly.
- 3 Align the screw holes on the I/O-board bracket with the screw holes on the I/O board.
- 4 Replace the two screws (M2x4) that secure the I/O-board bracket to the I/O-board.



- 5 Connect the cable to the connector on the I/O board.
- 6 Adhere the tape that secures the cable to the I/O board.
- 7 Route the cable through the routing guide on the palm-rest and keyboard assembly.
- 8 Adhere the tape that secures the I/O-board cable to the palm-rest and keyboard assembly.
- 9 Connect the cable to the connector on the I/O board.
- 10 Adhere the tape that secures the cable to the I/O board.
- 11 Route the cable through the routing guide on the palm-rest and keyboard assembly.



Post-requisites

Replace the [base cover](#).

Removing the speakers

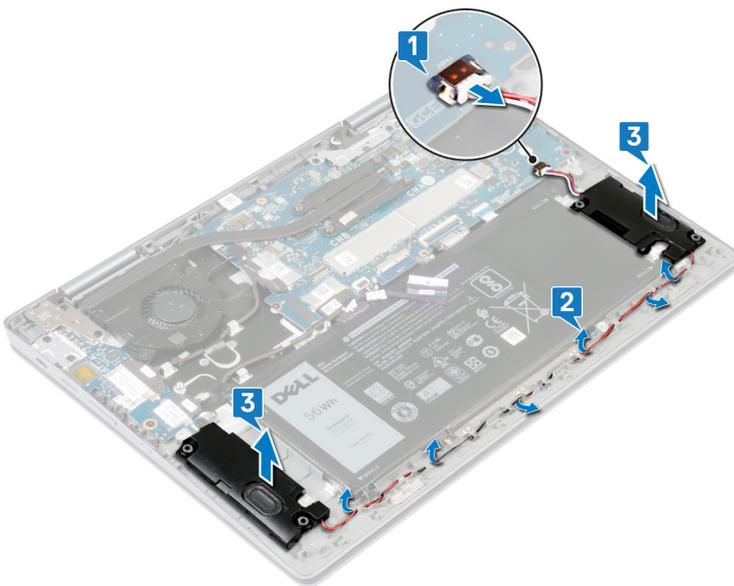
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Prerequisites

Remove the [base cover](#).

Procedure

- 1 Disconnect the speaker cable from the system board.
- 2 Remove the speaker cable from the routing guides on the palm-rest and keyboard assembly.
- 3 Remove the speakers from the alignment posts and lift the speakers off the palm-rest and keyboard assembly.

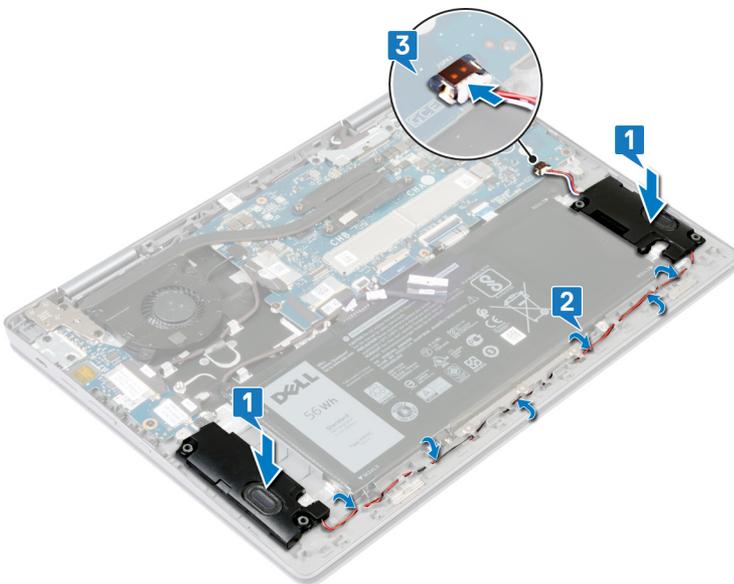


Replacing the speakers

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

- 1 Using the alignment posts on the palm-rest and keyboard assembly, place the speakers on the palm-rest and keyboard assembly.
- 2 Route the speaker cable through the routing guides on the palm-rest and keyboard assembly.
- 3 Connect the speaker cable to the system board.



Post-requisites

Replace the [base cover](#).

Removing the wireless card

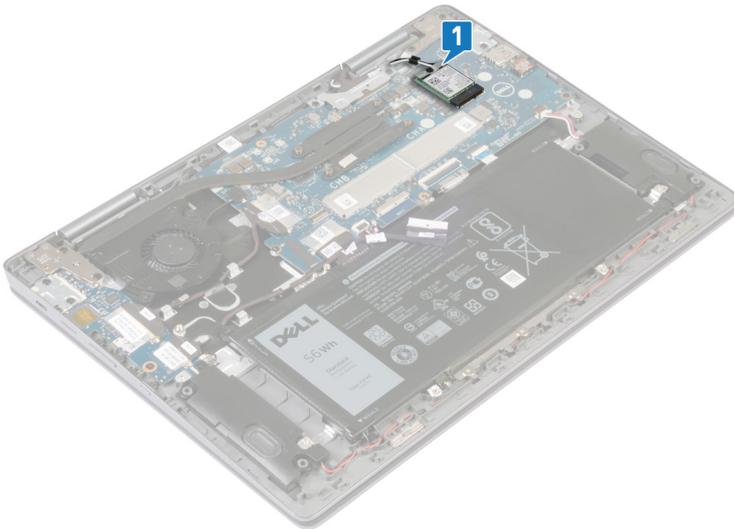
⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

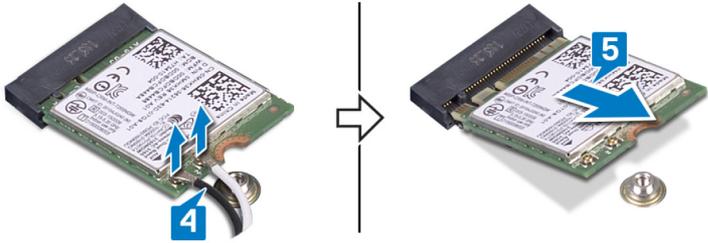
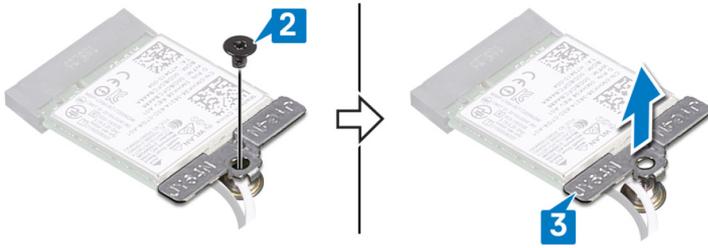
Remove the [base cover](#).

Procedure

- 1 Locate the wireless card on the system board.



- 2 Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card and system board.
- 3 Remove the wireless-card bracket from the wireless card.
- 4 Disconnect the antenna cables from the wireless card.
- 5 Slide and remove the wireless card from the wireless-card slot.



Replacing the wireless card

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Procedure

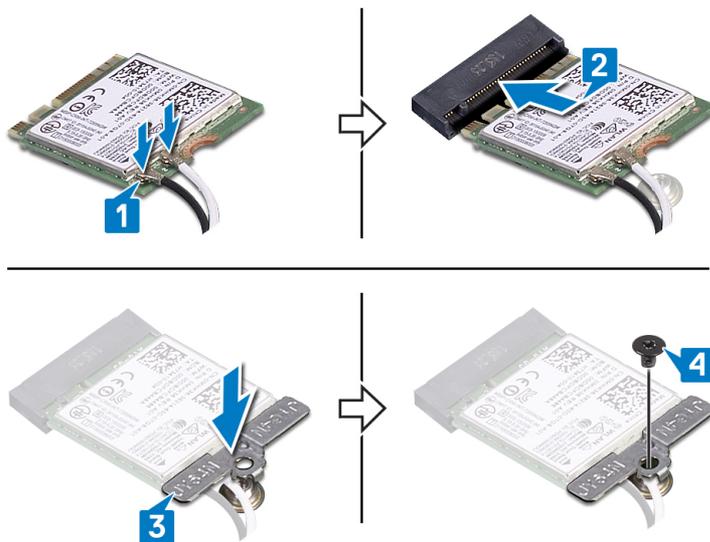
⚠ CAUTION: To avoid damage to the wireless card, do not place any cables under it.

- 1 Connect the antenna cables to the wireless card.
The following table provides the antenna-cable color scheme for the wireless card supported by your computer.

Table 2. Antenna-cable color scheme

Connectors on the wireless card	Antenna-cable color
Main (white triangle)	White
Auxiliary (black triangle)	Black

- 2 Align the notch on the wireless card with the tab on the wireless-card slot and insert the wireless card at an angle into the wireless-card slot.
- 3 Align the screw hole on the wireless-card bracket with the screw hole on the wireless card and palm-rest assembly.
- 4 Replace the screw (M2x3) that secures the wireless-card bracket to the wireless card and palm-rest assembly.



Post-requisites

Replace the [base cover](#).

Removing the display back cover

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

Remove the [base cover](#).

Procedure

- 1 Turn the computer over.
- 2 Using a plastic scribe, pry the display-back cover off the display-panel and antenna assembly.
- 3 Lift the display-back cover off the display-panel and antenna assembly.



Replacing the display back cover

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

- 1 Align the display-back cover on the display-panel and antenna assembly.
- 2 Snap the display-back cover onto the display-panel and antenna assembly.



Post-requisites

Replace the [base cover](#).

Removing the display assembly

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

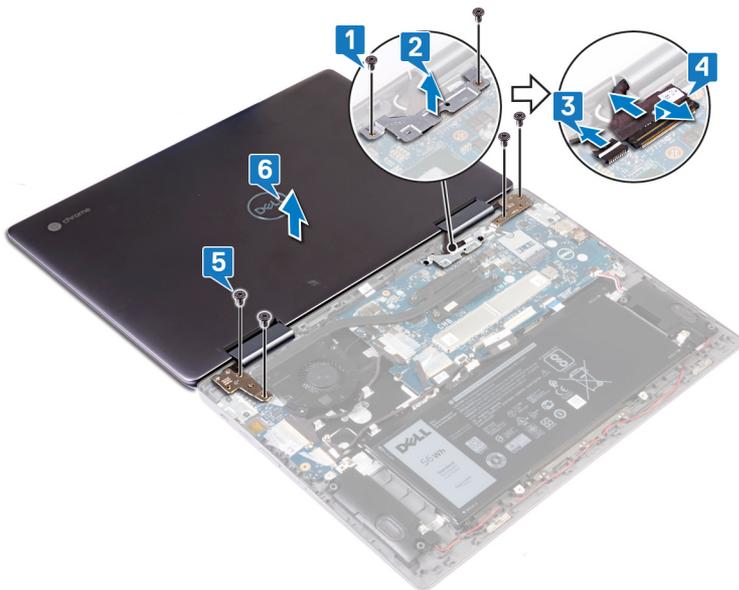
- 1 Remove the [base cover](#).
- 2 Remove the [wireless card](#).

Procedure

- 1 Turn the computer over and open the display as far as possible.

⚠ CAUTION: Place the computer on a soft and clean surface to avoid scratching the display.

- 2 Remove the two screws (M2x4) that connect the display-cable bracket to the palm-rest and keyboard assembly.
- 3 Disconnect the touch-screen board cable from the system board.
- 4 Open the latch and disconnect the display cable from the system board.
- 5 Remove the four screws (M2.5x5) that secures the display hinges to the I/O board and system board.
- 6 Lift the display assembly off the palm-rest assembly.



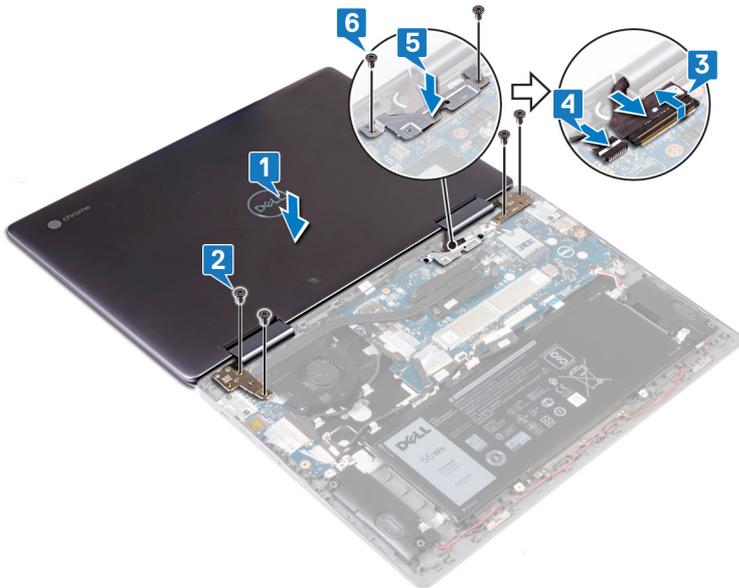
Replacing the display assembly

⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

⚠ CAUTION: Place the computer on a soft and clean surface to avoid scratching the display.

- 1 Place the display assembly and align the screw holes on the display hinges with the screw holes on the palm-rest assembly.
- 2 Replace the four screws (M2.5x5) that secure the display hinges to the I/O board and system board.
- 3 Connect the display cable to the system board and close the latch to secure the cable.
- 4 Connect the touch-screen cable to the system board.
- 5 Align the screw holes on the display-cable bracket with the screw holes on the system board.
- 6 Replace the two screws (M2x4) that secure the display-cable bracket to the system board.



Post-requisites

- 1 Replace the [wireless card](#).
- 2 Replace the [base cover](#).

Removing the display hinges

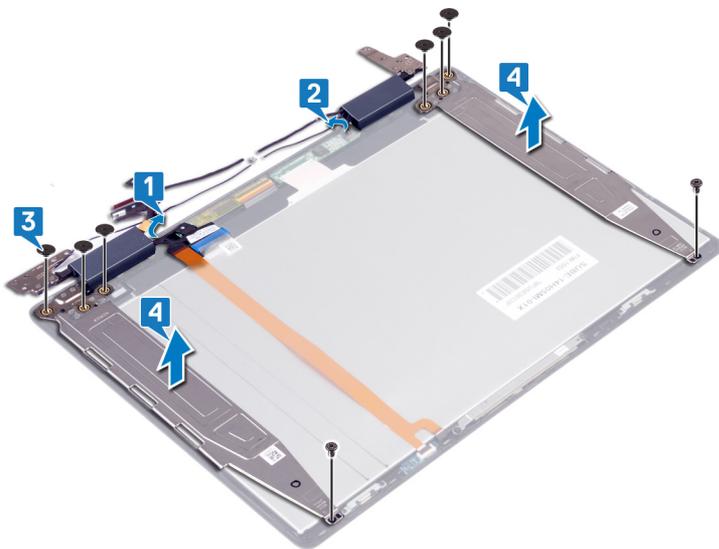
⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

- 1 Remove the [base cover](#).
- 2 Remove the [display back-cover](#).

Procedure

- 1 Remove the display cable and antenna cable out from the hinge cover.
- 2 Remove the antenna cable from the hinge cover.
- 3 Remove the six screws (M2.5x2.5) that secure the hinges to the display-panel and antenna assembly.
- 4 Remove the two screws (M2x3) that secure the hinge brackets to the display panel and antenna assembly.



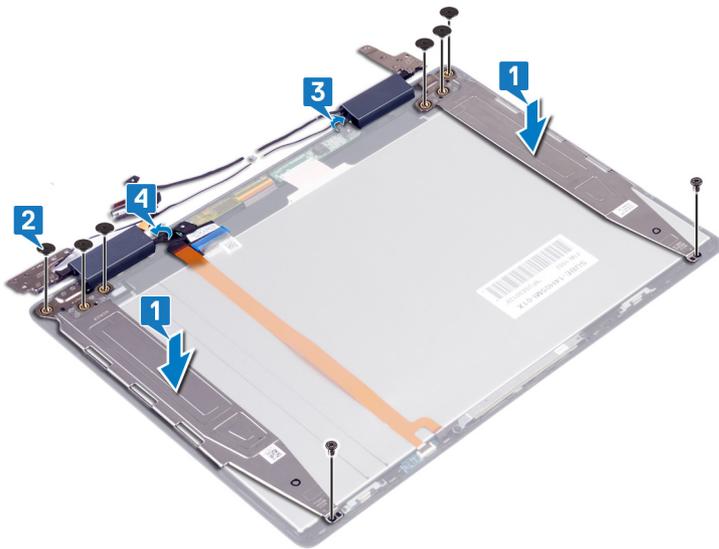
- 5 Lift the display hinges off the display-panel and antenna assembly.

Replacing the display hinges

WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Procedure

- 1 Align the screw holes on the display hinges with the screw holes on the display-panel and antenna assembly and replace the two screws (M2x3).
- 2 Replace the six screws (M2.5x2.5) that secure the display hinges to the display-panel and antenna assembly.
- 3 Route the antenna cable to the hinge cover.
- 4 Route the display cable and antenna cable through the hinge cover.



Post-requisites

- 1 Replace the [display back-cover](#).
- 2 Replace the [base cover](#).

Removing the camera

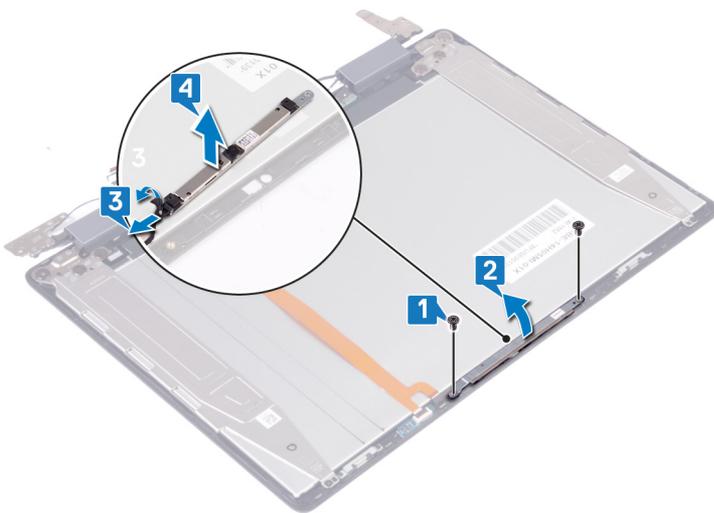
⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

- 1 Remove the [base cover](#).
- 2 Remove the [display back-cover](#).

Procedure

- 1 Remove the two screws (M2x3) that secures the camera module to the display-panel and antenna assembly.
- 2 Turn the camera module over.
- 3 Disconnect the camera cable from the camera.
- 4 Lift the camera off the display-panel and antenna assembly.

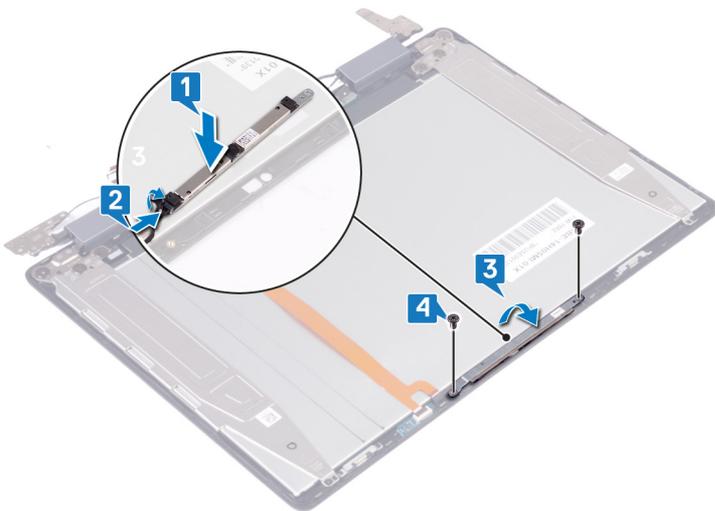


Replacing the camera

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Procedure

- 1 Place the camera module on the display-panel and antenna assembly.
- 2 Connect the camera cable to the camera module.
- 3 Turn the camera module over and align the screw holes on the camera module to the screw holes on the display-panel and antenna assembly.
- 4 Replace the two screws (M2x3) that secure the camera module to the display-panel and antenna assembly.



Post-requisites

- 1 Replace the [display back-cover](#).
- 2 Replace the [base cover](#).

Removing the display cable

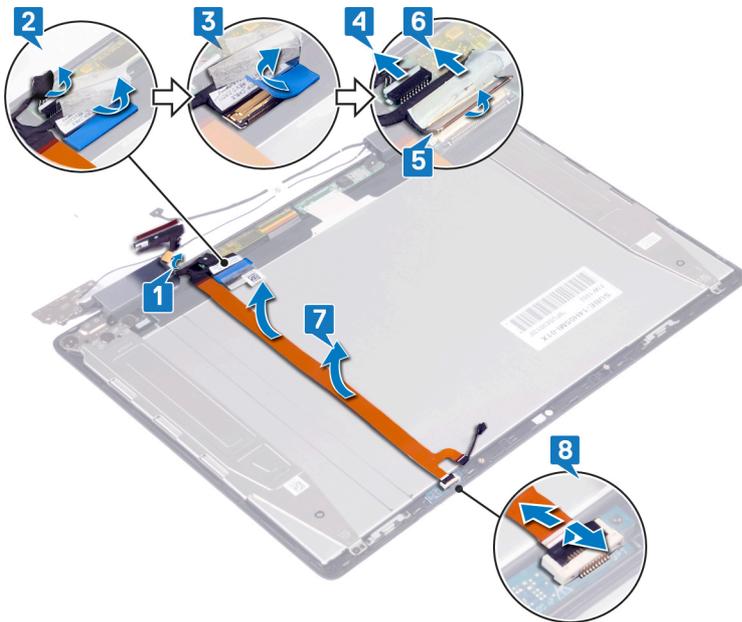
⚠ WARNING: Before working inside your computer, read the safety information that shipped with your computer and follow the steps in [Before working inside your computer](#). After working inside your computer, follow the instructions in [After working inside your computer](#). For more safety best practices, see the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

Prerequisites

- 1 Remove the [base cover](#).
- 2 Remove the [display assembly](#).
- 3 Remove the [display back-cover](#).
- 4 Remove the [camera](#).

Procedure

- 1 Remove the display cable from the hinge on the display-panel and antenna assembly.
- 2 Peel the tapes that secure the touch-screen cable and display cable to its connectors on the display-panel and antenna assembly.
- 3 Peel off the Mylar from the display cable.
- 4 Disconnect the touch-screen cable from its connector the display-panel and antenna assembly.
- 5 Open the latch that secures the display cable to its connector on the display-panel and antenna assembly.
- 6 Disconnect the display cable from the display-panel and antenna assembly.
- 7 Peel the display cable from the display-panel and antenna assembly
- 8 Open the latch and disconnect the display cable from the display-panel and antenna assembly.

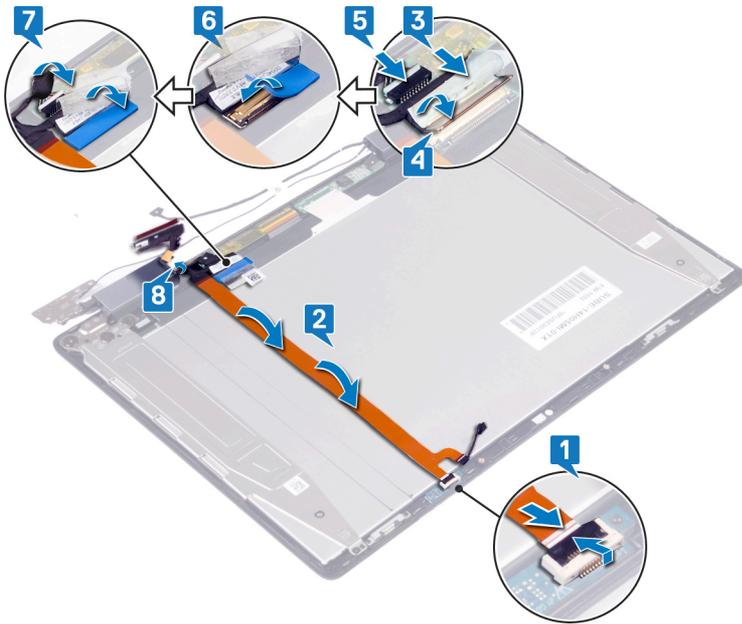


Replacing the display cable

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Procedure

- 1 Close the latch and connect the display cable to the display-panel and antenna assembly.
- 2 Adhere the display cable to the display-panel and antenna assembly.
- 3 Connect the display cable to its connector on the display-panel and antenna assembly.
- 4 Close the latch that secures the display cable to the display-panel and antenna assembly.
- 5 Connect the touch-screen cable to its connector on the display-panel and antenna assembly.
- 6 Adhere the Mylar to the display-cable connector.
- 7 Adhere the tape that secures the display cable to the display-panel and keyboard assembly.
- 8 Route the display cable through the hinge on the display-panel and antenna assembly.



Post-requisites

- 1 Replace the [camera](#).
- 2 Replace the [display back-cover](#).
- 3 Replace the [display assembly](#).
- 4 Replace the [base cover](#).

Replacing the display panel

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Procedure

Place the display panel on a flat surface.



Post-requisites

- 1 Replace the [display cable](#).
- 2 Replace the [camera](#).
- 3 Replace the [display hinges](#).
- 4 Replace the [display back-cover](#).
- 5 Replace the [display assembly](#).
- 6 Replace the [base cover](#).

Removing the system board

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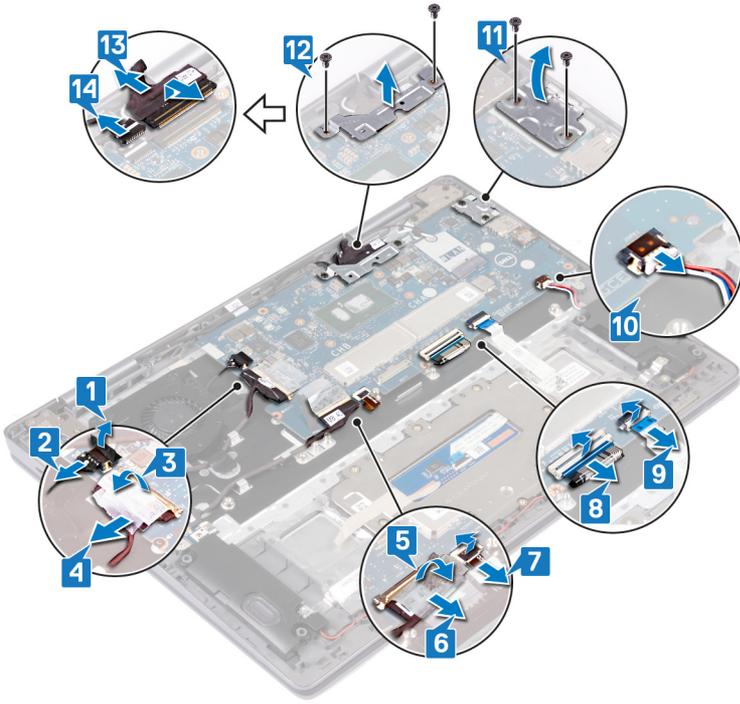
- ⓘ NOTE:** Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.
- ⓘ NOTE:** Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.
- ⓘ NOTE:** Before disconnecting the cables from the system board, note the location of the connectors so that you can reconnect the cables correctly after you replace the system board.

Prerequisites

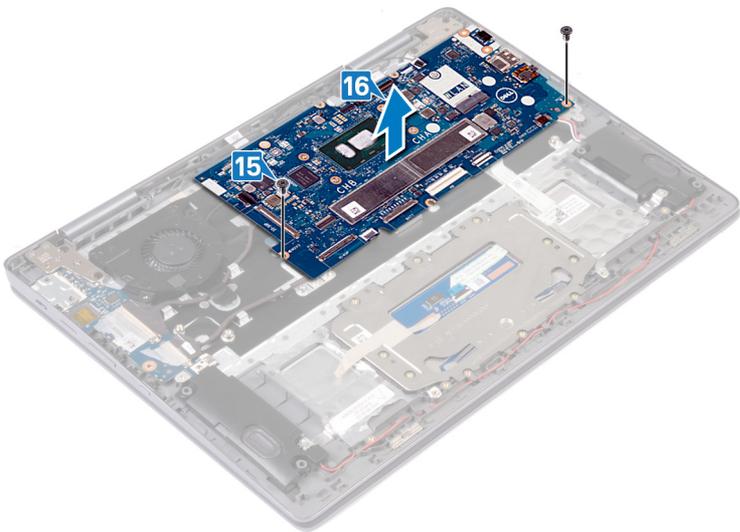
- 1 Remove the [base cover](#).
- 2 Remove the [battery](#).
- 3 Remove the [heat sink](#).

Procedure

- 1 Remove the tape that secures the fan cable to the system board.
- 2 Disconnect the fan cable from the system board.
- 3 Remove the tape that secures the I/O-board cable to its connector on the system board.
- 4 Disconnect the I/O-board cable from its connector on the system board.
- 5 Remove the tape that secures the I/O-board cable to its connector on the system board.
- 6 Disconnect the I/O-board cable from its connector on the system board.
- 7 Open the latch and disconnect the keyboard-backlight cable from the system board.
- 8 Open the latch and disconnect the keyboard cable from the system board.
- 9 Open the latch and disconnect the touchpad cable from the system board.
- 10 Disconnect the speaker cable from the system board.
- 11 Remove the two screws (M2x4) that secure the Type-C bracket to the system board.
- 12 Remove the two screws that secure the display-cable bracket to the system board.
- 13 Open the latch and disconnect the display cable from the system board.
- 14 Disconnect the touch-screen board cable from the system board.



- 15 Remove the two screws (M2x3) that secures the system board to the palm-rest and keyboard assembly.
- 16 Lift the system board off the palm-rest and keyboard assembly.



Replacing the system board

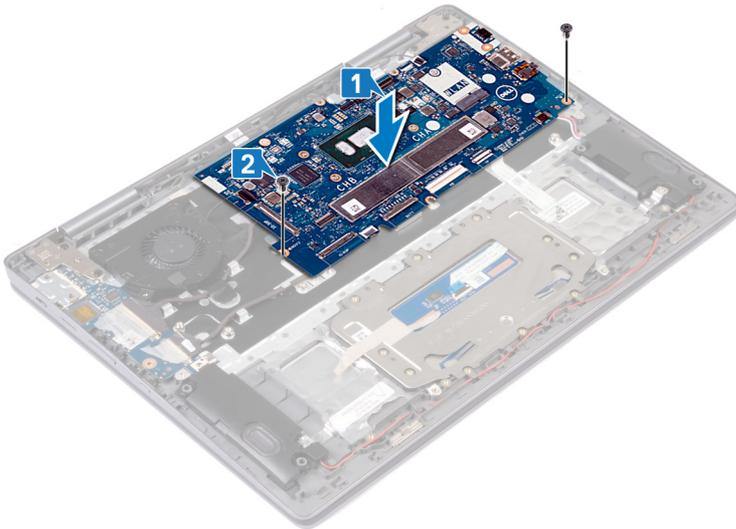
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ⓘ NOTE: Your computer's Service Tag is stored in the system board. You must enter the Service Tag in the BIOS setup program after you replace the system board.

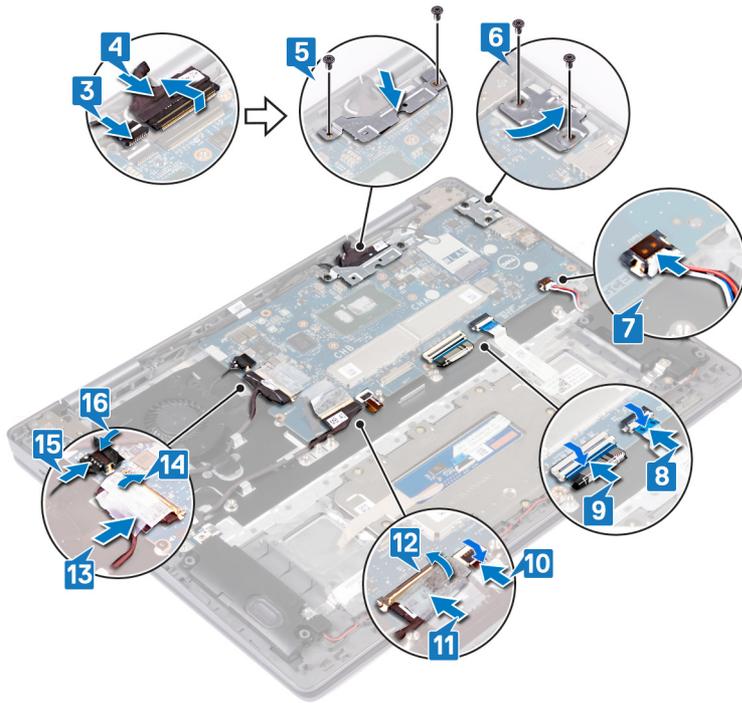
ⓘ NOTE: Replacing the system board removes any changes you have made to the BIOS using the BIOS setup program. You must make the appropriate changes again after you replace the system board.

Procedure

- 1 Align the screw holes on the system board with the screw holes on the palm-rest and keyboard assembly.
- 2 Replace the two screws (M2x3) that secure the system board to the palm-rest and keyboard assembly.



- 3 Connect the touch-screen board cable from the system board.
- 4 Close the latch and connect the display cable to the system board.
- 5 Align the display-cable bracket and replace the two screws that secure the display-cable bracket to the system board.
- 6 Align the Type-C bracket and remove the two screws (M2x4) that secure the Type-C bracket to the system board.
- 7 Connect the speaker cable to the system board.
- 8 Close the latch and connect the touchpad cable to the system board.
- 9 Close the latch and connect the keyboard cable to the system board.
- 10 Close the latch and connect the keyboard-backlight cable to the system board.
- 11 Connect the I/O-board cable to its connector on the system board.
- 12 Adhere the tape that secures the I/O-board cable to its connector on the system board.
- 13 Connect the I/O-board cable to its connector on the system board.
- 14 Adhere the tape that secures the I/O-board cable to its connector on the system board.
- 15 Connect the fan cable to its connector on the system board.
- 16 Adhere the tape that secures the fan cable to its connector on the system board.



Post-requisites

- 1 Replace the [heat sink](#).
- 2 Replace the [battery](#).
- 3 Replace the [base cover](#).

Removing the palm-rest and keyboard assembly

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Prerequisites

- 1 Remove the [base cover](#).
- 2 Remove the [battery](#).
- 3 Remove the [fan](#).
- 4 Remove the [heat sink](#).
- 5 Remove the [I/O board](#).
- 6 Remove the [speakers](#).
- 7 Remove the [wireless card](#).
- 8 Remove the [display assembly](#).
- 9 Remove the [system board](#).

Procedure

After performing the steps in prerequisites we are left with the palm-rest and keyboard assembly.



Replacing the palm-rest and keyboard assembly

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Procedure

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



Post-requisites

- 1 Replace the [system board](#).
- 2 Replace the [display assembly](#).
- 3 Replace the [wireless card](#).
- 4 Replace the [speakers](#).
- 5 Replace the [I/O board](#).
- 6 Replace the [heat sink](#).
- 7 Replace the [fan](#).
- 8 Replace the [battery](#).
- 9 Replace the [base cover](#).

Technology and components

NOTE: Instructions provided in this section are applicable on computers shipped with Windows 10 operating system. Windows 10 is factory-installed with this computer.

Special keys

Dell Inspiron Chromebook keyboards have extra features to help you browse the web efficiently. The keyboard contains a dedicated search key and a new row of web shortcut keys. A standard USB Windows keyboard can also be used with the Chromebook, using the same keyboard shortcuts.



Keyboard keys function

The Chromebook keyboard is designed to help you access the features that you need the most. The table below is an overview of the special keys on the top row of the keyboard:

Table 3. Special keys

Keys	Description
	Go to the previous page in browser history
	Go to the next page in browser history
	Reload active page
	Enter Immersive mode, which hides the tabs and launcher
	Enter Overview mode, which shows all windows

Keys	Description
	Decrease brightness
	Increase brightness
	Mute
	Decrease volume
	Increase volume
	Search applications and the web at the same time. On a Chromebook, this key is on the side, where the Caps Lock key is normally located.
	Lock

Keyboard shortcut keys

Table 4. Shortcut keys

Function	Combination keys
Page up	Press Alt and the up arrow
Page down	Press Alt and the down arrow
Home	Press Ctrl+Alt, and the up arrow
End	Press, Ctrl+Alt and the down arrow
Delete	Press Alt+Backspace
Toggle the bookmark bar	Ctrl+Shift+B
Search current webpage	Ctrl+F
Open a new tab	Ctrl+T
Open a new window	Ctrl+N
Open the link you clicked in a new background tab	Press Alt and click a link
Switch to next tab	Ctrl+Tab
Switch to next window	Switch to next window
Sign out of Google Account	Ctrl+Shift+Q
Close current tab	Ctrl+W

To access the keyboard on the screen and to see more shortcuts, press Ctrl+Alt+?.

Touchpad gestures

For more information about touchpad gestures for Inspiron Chromebook, see the Google Chromebook Help at support.google.com.

Bluetooth

This section outlines the instruction to pair a bluetooth device with your Chrome devices.

Bluetooth technology lets you connect devices wirelessly over short distances. To use the Bluetooth accessories with your Inspiron Chromebook, first check if your Inspiron Chromebook supports Bluetooth. You will then need to pair it with the accessory.

To see if you can use the Bluetooth accessories with your Inspiron Chromebook, click the status area in the lower right corner, where your

account picture appears. If you see the Bluetooth icon  or  in the menu, your Inspiron Chromebook supports Bluetooth. If you do not see either of these icons, your Inspiron Chromebook does not support Bluetooth. If your Inspiron Chromebook supports Bluetooth, it can connect to a wide range of the Bluetooth accessories, including the following:

- Keyboards
- Mice
- Speakers
- Headphones
- Headsets (audio only)

To connect a Bluetooth device with your Inspiron Chromebook, you need to pair them.

- 1 Sign in to your Inspiron Chromebook.
- 2 Click the status area in the lower-right corner, where your account picture appears.
- 3 Select your **Bluetooth status** in the menu that appears.
- 4 If Bluetooth is disconnected, click the disconnected icon  or click **Enable Bluetooth** in the menu. Your Inspiron Chromebook will automatically scan for available Bluetooth devices.
- 5 Select the device you want to add from the list of available Bluetooth devices and click **Connect**.
- 6 Follow the instructions on screen to connect your Bluetooth device.
 - If you are connecting a mouse, no PIN is normally required. If you are prompted for a PIN, enter the PIN for your mouse using your Chrome device's keyboard.
 - If you are connecting a keyboard, enter the randomly generated PIN on the keyboard you wish to pair and press Enter.

To confirm that your Bluetooth device is connected, check the Bluetooth status. You should see your device listed there.

NOTE: If you are turning on your chrome device for the first time and you have a Bluetooth device nearby that is also turned on, your chrome device may automatically detect the device and show you steps to pair it. You will see these instructions only if your chrome device does not already have a similar device connected or its functionality is not built in, like a keyboard or trackpad.

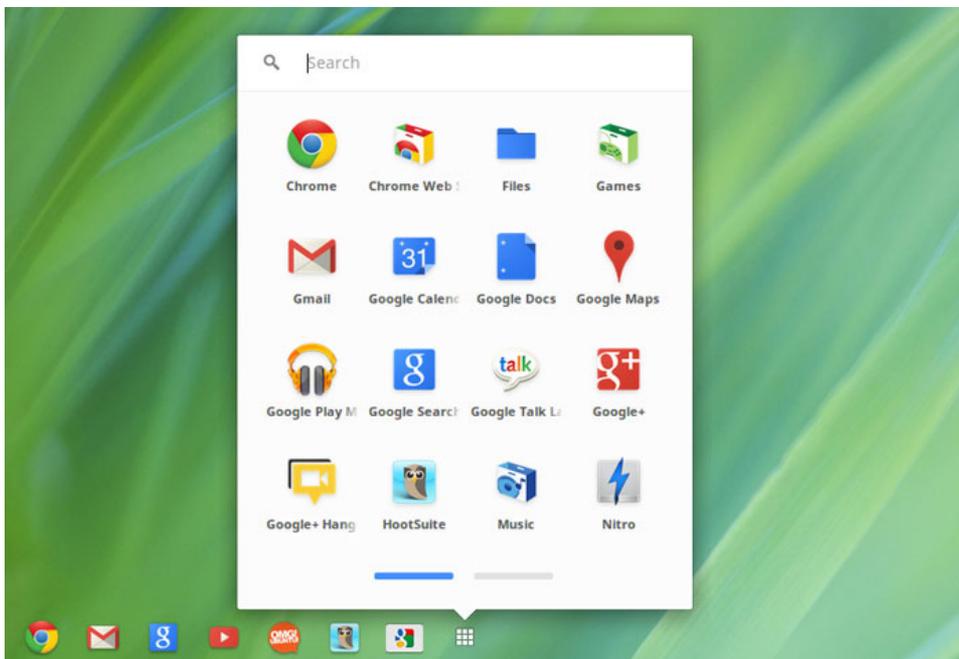
Software

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

Operating system

This page contains information about the operating system used by the Dell Inspiron Chromebook.

Chrome OS



Inspiron Chromebooks are powered by the Google Chrome operating system, based on Google's popular Chrome browser. It has been developed to provide a fast, simple, and more secure computing experience for users who spend most of their time online.

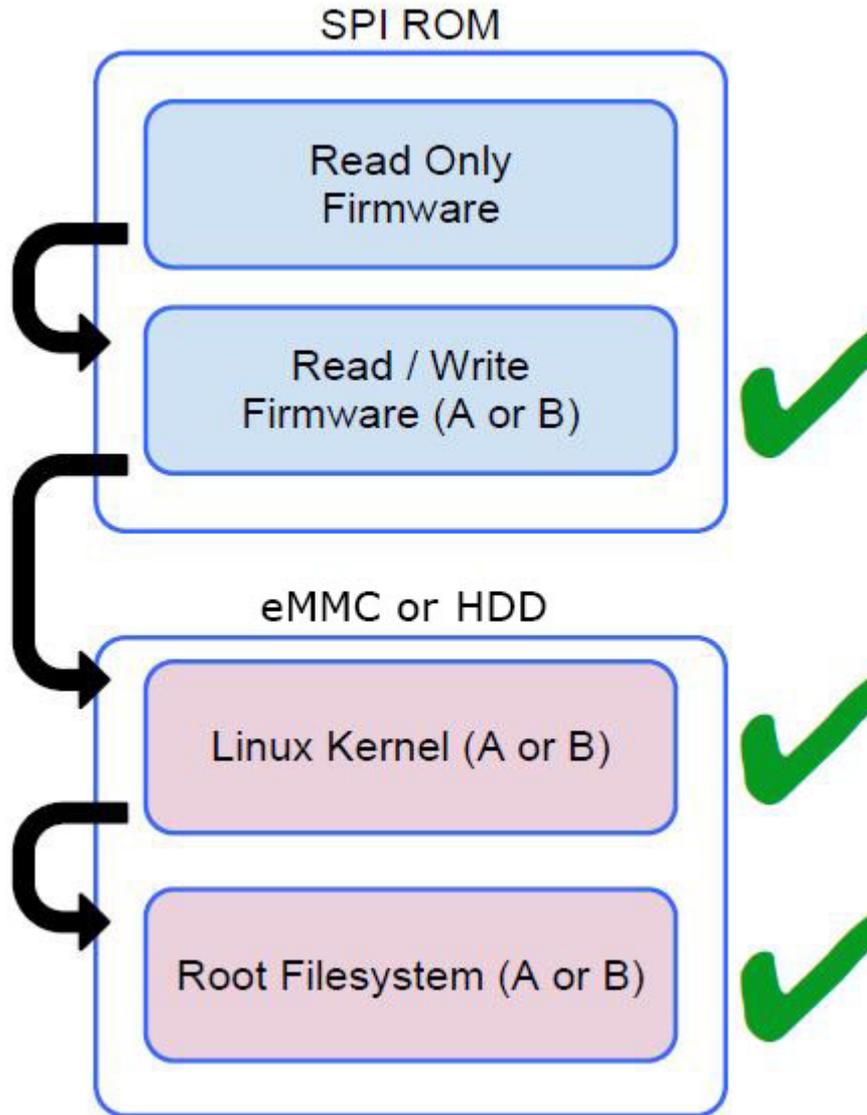
Key Benefits

- Speed
- Simplicity
- Security
- Updatability
- Synchronisability
- High power at low cost
- Easy to learn and use
- Documents, calendar, e-mail, contacts, and tasks available online and offline, and all securely backed-up and synchronised in the cloud.
- Access to the Chrome web app store
- Killer web apps
- The latest Intel Core processors

- Fun games
- Built-in support for popular file types and external devices

For more information about the Chrome OS, please visit the [Chrome OS training page](#).

Verified Boot

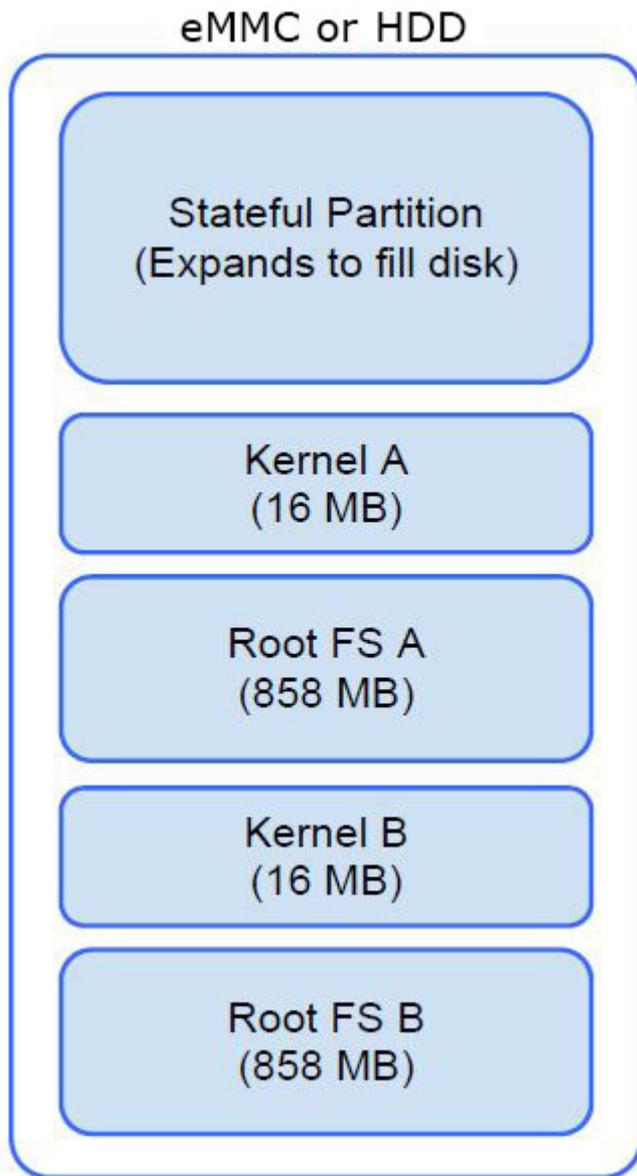


Read Only firmware verifies the integrity of Read/Write (R/W) firmware. R/W firmware verifies the active Linux kernel. During run time, the kernel verifies each block read from disk.

If a verification step fails and there is no backup option, the machine enters recovery mode.

The Developer Mode switch turns off verified boot (at the Kernel stage) to enable users to run Chromium OS (or other OS). The BIOS is always verified.

Disk Partition Map



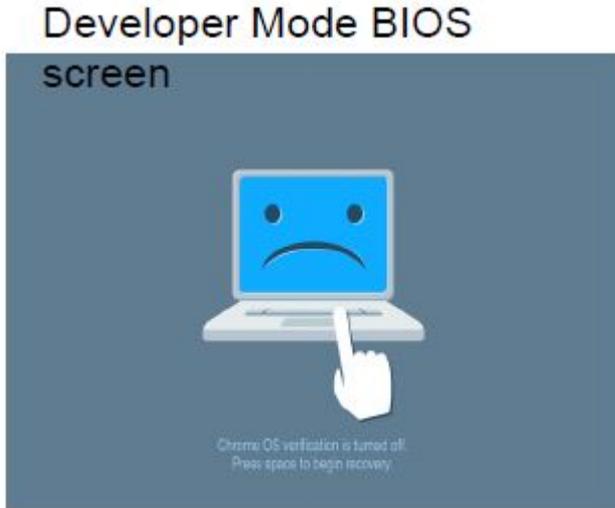
There are two copies of Chrome OS on disk: an active copy and a backup copy. Each copy consists of a kernel partition and a root file system. The backup copy is updated automatically in the background. Users only need to reboot. The partition contains encrypted user data and is also used in the factory for storing test software.

Developer and Recovery mode

Table 5. Developer and Recovery mode

Developer Mode

Recovery Mode



- Used to boot without verification.
- Can be turned on via key combination during boot.
- Stateful partition is wiped during transitions.
- Used in the factory to boot test image.

- Allows a user to reinstall the Chrome OS from a USB key or SD card.
- Recovery mode is entered if verified boot fails.
- A user can force recovery mode via a key combination during boot.

Coreboot and U-boot Custom Firmware

Coreboot (x86 only)

- Memory and chipset initialization
- Open-source, except for MRC binary from Intel.

U-Boot

- Performs verified boot
- Handles recovery and Developer Mode
- Open source code

Normal boot is very fast, as it takes less than 1 second to start loading kernel. Inspiron Chromebook does not boot other operating systems such as Windows or OS X.

Chrome vs Chromium OS

Table 6. Difference between Chromium and Chrome OS

Chromium OS	Chrome OS
<ul style="list-style-type: none">• Is an open source project: http://www.chromium.org/chromium-os• Runs on regular PCs and Chrome devices	<ul style="list-style-type: none">• Is based on Chromium OS• Only runs on the Chrome devices with required hardware features (TPM, RO firmware, recovery button, developer switch).• Includes additional licensed features such as the Netflix plugin, video codecs, and fonts

View system information

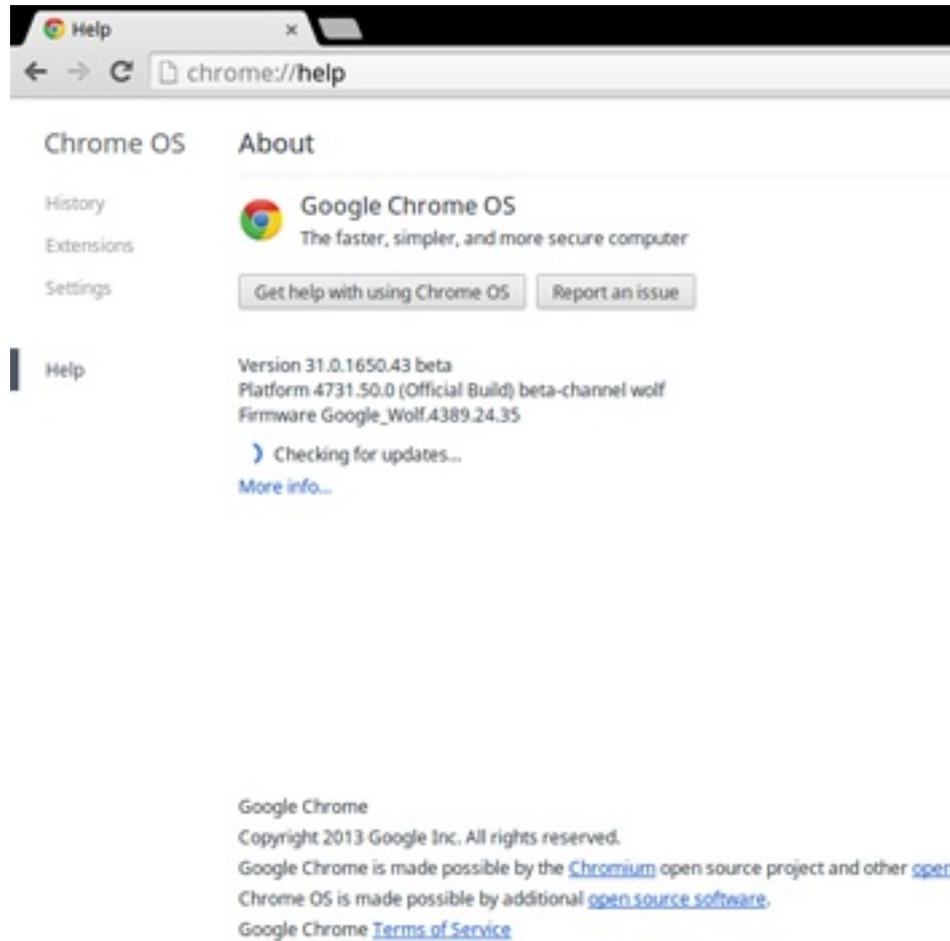
This page contains all the information about viewing system information for the Dell Inspiron Chromebook.

Dell Inspiron Chromebook does not support Dell BIOS. Hence, there are several ways to check system specifications depending on the information you are searching for. The table below lists some of the most commonly used methods to view system information and specifications.

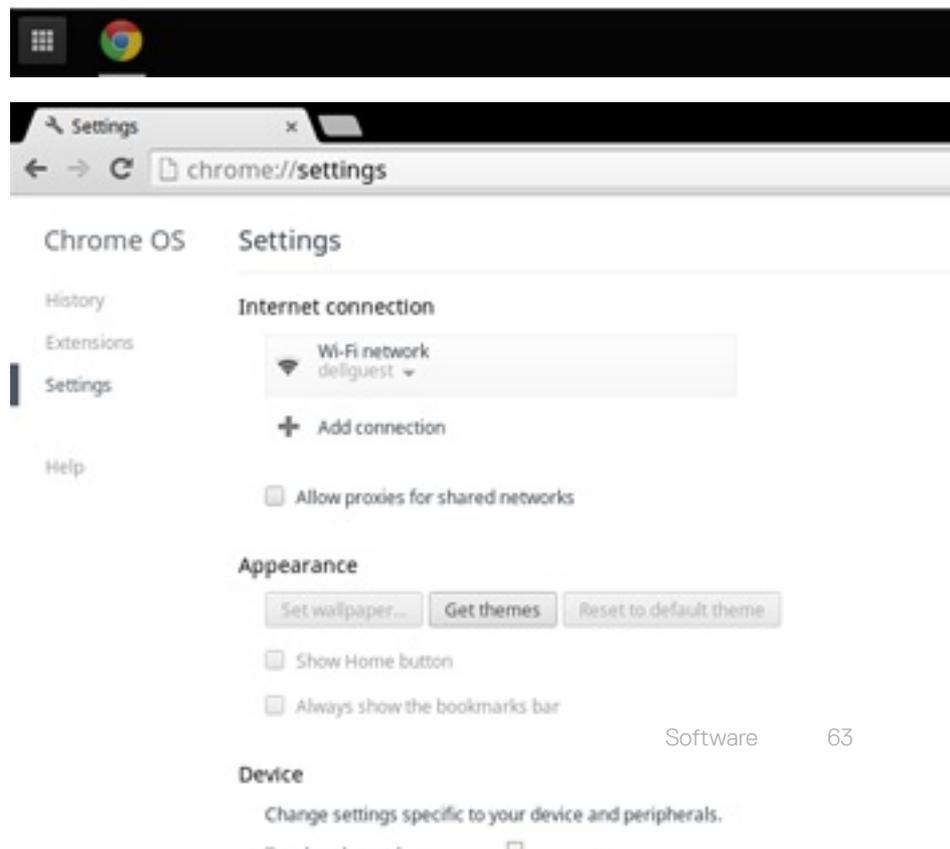
Table 7. View system information

Commands	Action and Purpose
chrome://help	View basic OS information.

Screenshot

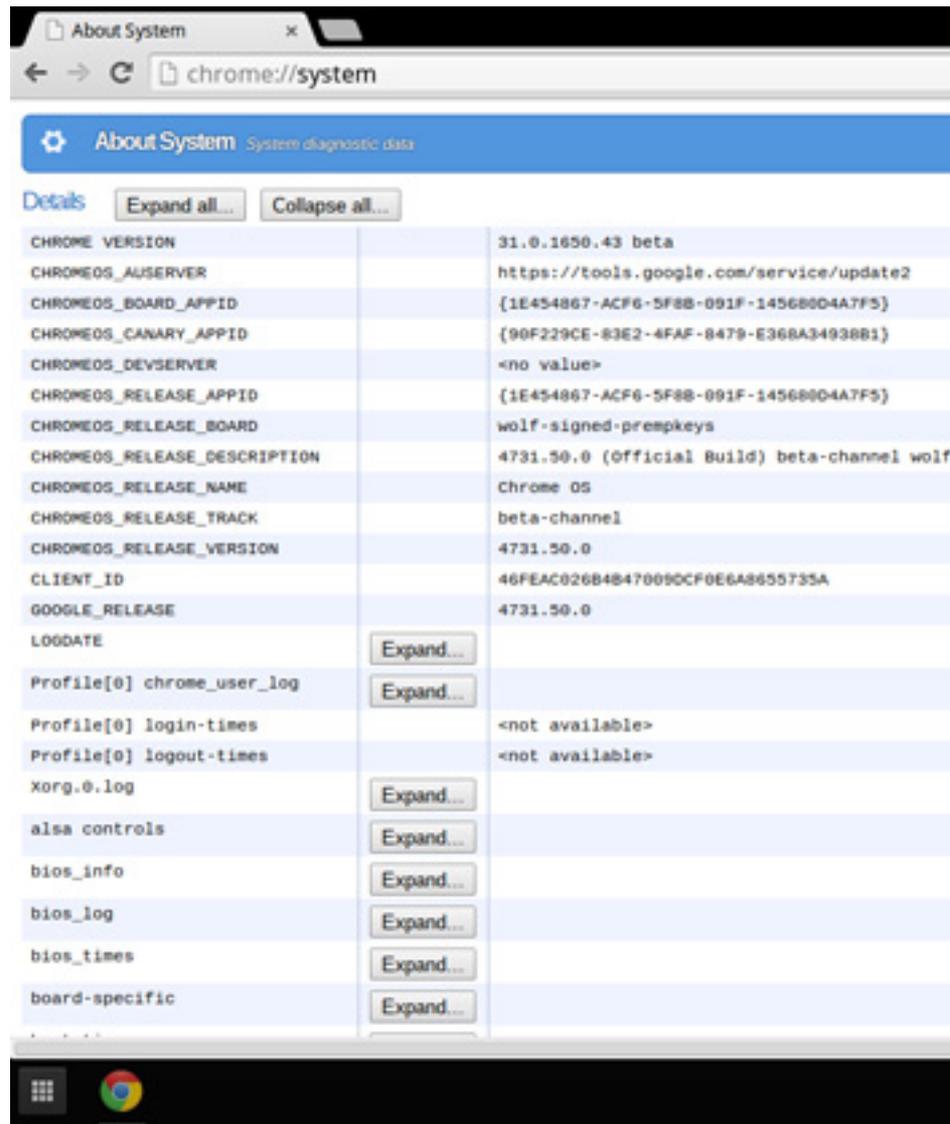


chrome://settings	View information such as screen resolution options (Device>Display settings), touchpad, and other basic hardware information.
-------------------	---



Commands**Action and Purpose****Screenshot**`chrome://system`

View advanced system information such as the Google Chrome version, BIOS information, CPU information, memory information, network status, power supply information, etc.



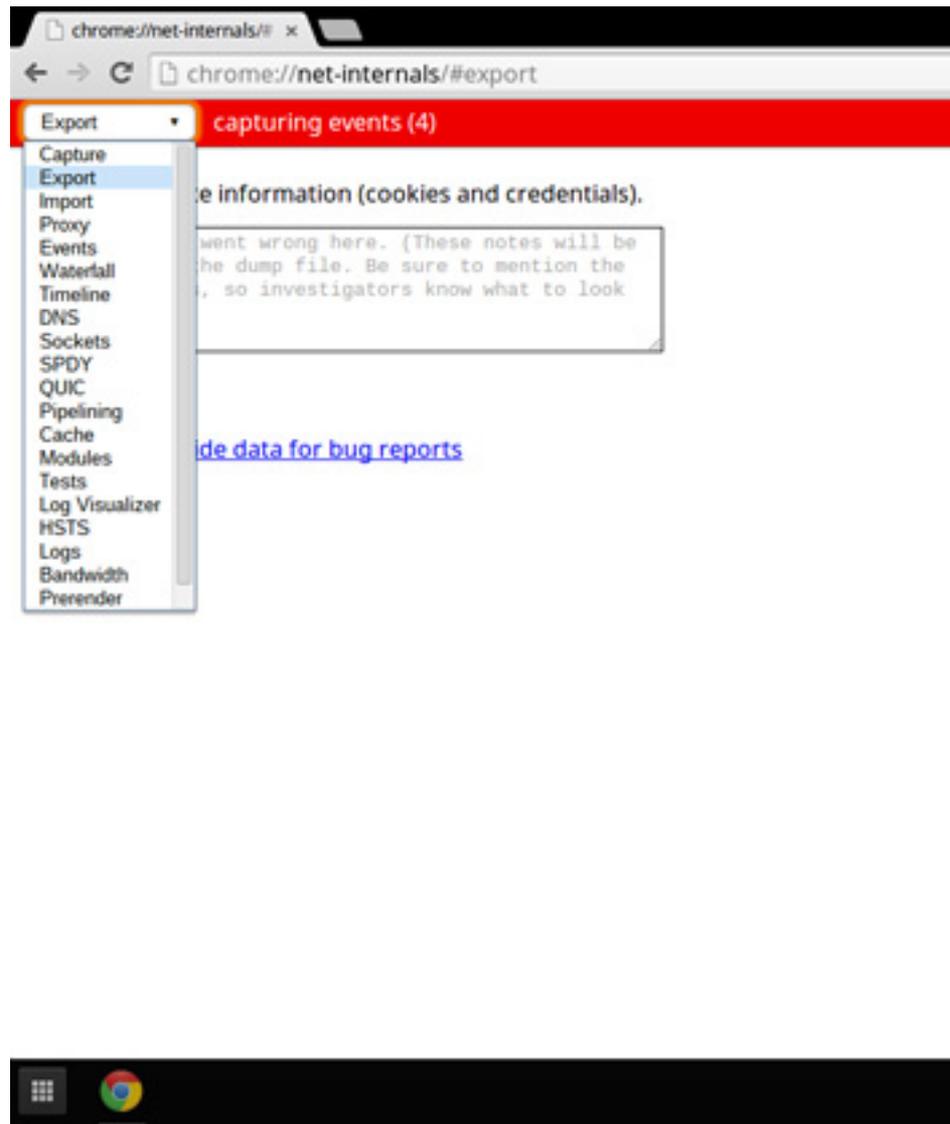
Commands

Action and Purpose

Screenshot

chrome://net-internals/#export

View advanced networking information.



Troubleshooting

Basic troubleshooting

This page contains all the information for Inspiron Chromebook basic troubleshooting.

① **NOTE:** Refer to [Google Help Center](#) for the online troubleshooter.

① **NOTE:** [Resetting the Inspiron Chromebook](#), also known as Powerwash, can be attempted before [Recovering the Inspiron Chromebook](#). Recovering the Inspiron Chromebook is the last resort.

Power issues

Table 8. Power issue

Issue	Possible solutions
Inspiron Chromebook would not Power On or charge	<p>If the Inspiron Chromebook will not turn on, follow these steps:</p> <ol style="list-style-type: none"> 1 Remove all external devices. <ol style="list-style-type: none"> a If the Inspiron Chromebook starts, reconnect devices one at a time while restarting the computer to figure out which device is causing the problem. You are done. b If the Inspiron Chromebook still does not start or exhibits the same problem, do not reconnect anything, and continue troubleshooting. 2 The battery might have gone into a deep discharge state. Plug the Inspiron Chromebook into the AC adapter and let it charge for at least 30 minutes and try turning it on again. <p>① NOTE: Google Chromebook Help recommends a charge time of 30 minutes. For further information, see Chromebook won't turn on or won't charge under the System problems section on support.google.com.</p> <p>① NOTE: When a new Inspiron Chromebook is used for the first time, the battery is still in shipping mode. To resolve this issue, turn off the Inspiron Chromebook and plug in the AC adapter and turn on the Inspiron Chromebook again.</p> 3 Depending on the Inspiron Chromebook you have, you may see a power indicator light close to the charging port. If you have let the Inspiron Chromebook charge and the light is not coming on, perform a hard reset. <p>① NOTE: You can perform a hard reset by pressing Refresh + Power.</p> 4 Use a different AC adapter with the same power voltage. 5 Remove the AC adapter, and turn on with the battery power only.

Display issue

Table 9. Display issue

Issue	Possible solutions
Screen is Blank	<p>If the Inspiron Chromebook's screen is blank, try the following troubleshooting steps to resolve the issue, checking to see if the screen turns on after each step:</p> <ol style="list-style-type: none"> 1 Make sure the Inspiron Chromebook is on. If you are using the battery, plug the Inspiron Chromebook in and press the power button. 2 Restart the Inspiron Chromebook by holding the power button down until the device turns off, then turn it back on again. 3 Reset or Recover the Inspiron Chromebook.

Audio, screen, and camera issues

Table 10. Audio, screen, and camera issues

Issue	Possible solutions
Audio issues	<p>If you hear static, or the volume from the speakers is low when attempting to listen to audio:</p> <ol style="list-style-type: none"> 1 Make sure the device is not muted. Try adjusting the volume. 2 Try rebooting the Inspiron Chromebook. 3 Try playing audio from various sources, including YouTube and audio files stored locally on the Inspiron Chromebook. <p>If the speakers are not responding when attempting to listen to audio:</p> <ol style="list-style-type: none"> 1 Unplug the device from all cables (USB, headphones, and displays). 2 Try playing audio from various sources, including YouTube and audio files stored locally on the Inspiron Chromebook. 3 Try rebooting the Inspiron Chromebook. 4 If audio still does not respond, try to Reset or Recover the Chromebook.
Screen issues	<p>If the screen is not operating properly (images are too dark or no image is appearing):</p> <ol style="list-style-type: none"> 1 Try adjusting the brightness with the brightness keys at the top of the keyboard. 2 In the status area in the bottom-right of the screen, check the display and make sure there are no issues with a mirrored or extended display. 3 Try rebooting the Inspiron Chromebook 4 If the screen issues persist, try to Reset or Recover the Chromebook.
Camera issues	<p>If the camera is not operating properly (blurry images or poor performance):</p> <ol style="list-style-type: none"> 1 Check that the camera is not being blocked or covered by a privacy screen or other obstruction.

Issue	Possible solutions
	<ol style="list-style-type: none"> 2 Try using different apps that use the camera. Try a Google+ Hangout or the onboard camera app 3 Try rebooting the Inspiron Chromebook 4 If the camera issues persist, try to Reset or Recover the Chromebook.

Bluetooth issue

Table 11. Bluetooth issue

Issue	Possible solutions
Bluetooth issues	<p>If you run into issues while attempting to pair or use a Bluetooth device with the Inspiron Chromebook, try the following steps to resolve the issue:</p> <ol style="list-style-type: none"> 1 First, make sure that the Bluetooth device you are trying to pair is supported by the Inspiron Chromebook. 2 Try disabling and re-enabling Bluetooth connectivity from the status area in the lower-right corner. 3 Try restarting the Inspiron Chromebook. 4 If you are still encountering issue with bluetooth, try to Reset or Recover the Chromebook.

Touchpad and Hotkeys issues

Table 12. Touchpad and hotkeys issues

Issue	Possible solutions
Touchpad not responding	<p>If the touch pad has stopped responding, try the following steps to resolve the issue:</p> <ol style="list-style-type: none"> 1 Try moving the cursor after each step. 2 Click the Esc key several times. 3 Drumroll the fingers across the touch pad for a few seconds. 4 Restart the Chrome OS by pressing the power button until the device turns off, and then turn it on again. 5 If the cursor still does not move when using the touch pad, try logging in from the Guest account using the tab key to navigate. 6 If users experience touch pad issues with the account that is not the owner (primary) account, delete the user account and re-create it. Again, use the tab key to navigate. 7 If none of the above steps work, try to Reset or Recover the Chromebook.
Top row of keys (Hotkeys) not responding	<p>If a hotkey (like the volume or brightness keys) are not responding, try the following troubleshooting steps:</p> <p>NOTE: Ensure to test the keys after each troubleshooting step.</p> <ol style="list-style-type: none"> 1 If the affected key is volume or brightness, check to make sure you are not at the upper or lower limit for that setting.

Issue	Possible solutions
	<ol style="list-style-type: none"> 2 If the backward or forward buttons do not work, check that the same icons in a web browser are not grayed out. For example, if the back button on a web page is grayed, this is because the browser is not aware of a page to move backward to. 3 Restart the Chrome OS by holding down the power button until the device turns off, and then turn it back on again. 4 Try using the keys in the Guest account. 5 If users experience hotkey issues with the account that is not the owner (primary) account, delete the user account and re-create it. 6 If none of the above steps work, try to Reset or Recover the Chromebook.

Chrome OS issue

Table 13. Chrome OS issue

Issue	Possible solutions
<p>He's Dead, Jim! error message</p>	<p>If the Inspiron Chromebook becomes slow or unresponsive, and the He's Dead, Jim! error message appears, the system could be running low on memory.</p> <p>NOTE: If you terminated the process using Google Chrome's Task Manager, the system's task manager, or with a command line tool, this message will appear as well.</p> <ol style="list-style-type: none"> 1 If the page was not ended intentionally, reload the page to continue. If the message continues to appear, try closing inactive tabs or other programs to free up more memory. 2 If issue persists, please see He's Dead, Jim! from Google knowledge base.
<p>Chrome OS is missing or damaged</p>	<p>If the Inspiron Chromebook does not start and displays the message, Chrome OS is missing or damaged. Please insert a recovery USB stick into the USB ports on the device:</p> <p>Perform a system recovery. See performing Recover Inspiron Chromebook for more information.</p>
<p>Chrome OS stops responding and nothing moves on the computer display</p>	<p>If the Chrome OS stops responding and nothing moves on the computer display, try the following steps to resolve the issue:</p> <ol style="list-style-type: none"> 1 Turn off the computer. 2 Disconnect all peripheral devices, and remove all USB devices and media cards. 3 Disconnect the AC adapter. 4 Press and hold the power button for 10 seconds. 5 Reconnect the AC adapter, and turn on the system. 6 If issue persists, please perform a Reset or Recover the Inspiron Chromebook.
<p>Lost/Forget Sign-in password (Chrome OS)</p>	<p>If you lost/forget the sign-in password to the Inspiron Chromebook, try the following steps to resolve the issue:</p> <ol style="list-style-type: none"> 1 Check if this is a managed device (Enterprise enrolled device). <ol style="list-style-type: none"> a If this is a managed device, please contact the administrator to have them reset the password via Google Admin Console.

Issue	Possible solutions
	<p>b If this is not a managed device, please proceed with the following steps:</p> <ol style="list-style-type: none"> 2 Sign in as guest or use a different PC. 3 Open an internet browser, and navigate to https://www.google.com/accounts/recovery/. 4 Select I do not know my password, and then enter the email address that you use to sign in to Google. 5 Click Continue and follow the on-screen instructions to reset the password.
Other Inspiron Chromebook lock up or freeze symptoms that are not listed here	If none of the above symptoms match the Inspiron Chromebook's issue, refer to Google Help Center for the online troubleshooter and more help.
I am unable to recover my Inspiron Chromebook	To help ensure that you are running the latest version of Chrome operating system once you recover your Inspiron Chromebook, we recommend creating the recovery media with the latest version of Chrome operating system and avoid using recovery media that may contain an older version of the operating system.
An error message An unexpected error has occurred.	<p>Try the following steps to resolve the issue:</p> <ol style="list-style-type: none"> 1 Confirm that you successfully completed all instructions as specified in Step2: Create the recovery USB flash drive or SD card. 2 Try using a different USB stick or SD card. 3 If the problem persists, contact Google Chrome support team.
An error message You are using an out-of-date Chrome OS recovery image.	You should download an up-to date recovery image. Follow all the instructions exactly as specified in Step2: Create the recovery USB flash drive or SD card .
You successfully recovered your Inspiron Chromebook but now you can not use your USB or SD card with Windows	After you have completed recovery, you need to format your USB or SD card using the recovery tool.
You successfully recovered your Inspiron Chromebook but now Windows does not recognize the size of the USB or SD card used for recovery.	After you have completed recovery, you need to format your USB or SD card using the recovery tool.

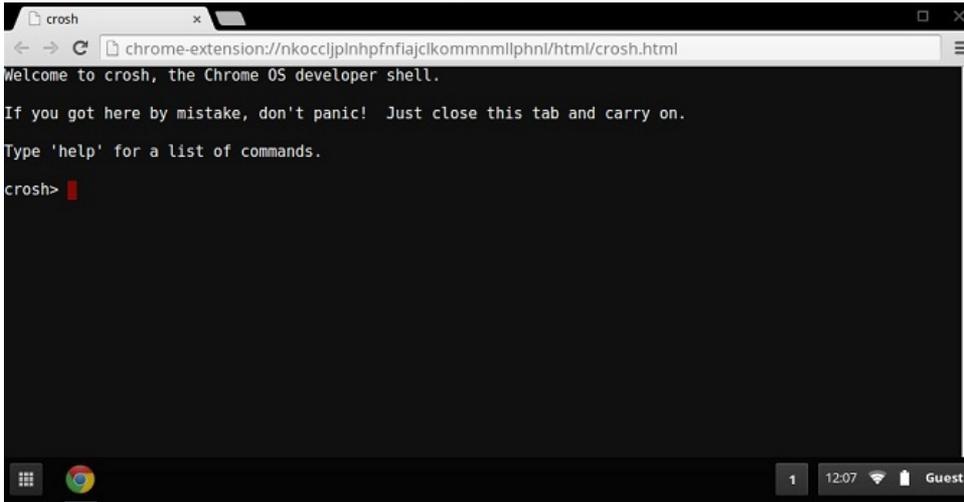
CROSH

This topic covers the information you need to know for the Chrome Shell (CROSH). CROSH and the Google Chrome URL commands provide some troubleshooting tools, information, and advanced settings.

The Chrome OS does not support ePSA, Dell BIOS, the F12 boot menu, or DellConnect. There are no preboot diagnostics. All troubleshooting must be done inside the OS. Chrome Shell (CROSH) and the Chrome URL commands provide some troubleshooting tools, information, and advanced settings. CROSH is a command line interface similar to the Linux BASH or Windows command (cmd.exe) terminals. Chrome OS is based on Linux, but CROSH does not recognize most Linux commands. The most useful commands for troubleshooting are memory test, storage_test_1, storage_test_2, ping, and tracepath. Ping works differently than it does in Windows. By default, it repeats until you press **<Ctrl> + <C>**, and it does not show any statistics. The tracepath command is similar to the Windows traceroute command. A detailed explanation of the commands can be viewed below, by typing help, or help_advanced in CROSH.

- 1 Open the Chrome browser.

- 2 Press **<Ctrl> + <Alt> + <T>** The interface appears as shown in the screenshot below:



- 3 Type in the CROSH command for diagnostics. Type **'help'** for a list of available commands. Type **help_advanced** to display a complete list of commands for debugging purposes

Alternately, refer to CROSH Commands for the list of the CROSH commands available for diagnostics.

CROSH commands

The table below lists the available commands in Chrome Shell (CROSH).

Table 14. Help commands

Command	Purpose
exit	Exits the CROSH Shell.
help	Displays this help.
help_advanced	Displays the help for more advanced commands, used for debugging.
ping	[-c count] [-i interval] [-n] [-s packetsize] [-W waittime] — Sends ICMP ECHO_REQUEST packets to a network host. If is "gw", then the next hop gateway for the default route is used. It works just like the ping command on other operating systems. Press <Ctrl> + <C> to stop the ping process or halt any other command in CROSH.
ssh	[optional args...] — Starts the ssh subsystem if invoked without any arguments. "ssh <user> <host>", "ssh <user> <host> <port>", "ssh<user>@<host>". or "ssh <user>@<host> <port>" connect without entering the subsystem
ssh_forget_host	Removes a host from the list of known ssh hosts. This command displays a menu of known hosts and prompts for the host to forget.
top	Sets the chaps debug logging level. No arguments start verbose logging

Table 15. Advanced help command

Command	Purpose
<code>battery_test</code> [<test length>]	Tests the battery discharge rate for a given number of seconds. No argument defaults to a 300 s test.
<code>bt_console</code> [<agent capability>]	Enters a Bluetooth debugging console. The Optional argument specifies the capability of a pairing agent the console provides; see the Bluetooth Core specification for valid options.
<code>chaps_debug</code> [start stop <log_level>]	Sets the chaps debug logging level. No arguments will start verbose logging.
<code>connectivity</code>	Shows connectivity status.
<code>experimental_storage</code> <status enable disable>	Enables or disables experimental storage features.
<code>ff_debug</code> [<tag_expr>] [--help] [--list_valid_tags] [--reset]	Adds and removes flimflam debugging tags.
<code>memory_test</code>	Performs extensive memory testing on the available free memory.
<code>modem</code> <command> [args...]	Interacts with the 3G modem. Run modem help for detailed help.
<code>modem_set_carrier</code> carrier-name	Configures the modem for the specified carrier.
<code>network_diag</code> [--date] [--link] [--show-macs] [--wifi] [--help] [--wifi-mon] <host>	Performs a suite of network diagnostics and saves a copy of the output to your download directory
<code>network_logging</code> <wifi cellular ethernet>	Enables a predefined set of tags useful for debugging the specified device.
<code>p2p_update</code> [enable disable]	Enables or disables the peer-to-peer (P2P) sharing of updates over the local network. This will both attempt to get updates from other peers in the network and shares the downloaded updates with them. Run this command without arguments to see the current state.
<code>rlz</code> < status enable disable>	Enables or disables RLZ.
<code>rollback</code>	Attempts to roll back to the previous update cached on your system. Only available on non-stable channels and non-enterprise enrolled devices. Please note that this will power wash your device.
<code>route</code> [-n] [-6]	Displays the routing tables.
<code>set_apn</code> [-n <network-id>] [-u <username>] [-p <password>] <apn>	Sets the APN to use when connecting to the network specified by <network-id>. If <network-id> is not specified, use the network-id of the currently registered network.
<code>set_apn - c</code>	Clears the APN to be used, so that the default APN is used instead.
<code>set_arggw</code> <true false>	Turns on the extra network state checking to make sure the default gateway is reachable.
<code>set_cellular_ppp</code> [-u <username>] [-p <password>]	Sets the PPP username and/or password for an existing cellular connection. If neither -u nor -p is provided, this shows the existing PPP username for the cellular connection.
<code>set_cellular_ppp -c</code>	Clears any existing PPP username and PPP password for an existing cellular connection.
<code>sound</code> <command> <argument>	Low level sound configuration. Can be used to play/record audio samples and enable beam forming on Pixel. sound beamforming <on off > will enable/disable the feature. sound record [duration] will start recording. sound play <filename> plays the recorded audio samples
<code>storage_status</code>	Reads storage device SMART health status, vendor attributes, and error logs.
<code>storage_test_1</code>	Performs a short offline SMART test.

Command	Purpose
<code>storage_test_2</code>	Performs an extensive readability test.
<code>syslog <message></code>	Logs a message to system log.
<code>tpcontrol{status taptoclick [on off] sensitivity [1-5] set <property>< value>} tpcontrol {syntp [on off]}</code>	Allows the user to manually adjust advanced touchpad settings.
<code>tracpath [-n] <destination>[/port]</code>	Traces the path/route to a network host.
<code>update_over_cellular [enable disable]</code>	Enables or disables the auto updates over cellular networks. Run without arguments to see the current state.
<code>upload crashes</code>	Uploads available crash reports to the crash server.
<code>wpa_debug [<debug_level>] [--help] [--list_valid_level] [--reset]</code>	Sets the wpa_supplicant debugging level.
<code>xset m [acc_mult[/acc_div] [thr]] xset m default</code>	Tweaks the mouse acceleration rate.
<code>xset r rate [delay [rate]]</code>	Tweaks the autorepeat rates. The delay is the number of milliseconds before autorepeat starts. The rate is the number of repeats per second.
<code>xset r [keycode] < on off ></code>	Turns autorepeat on/off. If a keycode is specified, it affects only that key. If not specified, it affects global behavior.

Commonly used CROSH command

This page contains information about the most commonly used CROSH commands to diagnose the Dell Inspiron Chromebook. Below are some of the most commonly used CROSH commands to troubleshoot a hardware issue.

NOTE: CROSH `storage_test_1` and `storage_test_2` are not supported on the eMMC storage device.

Check battery charging status

The Chrome Shell (CROSH) includes a simple battery health diagnostic test. This is to confirm that the battery is charging and to check on the battery health and discharge rate. Follow the instruction provided to check on the battery charging status:

- 1 Connect the AC adapter to the Inspiron Chromebook and a power outlet.
- 2 Turn on, and sign in to the Inspiron Chromebook.
- 3 Open the Chrome browser.
- 4 Press **CTRL + ALT + T** to open CROSH.

```

chrome-extension://nkoccljplnhpfnfajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.

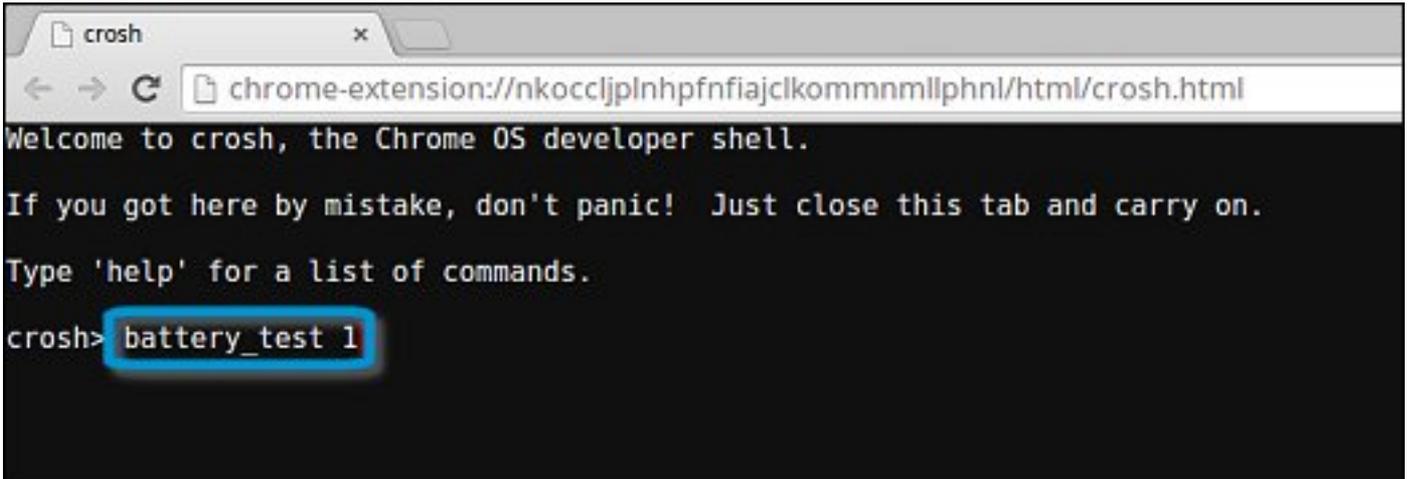
If you got here by mistake, don't panic! Just close this tab and carry on.

Type 'help' for a list of commands.

crosh>

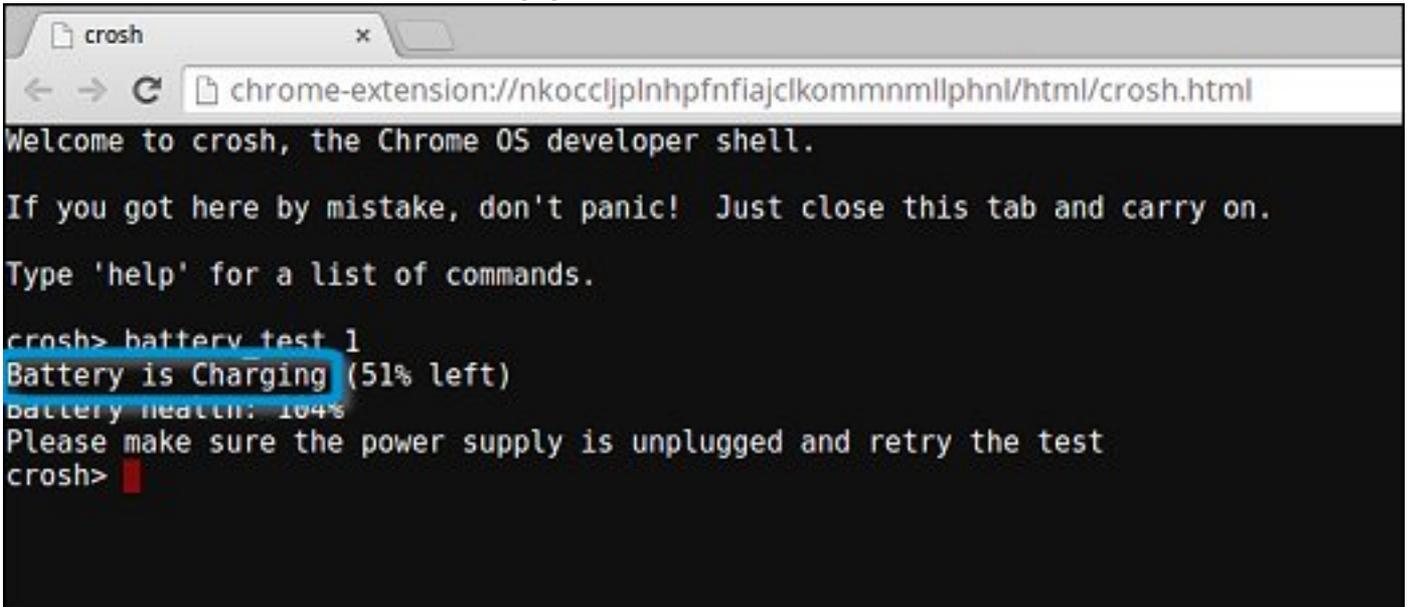
```

- 5 Type `battery_test 1` into CROSH, and then press **Enter**.



```
chrome-extension://nkoccljplnhpfnfajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.
If you got here by mistake, don't panic! Just close this tab and carry on.
Type 'help' for a list of commands.
crosh> battery_test 1
```

- 6 Check the result to confirm that the battery is charging.



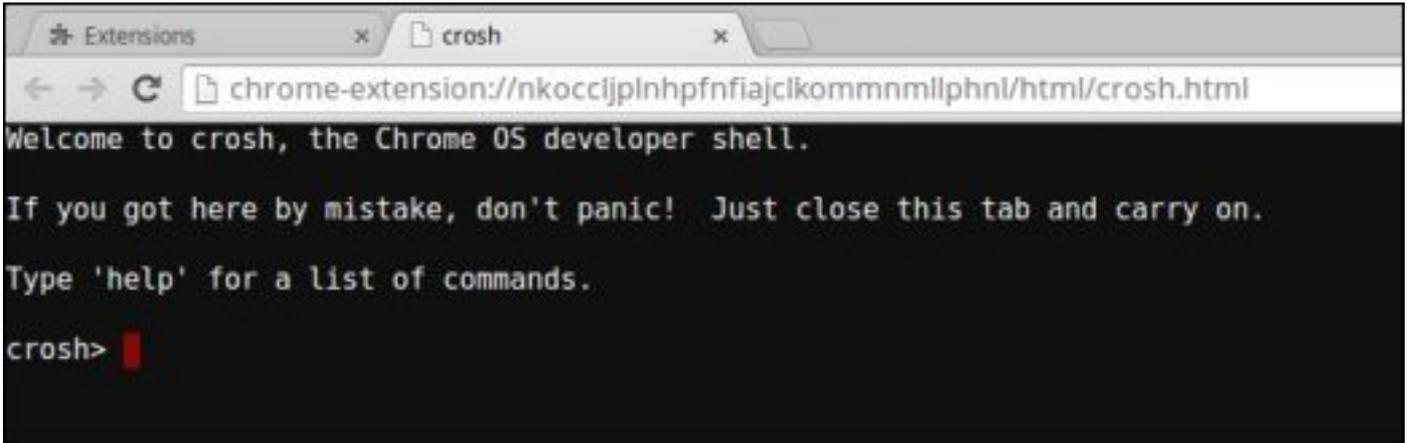
```
chrome-extension://nkoccljplnhpfnfajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.
If you got here by mistake, don't panic! Just close this tab and carry on.
Type 'help' for a list of commands.
crosh> battery_test 1
Battery is Charging (51% left)
battery health: 104%
Please make sure the power supply is unplugged and retry the test
crosh>
```

Check battery health

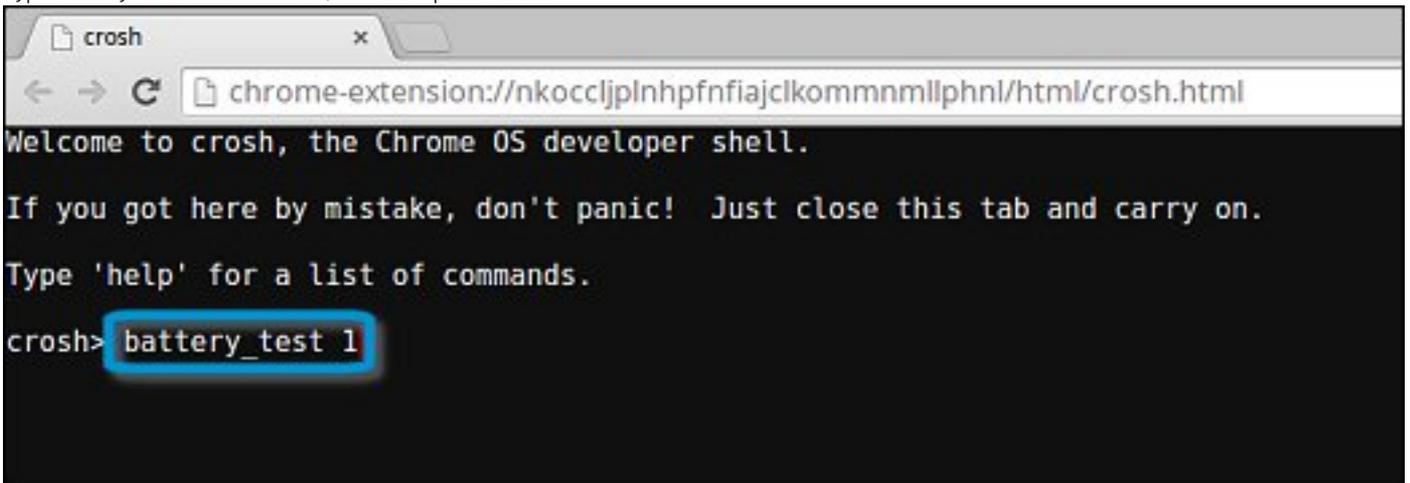
Follow the steps to evaluate the health of the Inspiron Chromebook battery, and check the discharge rate:

- 1 Disconnect the AC adapter from the Inspiron Chromebook.
- 2 Turn on and sign in to Inspiron Chromebook.
- 3 Open the Chrome browser.

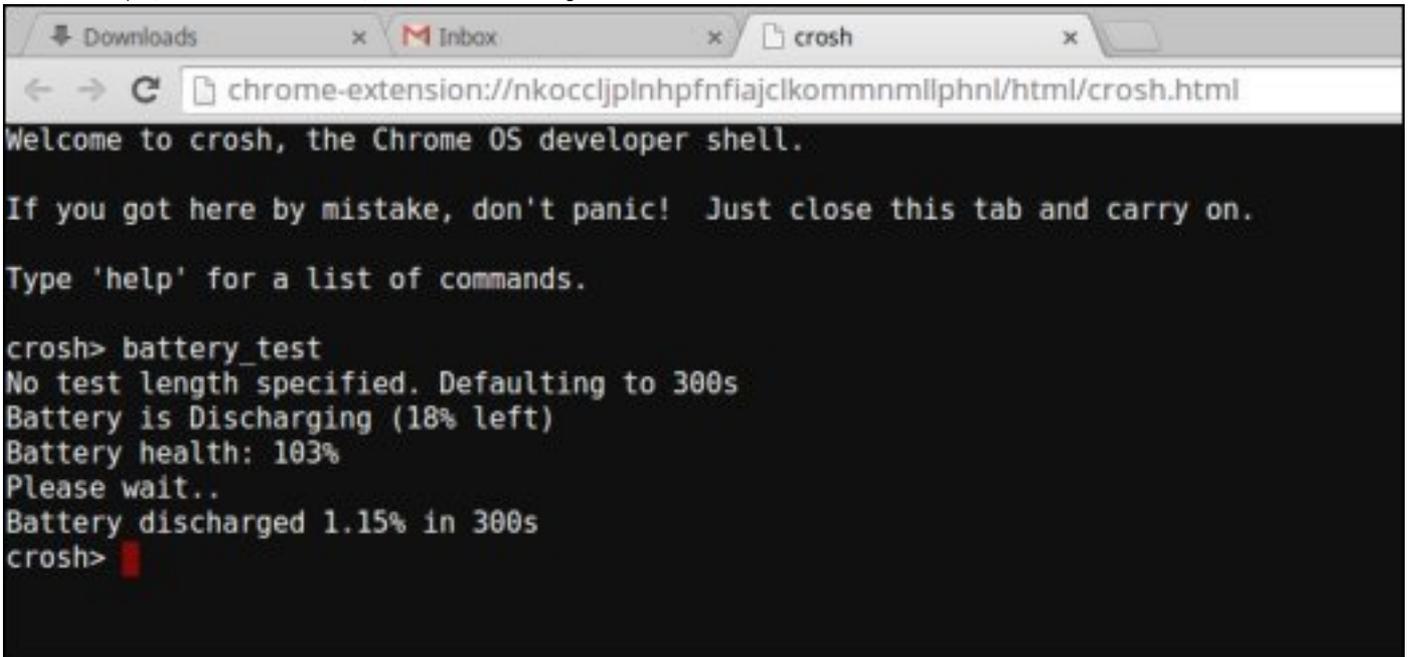
- 4 Press **CTRL + ALT + T** to open CROSH.



- 5 Type `battery_test 1` into CROSH, and then press Enter.



- 6 A screen displays the current battery health and discharge rate.



- If the Battery health percentage is greater than 50%, the battery is within the expected wear limits.
- If the Battery health percentage is equal to or less than 50% and the battery is less than a year old, the battery is outside expected wear limits and might need to be replaced.

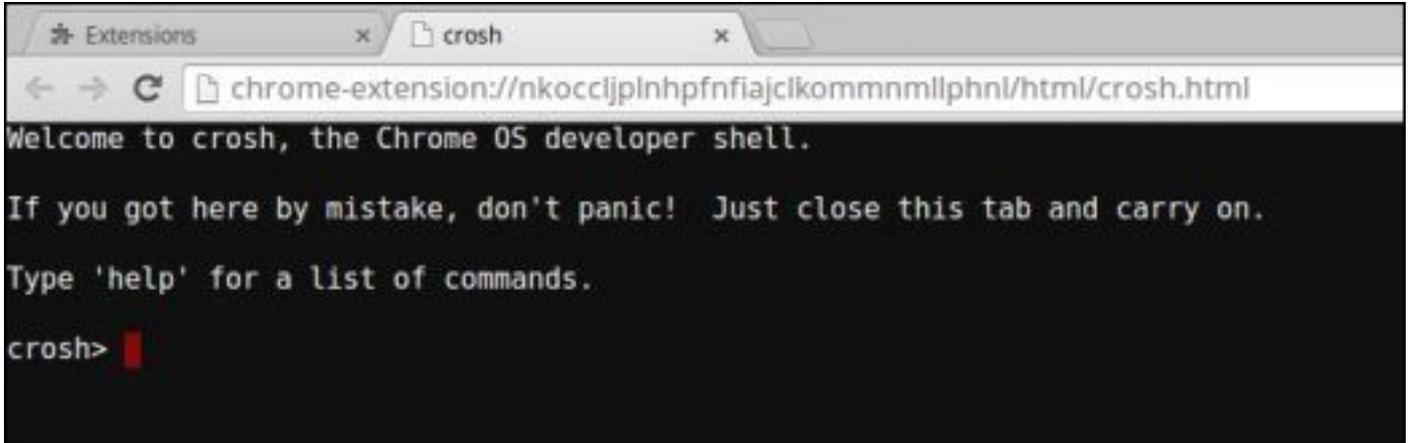
- If the test results show that Battery is Unknown, the battery might need to be replaced.

Checking memory

Follow the steps below to perform a memory check for Inspiron Chromebook:

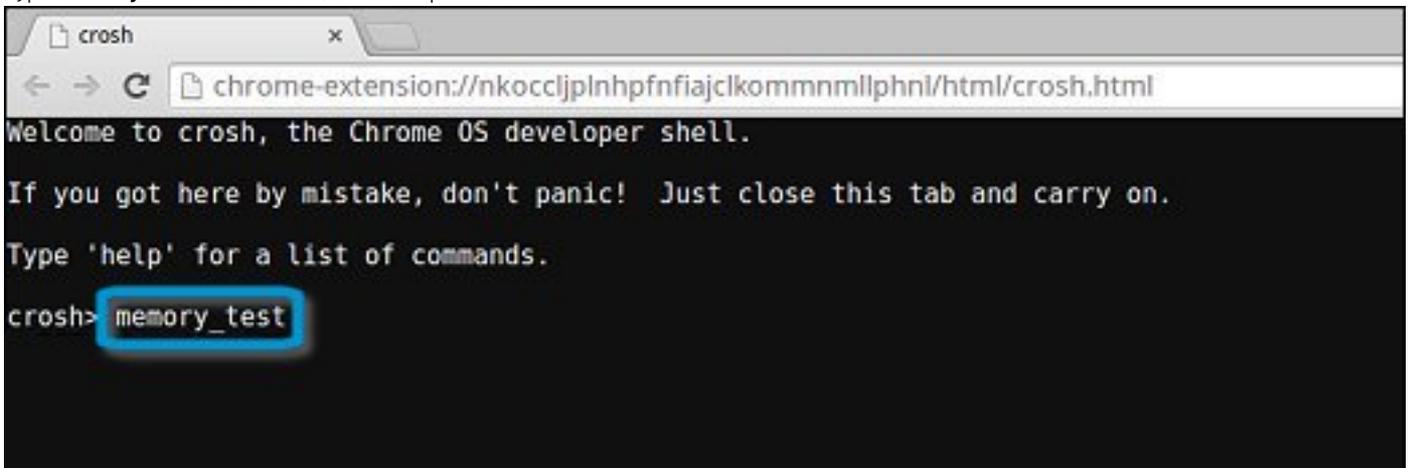
NOTE: This will approximately take 20 minutes, and it also depends on the capacity of the memory.

- 1 Turn on and sign in to Inspiron Chromebook.
- 2 Open the Chrome browser.
- 3 Press **CTRL + ALT + T** to open CROSH.



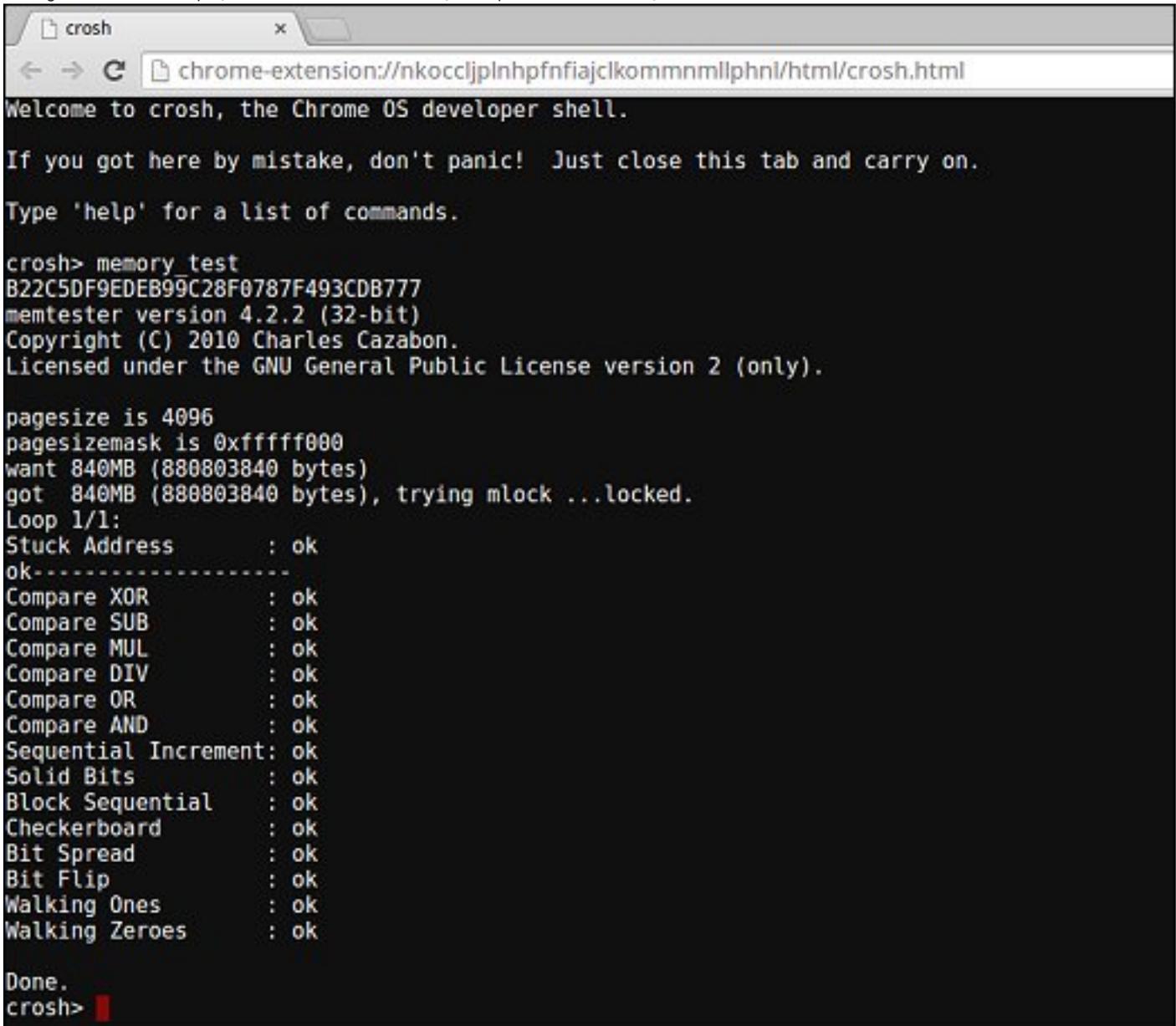
The screenshot shows a Chrome browser window with two tabs: 'Extensions' and 'crosh'. The address bar displays the URL 'chrome-extension://nkoccljplnhpfnfajclkommmnmlphnl/html/crosh.html'. The main content area is a black terminal window with white text. The text reads: 'Welcome to crosh, the Chrome OS developer shell. If you got here by mistake, don't panic! Just close this tab and carry on. Type 'help' for a list of commands. crosh>'. A red cursor is positioned after the 'crosh>' prompt.

- 4 Type **memory_test** into CROSH, and then press **Enter**.



The screenshot shows the same Chrome browser window as above. The terminal window now displays the command 'memory_test' entered at the 'crosh>' prompt. The text 'memory_test' is highlighted with a blue rectangular selection box.

- 5 A diagnostic screen displays the result of the memory test passed without any errors.



```
chrome-extension://nkoccljplnhpfnfajclkommmllphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.

If you got here by mistake, don't panic! Just close this tab and carry on.

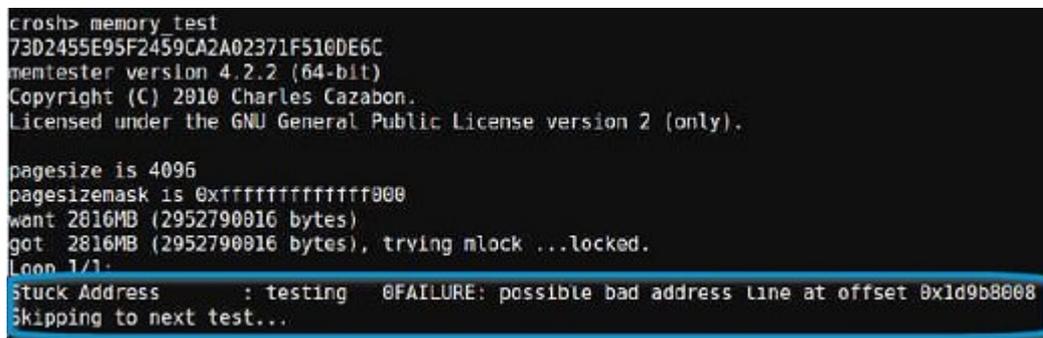
Type 'help' for a list of commands.

crosh> memory_test
B22C5DF9EDEB99C28F0787F493CDB777
memtester version 4.2.2 (32-bit)
Copyright (C) 2010 Charles Cazabon.
Licensed under the GNU General Public License version 2 (only).

pagesize is 4096
pagesizemask is 0xfffff000
want 840MB (880803840 bytes)
got 840MB (880803840 bytes), trying mlock ...locked.
Loop 1/1:
Stuck Address      : ok
ok-----
Compare XOR        : ok
Compare SUB        : ok
Compare MUL        : ok
Compare DIV        : ok
Compare OR         : ok
Compare AND        : ok
Sequential Increment: ok
Solid Bits         : ok
Block Sequential   : ok
Checkerboard       : ok
Bit Spread         : ok
Bit Flip           : ok
Walking Ones      : ok
Walking Zeroes    : ok

Done.
crosh> █
```

Example of a memory test failure.



```
crosh> memory_test
73D2455E95F2459CA2A02371F510DE6C
memtester version 4.2.2 (64-bit)
Copyright (C) 2010 Charles Cazabon.
Licensed under the GNU General Public License version 2 (only).

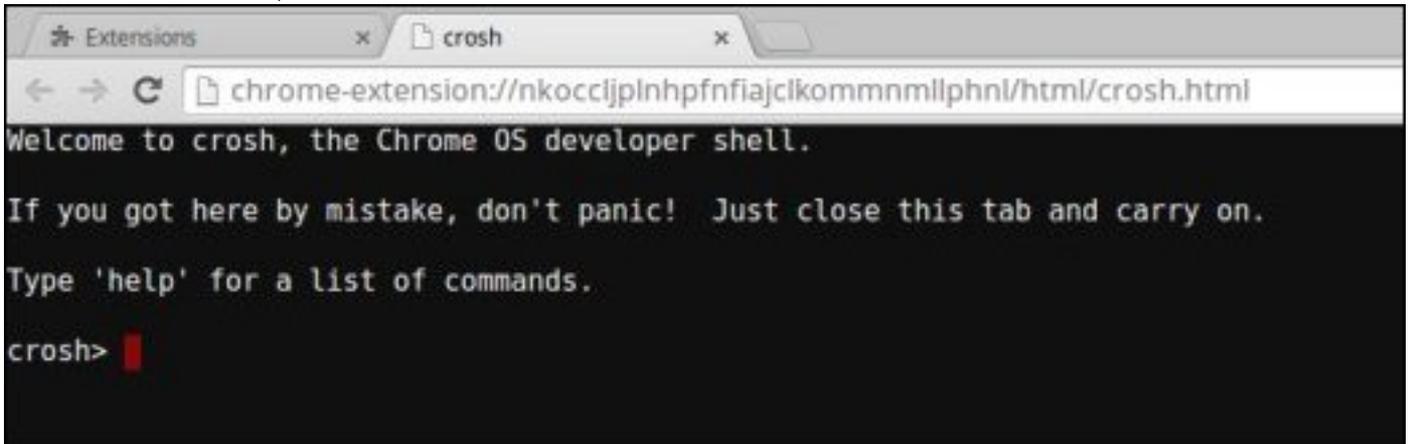
pagesize is 4096
pagesizemask is 0xfffffffff000
want 2816MB (2952790016 bytes)
got 2816MB (2952790016 bytes), trying mlock ...locked.
Loop 1/1:
Stuck Address      : testing @FAILURE: possible bad address line at offset 0x1d9b8008
Skipping to next test...
```

Checking network status

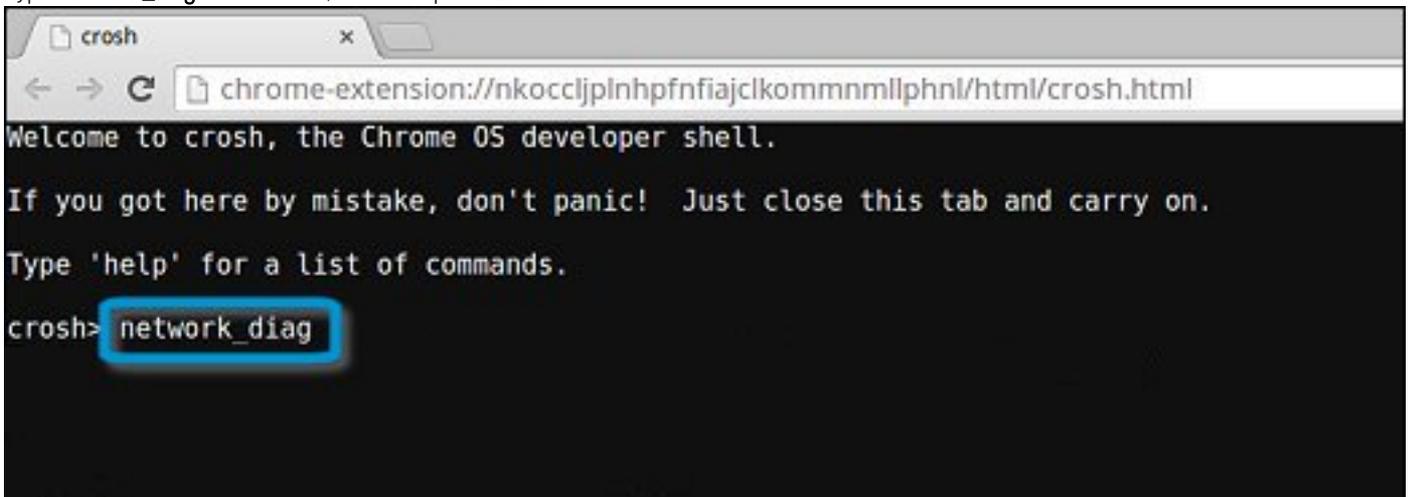
If you are having trouble connecting to the Internet, use the steps in one or more of the following sections to test the network adapter:

Follow the instruction to gather the information about the network and diagnose the network errors.

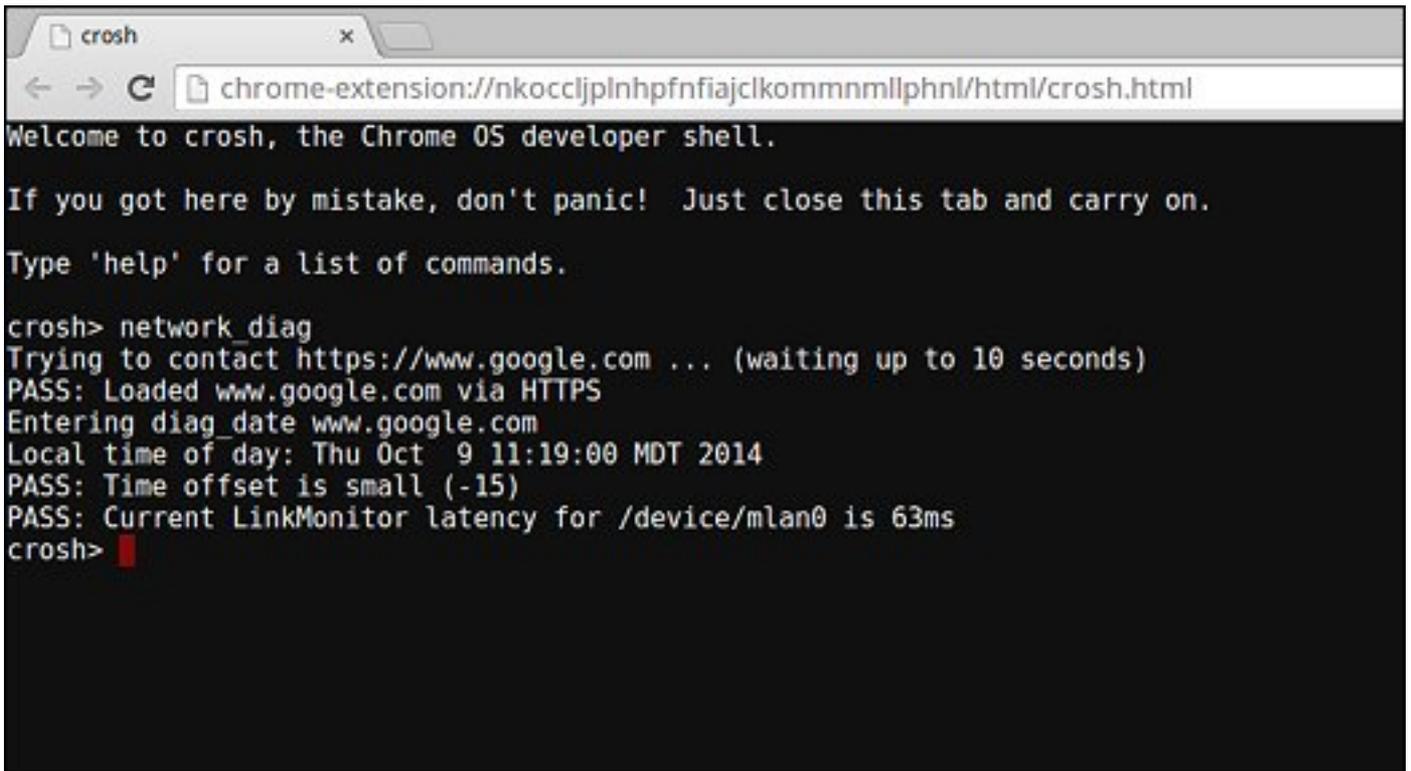
- 1 Turn on and sign in to Inspiron Chromebook.
- 2 Open the Chrome browser.
- 3 Press **CTRL + ALT + T** to open CROSH.



- 4 Type **network_diag** into CROSH, and then press **Enter**.



- 5 Wait while CROSH performs a set of network diagnostic tests. A diagnostic screen displays the results of the network adapter health test.



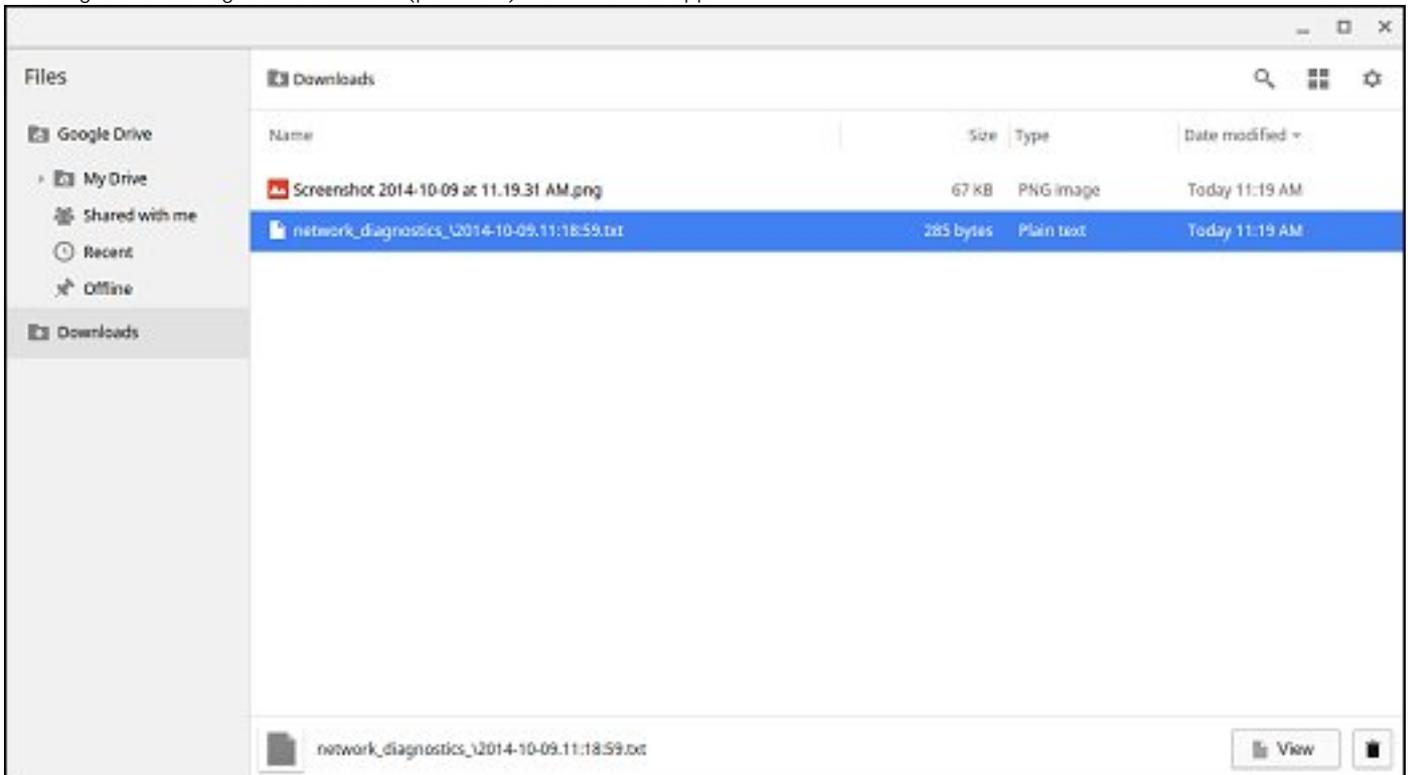
```
chrome
chrome-extension://nkocljplnhpfnfajclkommmmlphnl/html/crosh.html
Welcome to crosh, the Chrome OS developer shell.

If you got here by mistake, don't panic! Just close this tab and carry on.

Type 'help' for a list of commands.

crosh> network_diag
Trying to contact https://www.google.com ... (waiting up to 10 seconds)
PASS: Loaded www.google.com via HTTPS
Entering diag_date www.google.com
Local time of day: Thu Oct 9 11:19:00 MDT 2014
PASS: Time offset is small (-15)
PASS: Current LinkMonitor latency for /device/mlan0 is 63ms
crosh>
```

- 6 The diagnostic test log is saved as a .txt (plain text) file in the Files app.



7 If the diagnostic test returns a failure message, make sure the Wi-Fi adapter is enabled and connect to a network.

```

Entering diag ping 192.168.1.254
connect: Network is unreachable
FAIL: We can reach the nameservers but were not able to resolve hostnames
FAIL: You may be behind a captive portal or there may be a DNS
FAIL: configuration problem
Entering get device list
  
```

Chrome commands

Chrome:// pages contain experimental features, diagnostic tools, and detailed statistics. They are hidden in Chrome's user interface.

Chrome://about page lists all Chrome's internal pages. To view all the commands, type **chrome://about** in the Chrome browser URL as shown below:

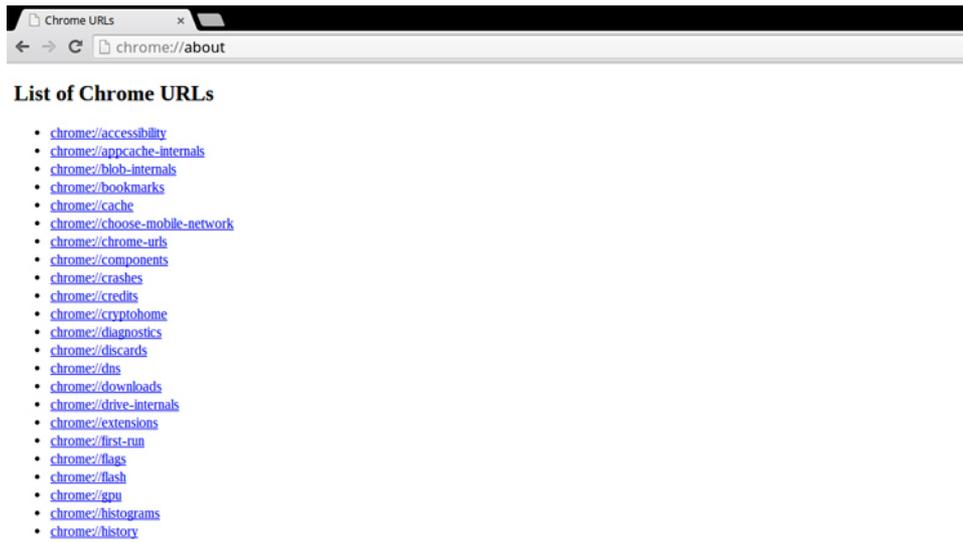


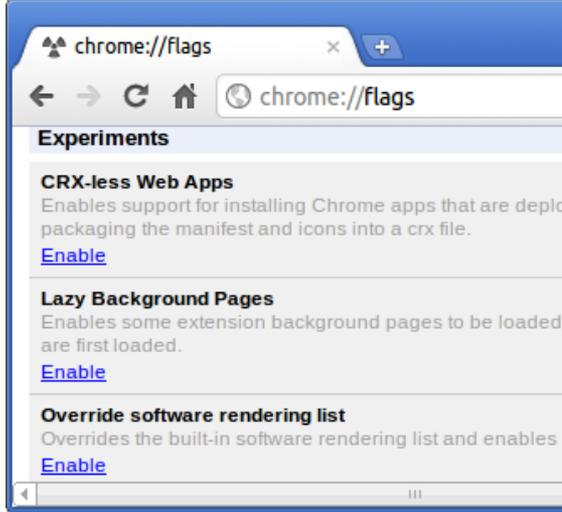
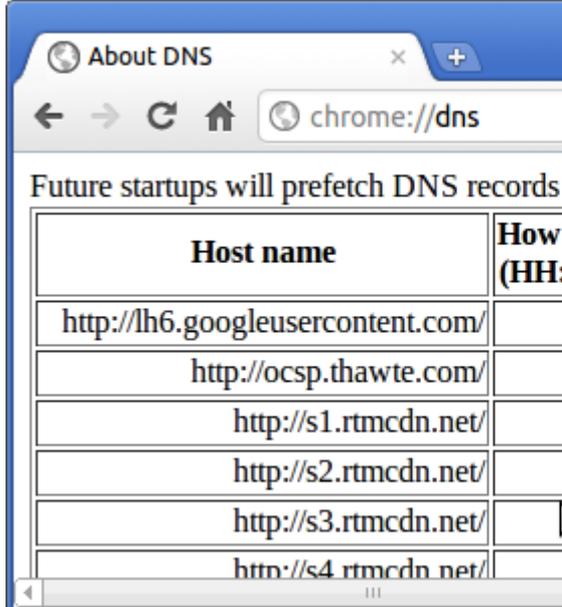
Table 16. Chrome browser shortcuts

Purpose	Browser Shortcut	Explanation
System Information	chrome://system/	"Who am I".. BIOS version, and so on
Basic Connectivity Diags	chrome://diagnostics/	Test for NIC and Internet connection
Chrome Information	chrome://version	More "Who am I" type of stuff
Create Recovery USB Stick	chrome://imageburner/	Google's version of DBAR/DBRM
Chrome Flags	chrome://flags	Experimental features beyond the scope of what Dell supports
Memory Troubleshooting	chrome://memory	View running processes and memory utilization
Module Load	chrome://conflicts	Shows conflicts of all modules loaded by Chrome
Chrome Sync Status	chrome://syncchrome://sync-internals	Allows troubleshooting of connected accounts
Connectivity Troubleshooting	chrome://net-internals	Comprehensive network/connectivity diagnostics, including DNS analysis, Waterfall and Bandwidth diagnostics, and so on
Histogram	chrome://histograms	Actual work and I/O audit

Purpose	Browser Shortcut	Explanation
Credits	<code>chrome://credits</code>	References to all module/libs contributions and their respective wiki/license URLs
Crash Reporting	<code>chrome://crashes</code>	Shows detailed crash report, if the feature was enabled
Apps RAM Utilization	<code>chrome://appcache-internals</code>	Detailed memory usage for apps/extensions, especially handy for 2 GB Chromebooks

Following are the 12 most helpful `chrome://` commands that you should know:

Table 17. Helpful chrome commands

Chrome Commands	Purpose	Screenshot
<code>chrome://flags</code>	From here you can enable some of the experimental features that are hidden in the Google Chrome browser. Please note that as mentioned on this page, since these are experimental, these might not work as expected and might cause issues. Enable these features, and use it at your own risk.	
<code>chrome://dns</code>	This displays the list of hostnames for which the browser will prefetch the DNS records.	

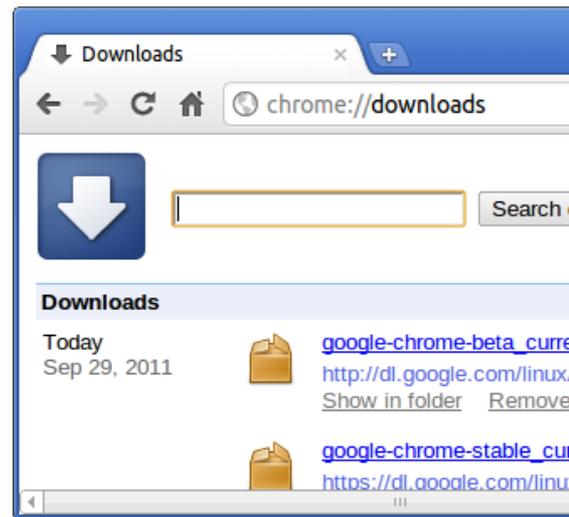
Chrome Commands

chrome://downloads

Purpose

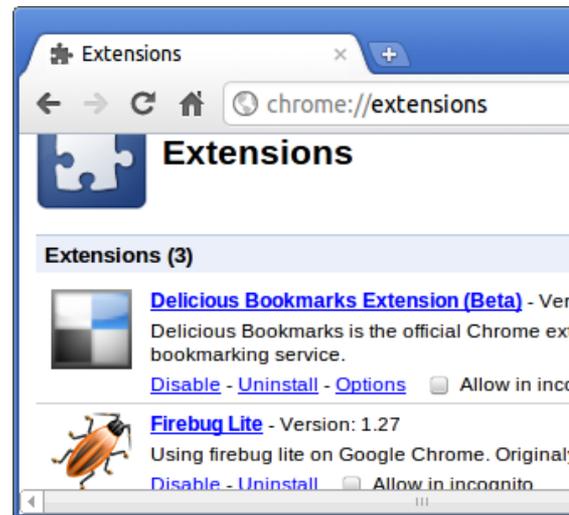
This is also available from the Menu > Downloads. Shortcut key is Ctrl+J.

Screenshot



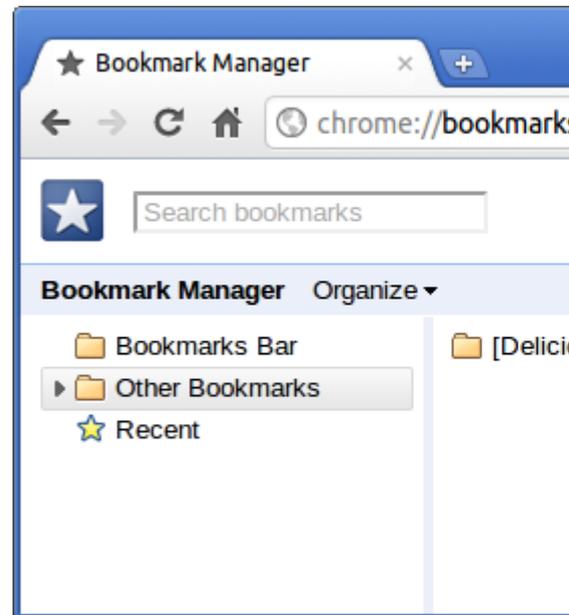
chrome://extensions

This is also available from the Menu > Tools > Extensions.



chrome://bookmarks

This is also available from the Menu > Bookmarks > Bookmark Manager. Short cut key is Ctrl+Shift+O.



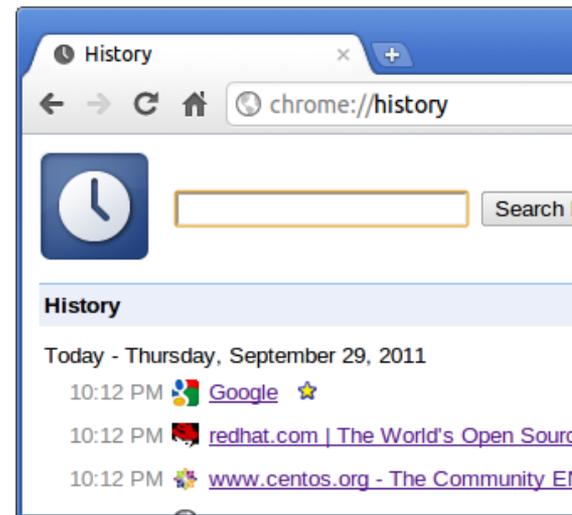
Chrome Commands

Purpose

Screenshot

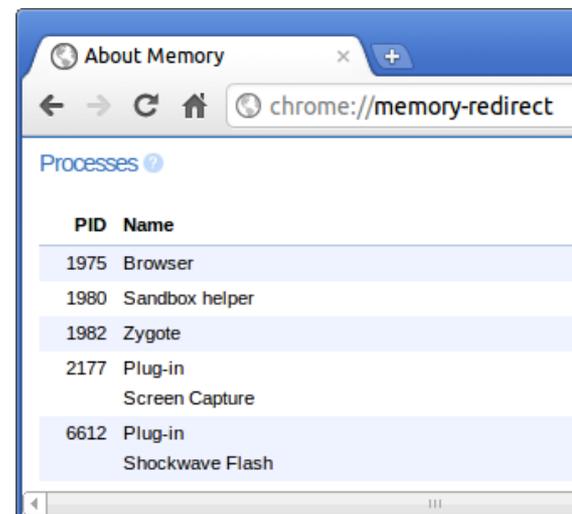
`chrome://history`

This is also available from the Menu > History. Short cut key is Ctrl+H.



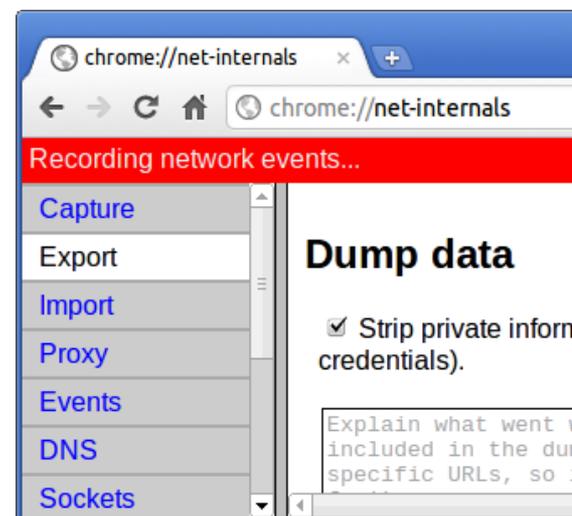
`chrome://memory`

This will redirect to “chrome://memory-redirect/”. This will display the memory used by the Google Chrome browser. This also displays all the process related to browser with their PID, process name, and the memory it takes.



`chrome://net-internals`

This displays all networking related information. Use this to capture network events generated by the browser. You can also export this data. You can view DNS host resolver cache. One of the important features in this feature is “Test”. If a URL failed to load, you can go to “chrome://net-internals” > click on “Tests” tab > type that URL which failed, and click on “Start Test”, which does some test and report you why that URL failed. `chrome://plugins/`.



Chrome Commands

`chrome://quota-internals`

Purpose

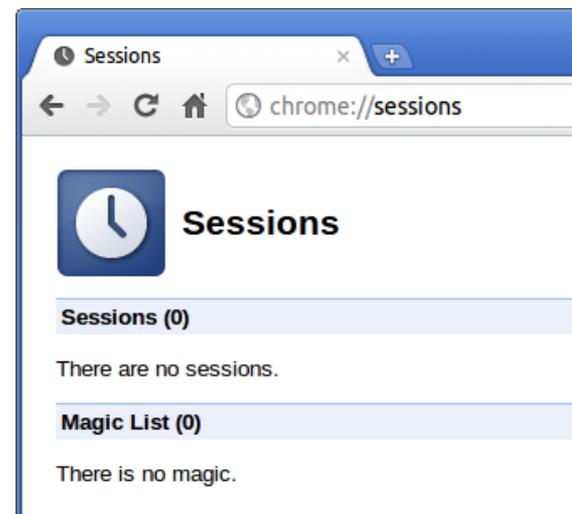
This gives information about the disk space quote used by the browser, including the breakdown of how much space the individual websites took under temporary files.

Screenshot



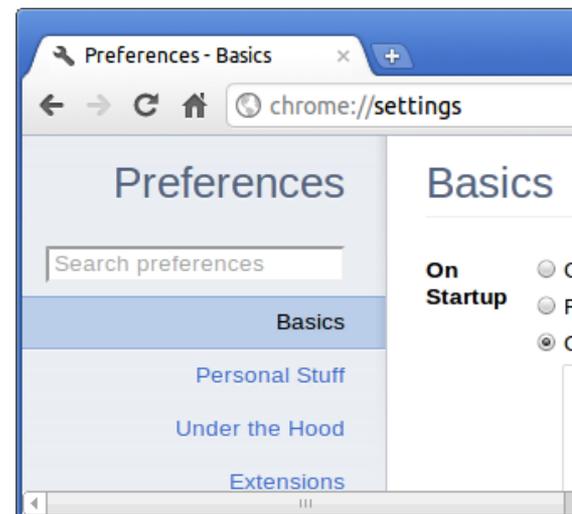
`chrome://sessions`

This displays the number of sessions and magic list that are currently running.



`chrome://settings`

This is also available from the Menu > Options (on Windows), and Menu > Preferences (on Linux). From here you can control various browser related settings.



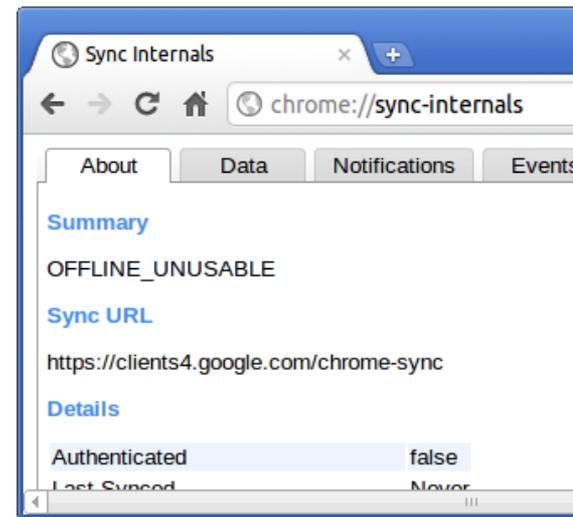
Chrome Commands

chrome://sync-internals

Purpose

This gives information about the Chrome sync feature, including the Sync URL used by Google, and sync statistics.

Screenshot



Reset Inspiron Chromebook

This page contains all information about resetting Dell Inspiron Chromebook.

All local user data stored on the Inspiron Chromebook can be cleared by resetting it to its original factory state (also known as Powerwash).

This step might be helpful if you want to reset owner permissions or if you are experiencing issues with your user profile.

- NOTE:** All data stored on your Inspiron Chromebook such as downloaded files, photos, owner permissions, and saved networks, will be deleted for all accounts when performing a factory reset. After clearing this data, you will be guided through the initial setup again. Resetting your device will not affect your accounts themselves, or any data synced to these accounts.
- NOTE:** Do not follow the instructions below if you're using a managed Chrome device, as you will not be able to re-enroll your device after powerwashing it.

Follow these steps to reset your Inspiron Chromebook to its original factory state:

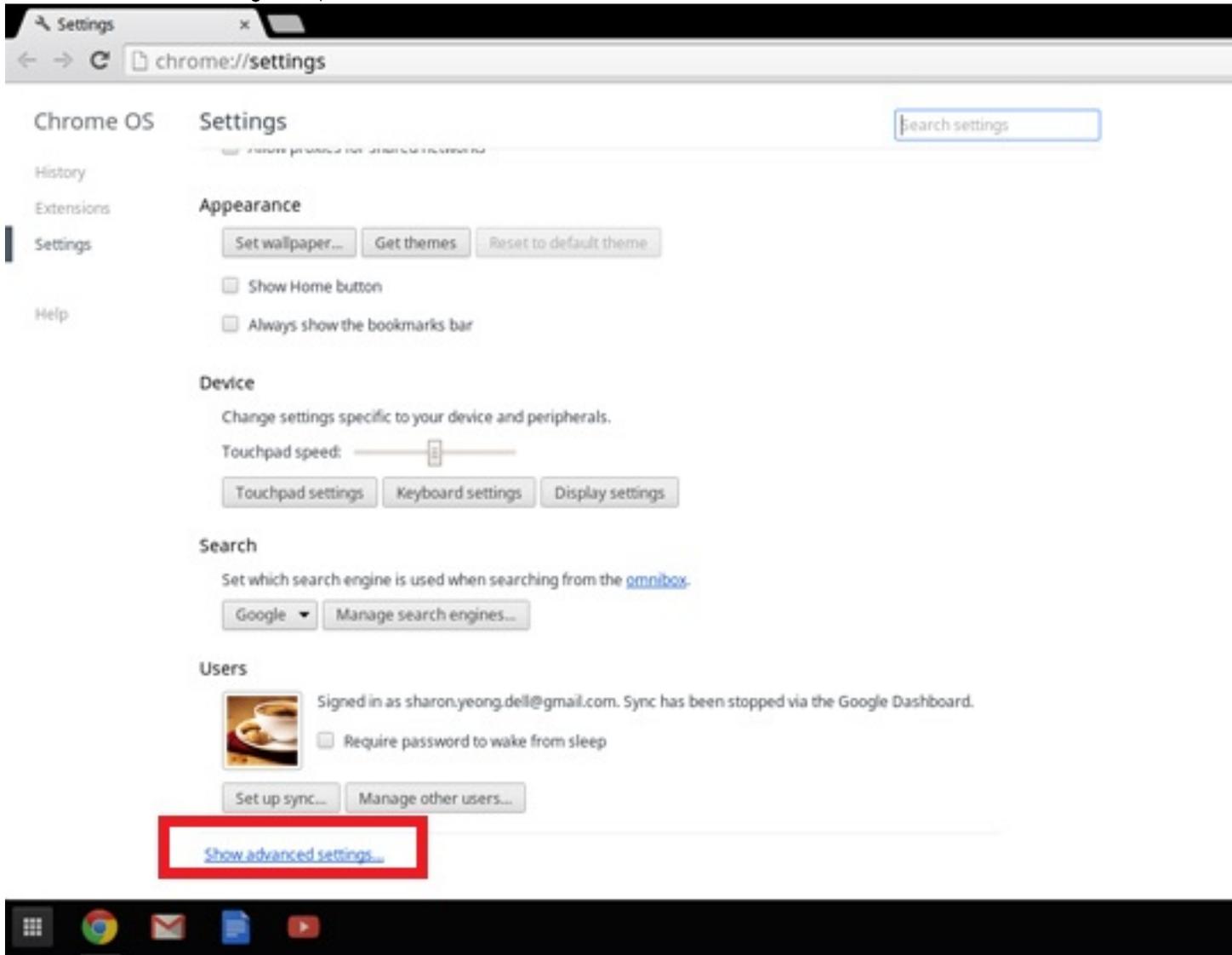
- 1 Click the status area in the lower-right corner, where your account picture appears.



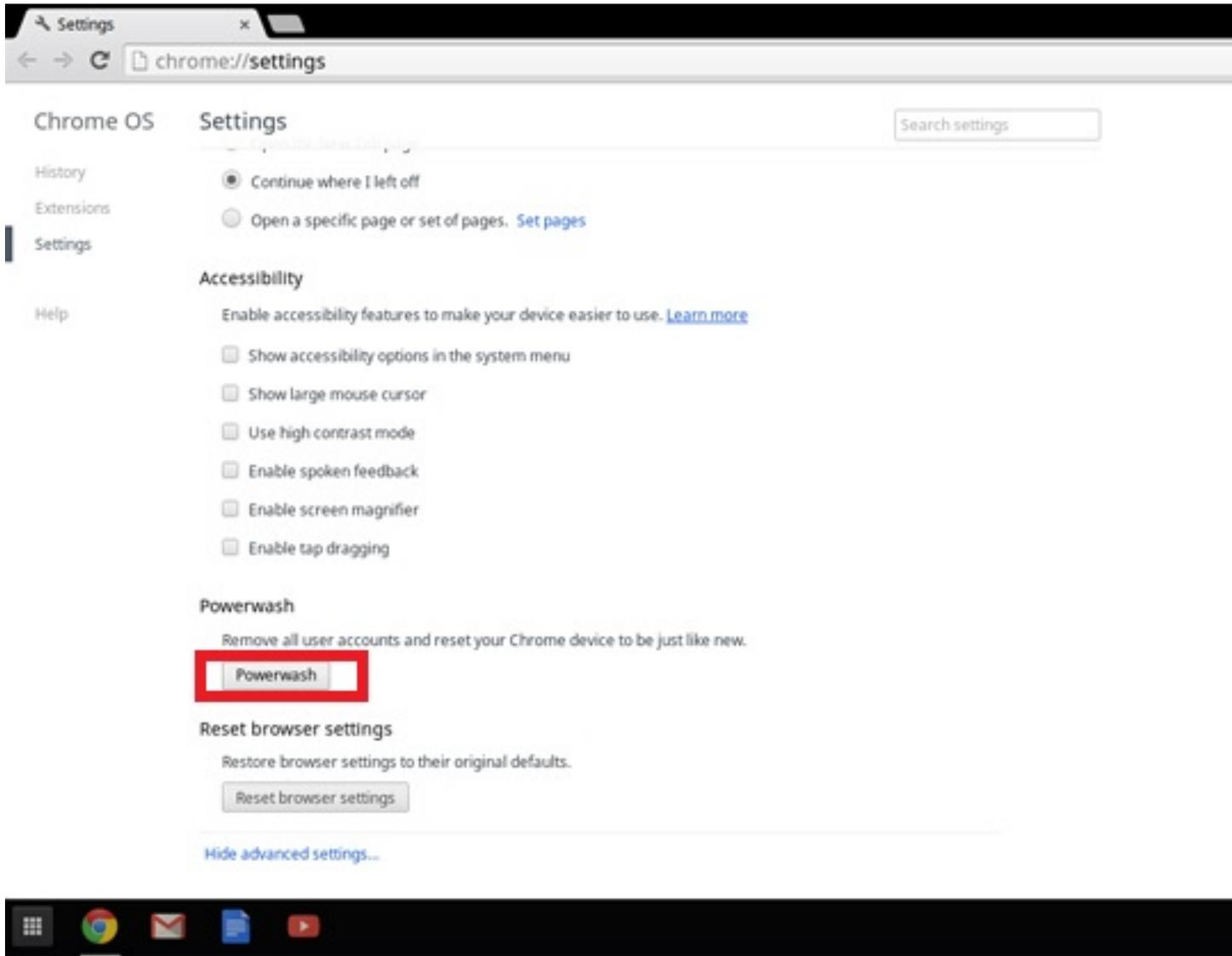
- 2 Click **Settings** as highlighted from the screenshot below.



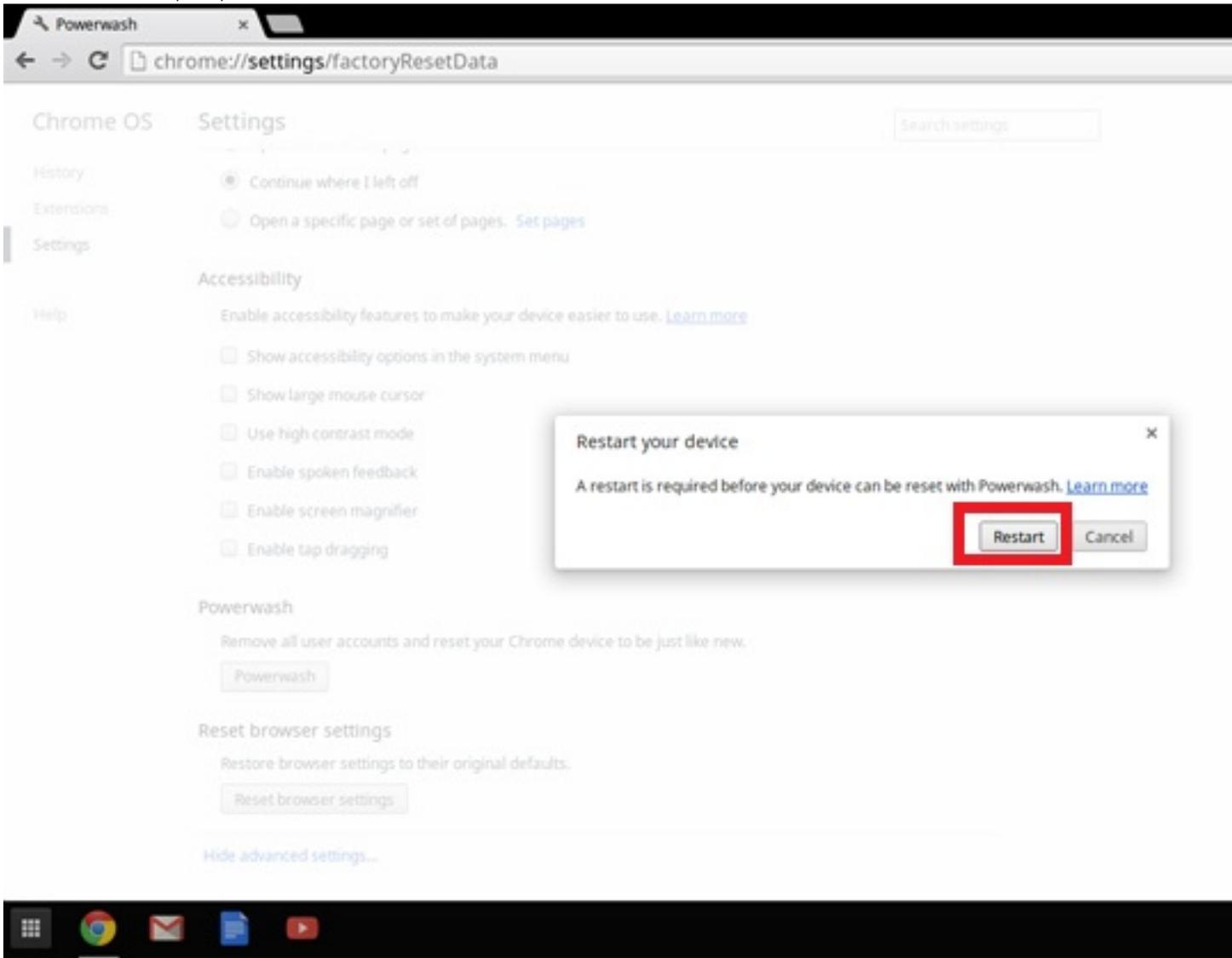
- 3 Click **Show advanced settings** to expand the menu.



- 4 Click the **Powerwash** button.



5 Click **Restart** when prompted.



You can also reset your Inspiron Chromebook from the sign-in screen by holding down the keys `Ctrl+Alt+Shift+R` and clicking **Restart**. (If you are signed in to your Inspiron Chromebook, sign out first before you press on `Ctrl+Alt+Shift+R`, then click **Restart**. Once the Inspiron Chromebook is restarted, click **Reset**.)

After you restart the Inspiron Chromebook, you should now see the setup screen. Follow the instructions on the screen to set up your Inspiron Chromebook again. Make sure you sign in with your primary Google Account, because this account is set as the owner account.

Recovering the Inspiron Chromebook

This page contains information about recovering Dell Inspiron Inspiron Chromebook.

Install a new version of the Chrome operating system on your Inspiron Chromebook by going through the recovery process. You may want to go through this process if you are having problems updating your Inspiron Chromebook or if it stops working.

NOTE: All account information and data stored on your Inspiron Chromebook, such as photos, downloaded files, and saved networks, will be deleted. Owner privileges for your primary account will also be reset. However, the actual Google Accounts and any data synced to these accounts are not affected by the recovery process. After the recovery process is complete, you will be guided through the initial setup again.

Prerequisites:

Before starting this process, you need the following:

- A Chrome device, Windows, Mac, or the Linux computer with administrative rights.
- A 4 GB or larger USB flash drive or SD card that you do not mind clearing.

Step 1-Check for the Chrome OS is missing or damaged message

If you see this message, you can first try to perform a hard reset on your Inspiron Chromebook by pressing Refresh + Power. If you still see this message after performing a hard reset, please proceed to Step 2.

If you see the **Chrome OS verification is turned off** message, refer to **Chrome OS verification is turned off** section below.

Step 2-Create the recovery USB flash drive or SD card

Insert a USB flash drive or SD card into your computer and follow the instructions below

Table 18. USB flash drive or SD card

Operating System	Instructions
Chrome Device Instructions	<p>Create a recovery flash drive by using the Image Burner. The tool may not be available in all languages.</p> <ol style="list-style-type: none">1 Type chrome://imageburner into the omnibox (browser's address bar) .2 Run the tool and follow the instructions that appear on your screen. <p>NOTE: When recovering your Inspiron Chromebook, make sure to create the recovery flash drive on the same model.</p>
Windows Instructions	<ol style="list-style-type: none">1 Click this link to download the Recovery Tool. If you are a network administrator for your school, business, or organization, click this link to download the Recovery Tool: 2. 3.2 Run the tool and follow the instructions that appear on your screen.3 After you recover your Inspiron Chromebook, you must format your USB flash drive or SD card using the Recovery Tool. If you do not format your USB flash drive or SD card, you will not be able to use all the storage space on your external device. Additionally, your USB flash drive or SD card may not be recognizable by Windows. <p>Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages.</p> <ol style="list-style-type: none">1 Click this link to download the Recovery Tool.2 Run the tool and follow the instructions that appear on your screen. <p>After the process is complete, you might see an alert saying your USB drive or SD card is unreadable. If this fails, try removing and reinserting your USB drive or SD card. Your USB drive or SD card should now be ready to use for recovery.</p>
Mac Instructions	
Linux Instructions	<p>Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages.</p>

- 1 Click this link to download the Recovery Tool.
- 2 Modify the script permissions to allow execution with the following command: `$ & sudo chmod 755 linux_recovery.sh`
- 3 Run the script with root privileges with the following command: `$ sudo bash linux_recovery.sh`
- 4 Follow the prompts from the tool to complete building the operating system image.

Reinstall the Chrome Operating System

- 1 Start your Inspiron Chromebook.
- 2 When the **Chrome OS is missing or damaged** screen appears, insert the USB flash drive or SD card you created into the USB port or SD card slot on your Chrome device
- 3 Wait for the Inspiron Chromebook to boot up from the flash drive
- 4 Follow the instructions that appear on the screen.
- 5 On successful installation of the Chrome operating system, you will be prompted to remove the USB flash drive or SD card.
- 6 Remove the USB flash drive or SD card when prompted, and your Inspiron Chromebook will automatically restart.

You should now be able to start your Inspiron Chromebook as normal. Because the data stored on your Inspiron Chromebook has been cleared, you will need to go through the initial setup again. Make sure you sign in with your primary Google Account, because this account will be set as the owner account.

Chrome OS verification is turned off Message

By default, Inspiron Chromebooks are set to the normal user mode. If you've set the user mode to developer mode instead, you'll see a screen with the message "Chrome OS verification is turned off" when you start up. Use the developer mode if you want to test your own version of the Chrome operating system.

Press **Ctrl+D** to enter developer mode. If you press the space bar instead, you'll see a screen asking to recover your device.

Troubleshooting Tips

Table 19. Troubleshooting tips

Question	Solution
I am unable to recover my Inspiron Chromebook	To help ensure that you are running the latest version of Chrome OS once you recover your Inspiron Chromebook, we recommend creating the recovery media with the latest version of Chrome OS and avoid using recovery media that may contain an older version of the operating system.
An error message An unexpected error has occurred.	Try the following steps: <ol style="list-style-type: none"> 1 Confirm that you successfully completed all instructions exactly as specified in Step 2: Create the recovery USB flash drive or SD card above. 2 Try using a different USB stick or SD card. 3 If the problem persists, contact Google Chrome support team.
An error message You are using an out-of-date Chrome OS recovery image.	You should download an up-to date recovery image. Simply follow all the instructions exactly as specified in Step 2 above.

Question

You successfully recovered your Inspiron Chromebook but now you can not use your USB or SD card with Windows

You successfully recovered your Inspiron Chromebook but now Windows does not recognize the whole size of the USB or SD card used for recover.

Solution

After you have completed recovery, you need to format your USB or SD card using the recovery tool.

After you have completed recovery, you need to format your USB or SD card using the recovery tool.