Chromebook 11 3380

Disassembly and Reassembly Guide - For use by Dell Certified Technicians only

Regulatory Model: P80G
Regulatory Type: P80G002

Notes, cautions, and warnings

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

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

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

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1

Working on your computer

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure included in this document assumes that the following conditions exist:

- You have read the safety information that shipped with your computer.
- A component can be replaced or, if purchased separately, installed by performing the removal procedure in reverse order.

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 power source.

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

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

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

CAUTION: Handle components and cards with care. Do not touch the components or contacts on a card. Hold a card by its edges or by its metal mounting bracket. Hold a component such as a processor by its edges, not by its pins.

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; if you are disconnecting this type of cable, press in on the locking tabs before you disconnect the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, ensure that both connectors are correctly oriented and aligned.

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

Before working inside your computer

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

CAUTION: To disconnect a network cable, first unplug the cable from your computer and then unplug the cable from the network device.

4 Disconnect all network cables from the computer.
5 Disconnect your computer and all attached devices from their electrical outlets.
6 Close the display and turn the computer upside-down on a flat work surface.

NOTE: To avoid damaging the system board, you must remove the main battery before you service the computer.

7 Remove the base cover.
8 Remove the main battery.
9 Turn the computer top-side up.
10 Open the display.

11 Press and hold the power button for few seconds, to ground the system board.

> **CAUTION: To guard against electrical shock, always unplug your computer from the electrical outlet before opening the display.**

> **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.**

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

After working inside your computer

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

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

1 Replace the battery.
2 Replace the base cover.
3 Connect any external devices, such as a port replicator or media base, and replace any cards, such as an ExpressCard.
4 Connect any telephone or network cables to your computer.

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

5 Connect your computer and all attached devices to their electrical outlets.
6 Turn on your computer.

Removing and installing components

This section provides detailed information on how to remove or install the components from your computer.

Recommended tools

The procedures in this document require the following tools:

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

microSD card

Removing microSD card

1 Follow the procedure in Before working inside your computer.
2 Press in on the microSD card to release it from the computer.

3 Remove the microSD card from the computer.

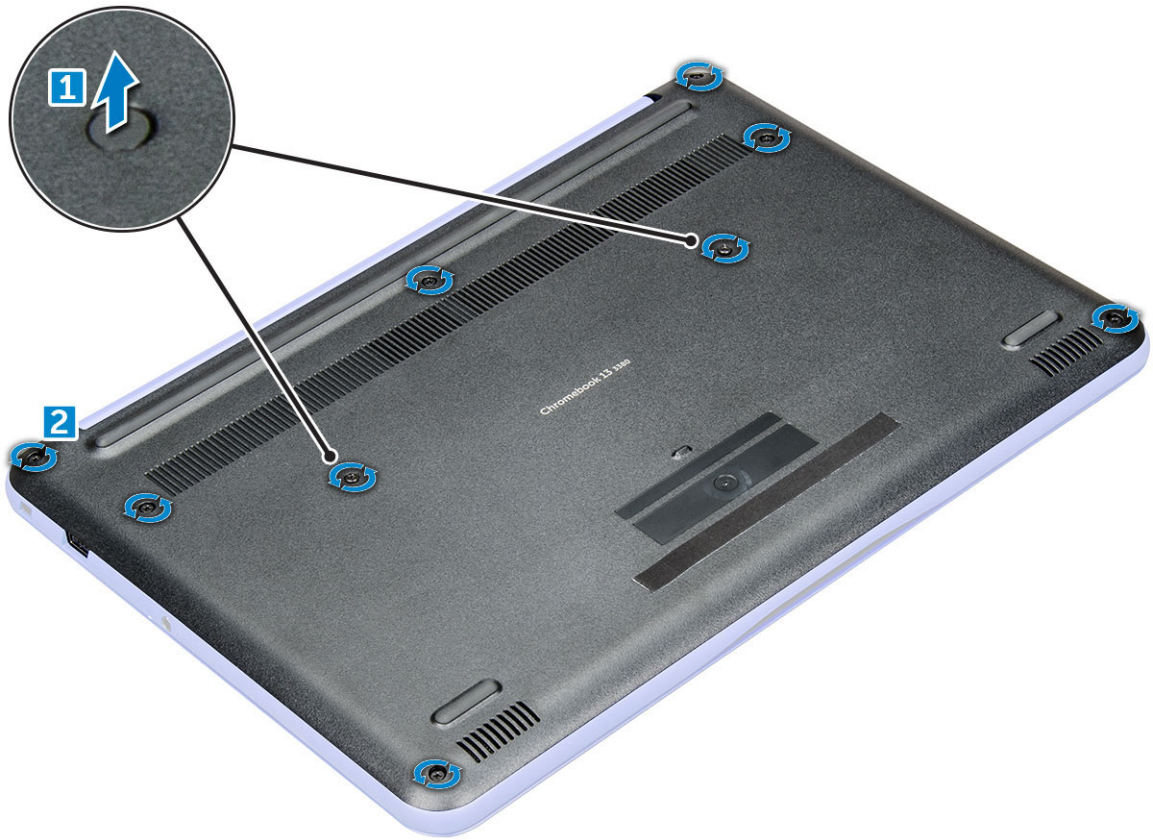
Installing microSD card

1 Slide the microSD card into its slot until it clicks into place.
2 Follow the procedure in After working inside your computer.

Base cover

Removing the base cover

1 Follow the procedure in Before working inside your computer.
2 To remove the base cover:
   a Using a screwdriver, first remove the Mylar caps and then remove the two middle screws.
   b Loosen the M2.5xL8.5 captive screws that secure the base cover to the computer [2].



3 Using a plastic scribe, pry and lift the base cover away from the computer.

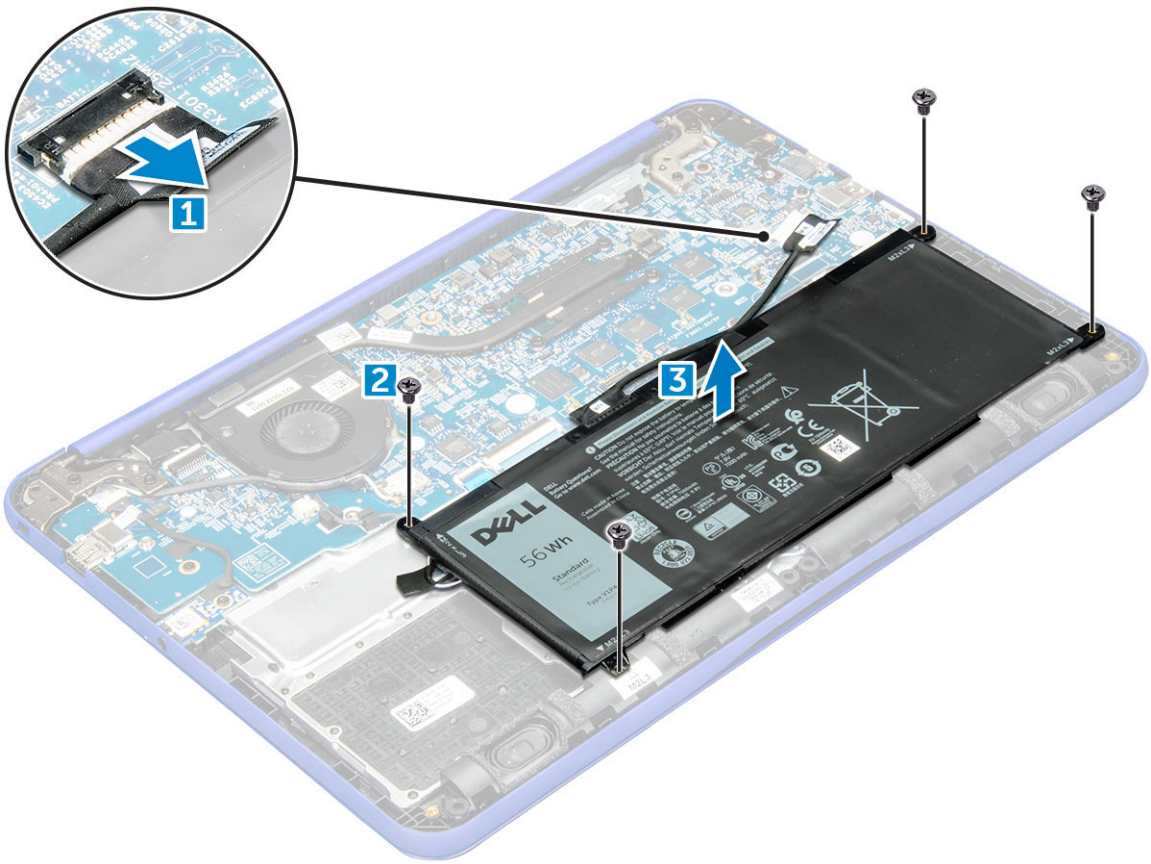
Installing base cover

1 Align the base cover with the screw holders on the computer.
2 Press the edges of the cover until it clicks into place.
3 Tighten the two middle screws.
4 Tighten the M2.5xL8.5 screws to secure the base cover to the computer.
5 Follow the procedure in After working inside your computer.

Battery

Removing the battery

1 Follow the procedure in Before working inside your computer.
2 Remove the base cover
3 To remove the battery:
   a Disconnect the battery cable from the connector on the system board [1].
   b Remove the M2.0x3.0 screws that secure the battery to the computer [2].
   c Lift the battery away from the computer [3].



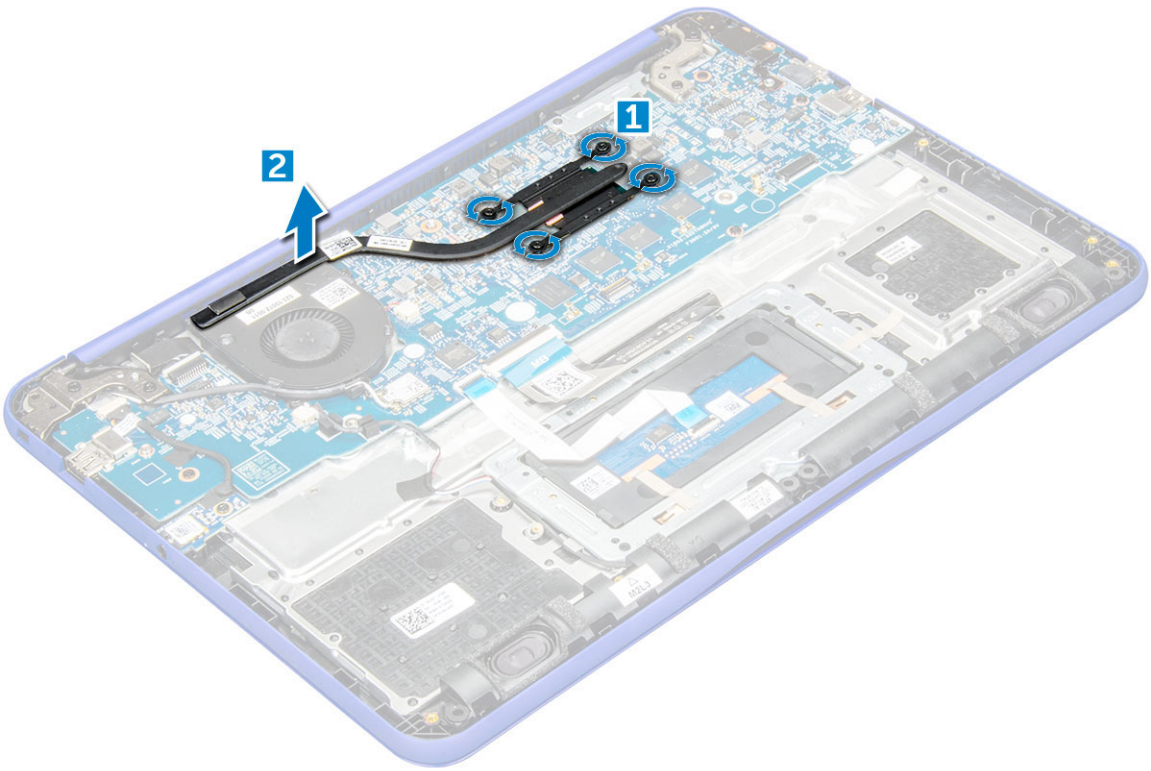
Installing the battery

1 Insert the battery into the slot on the computer.
2 Connect the battery cable to the connector on the battery.
3 Tighten the M2.0xL3 screws to secure the battery to the computer.
4 Install the base cover
5 Follow the procedure in After working inside your computer.

Heat sink

Removing the heatsink

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the heatsink:
   a Remove the M2.5x2.5 screws that secure heat sink to the computer [1].
   b Lift the heatsink away from the computer [2].



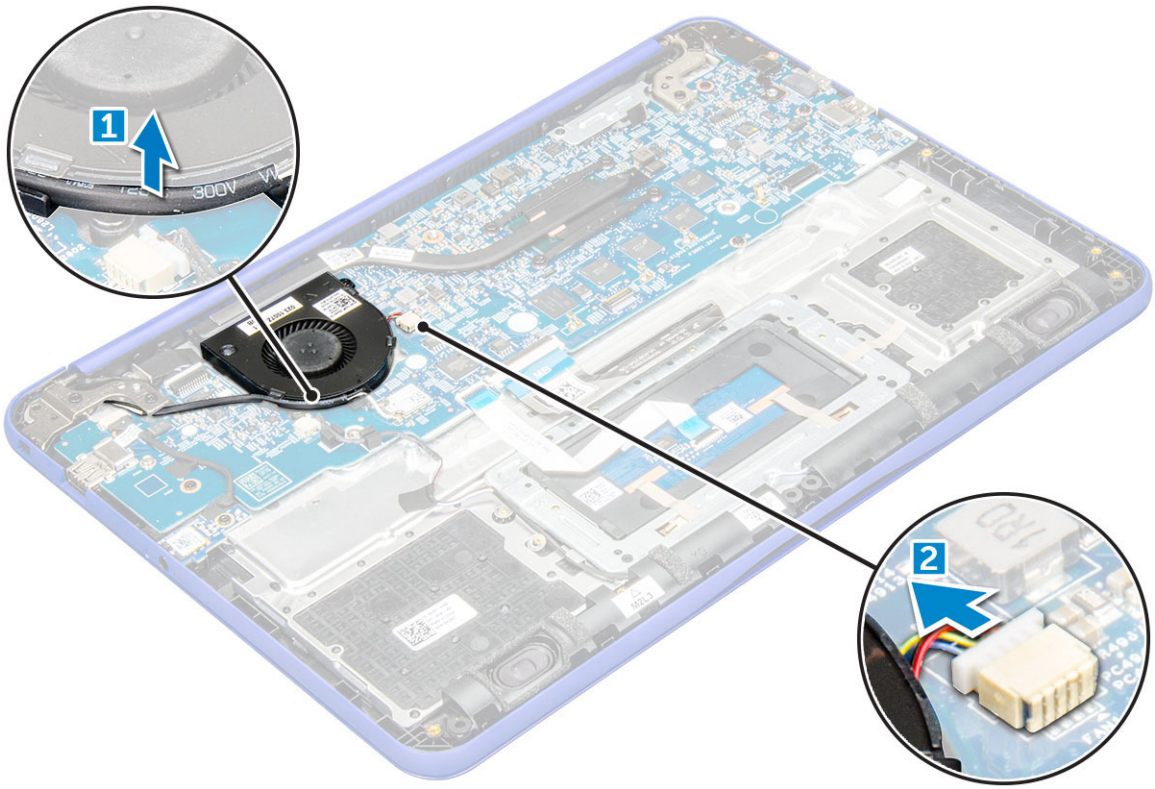
Installing the heatsink

1 Insert the heatsink into the slot on the computer.
2 Tighten the M2.5x2.5 screws to secure the heatsink to the computer.
3 Install the:
   a battery
   b base cover
   c microSD card
4 Follow the procedure in After working inside your computer.

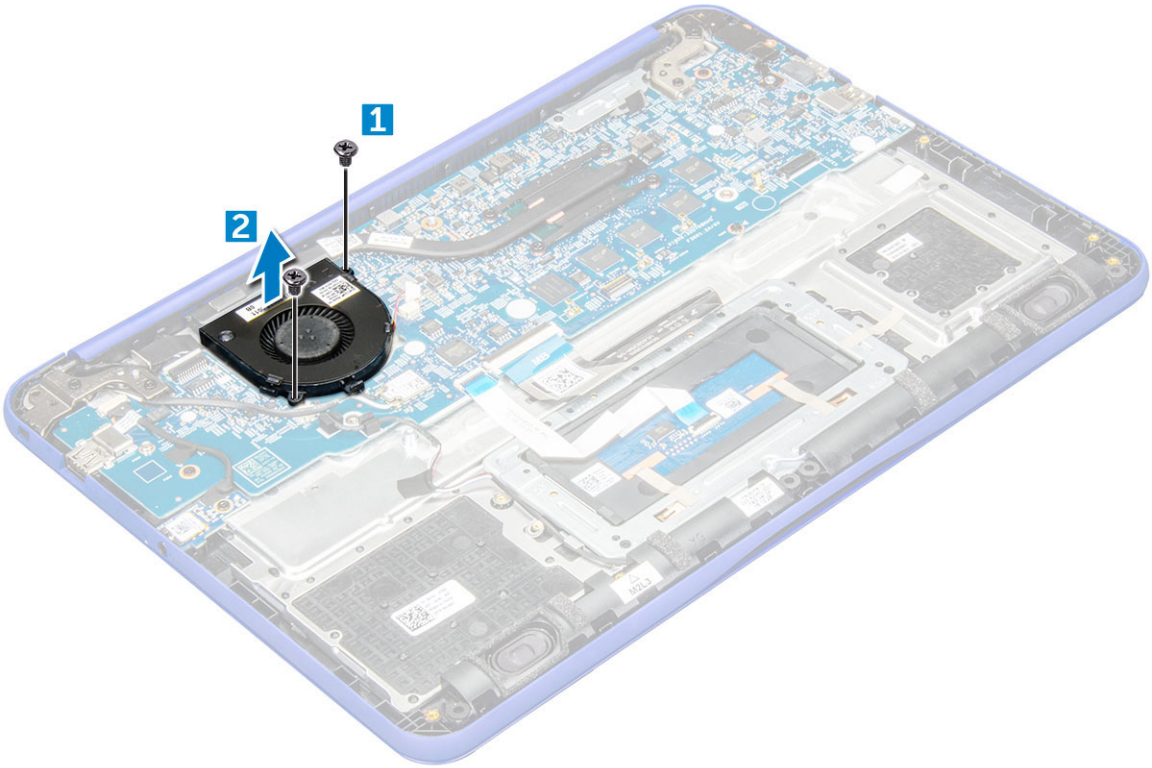
System Fan

Removing the system fan

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove the system fan:
   a Unroute the WLAN cable from the routing on the system fan [1].
   b Disconnect the fan cable from the connector on the system board [2].



4 Remove the M2xL3 screws that secure the fan to the system board [1].
5 Lift the system fan off the system board [3].



Installing the system fan

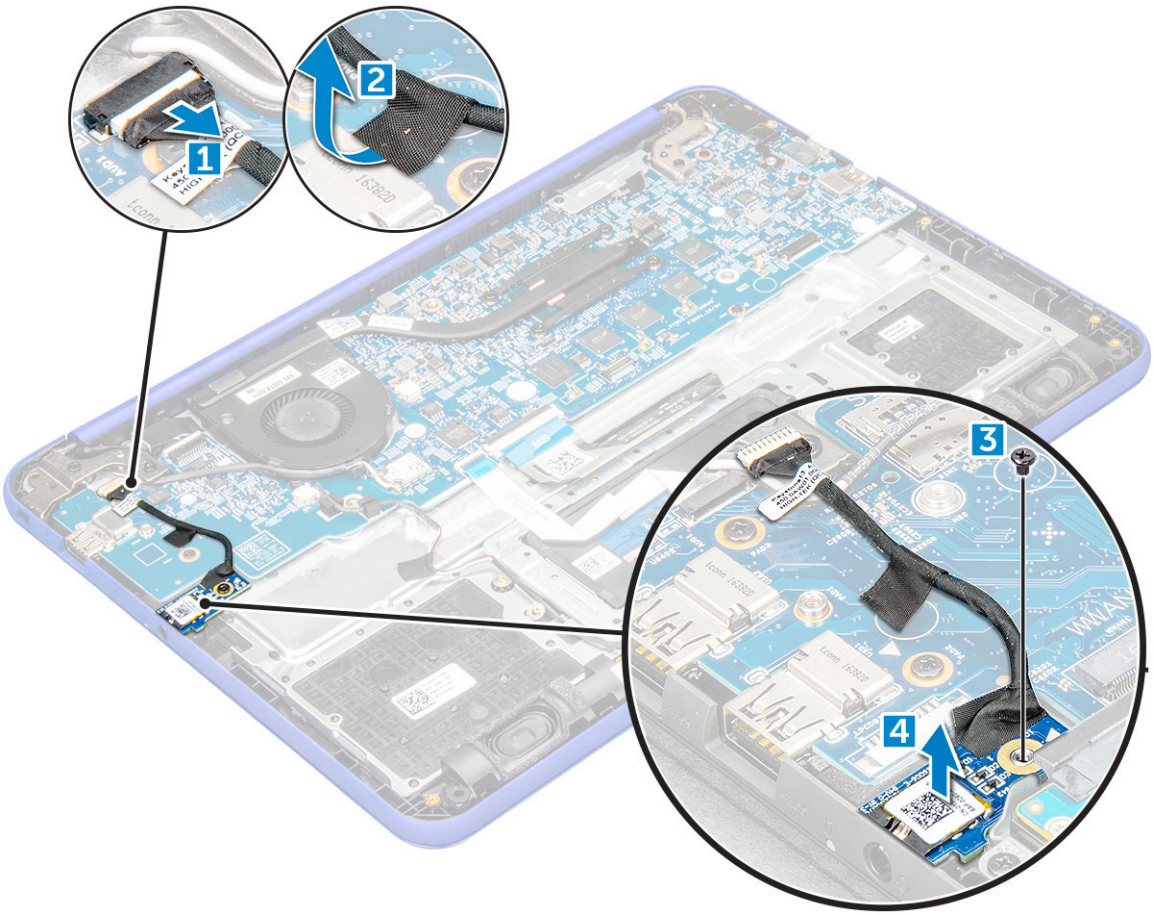
1 Place the fan on the system board.
2 Tighten the M2xL3 screws to secure the fan to the system board.
3 Connect the fan cable to its connector on the system board.
4 Route the WLAN cable onto its routing on the fan.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

Audio board

Removing the audio board

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a micrSD card
   b base cover
   c battery
3 To remove the audio board:
   a Disconnect the audio board cable from its connector on the system board [1]
   b Lift and peel off the black adhesive tape to remove the cable from the system board [2].
   c Remove the M2xL3 screw that secures the audio board to the system board [3].

d Lift and remove the audio board from the system [4].



Installing the audio board

1 Place the audio board in its place on the computer.
2 Tighten the M2xL3 screw to secure the audio board to the computer.
3 Affix the cable adhesive to the computer.
4 Reconnect the audio board cable to its connector on the system board.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

Speakers

Removing the speakers

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery

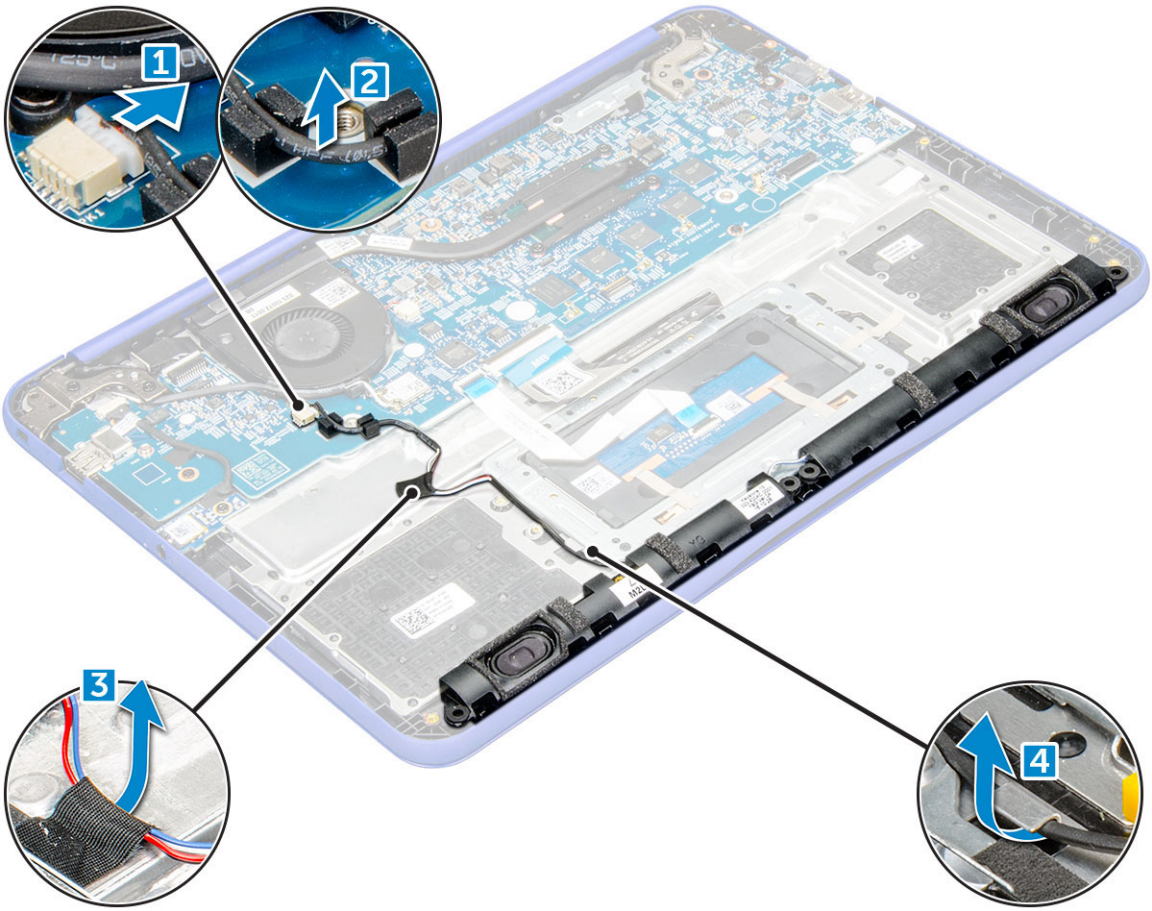
3 To remove the speaker:

a Disconnect the speaker cable from the connector on the system board [1].

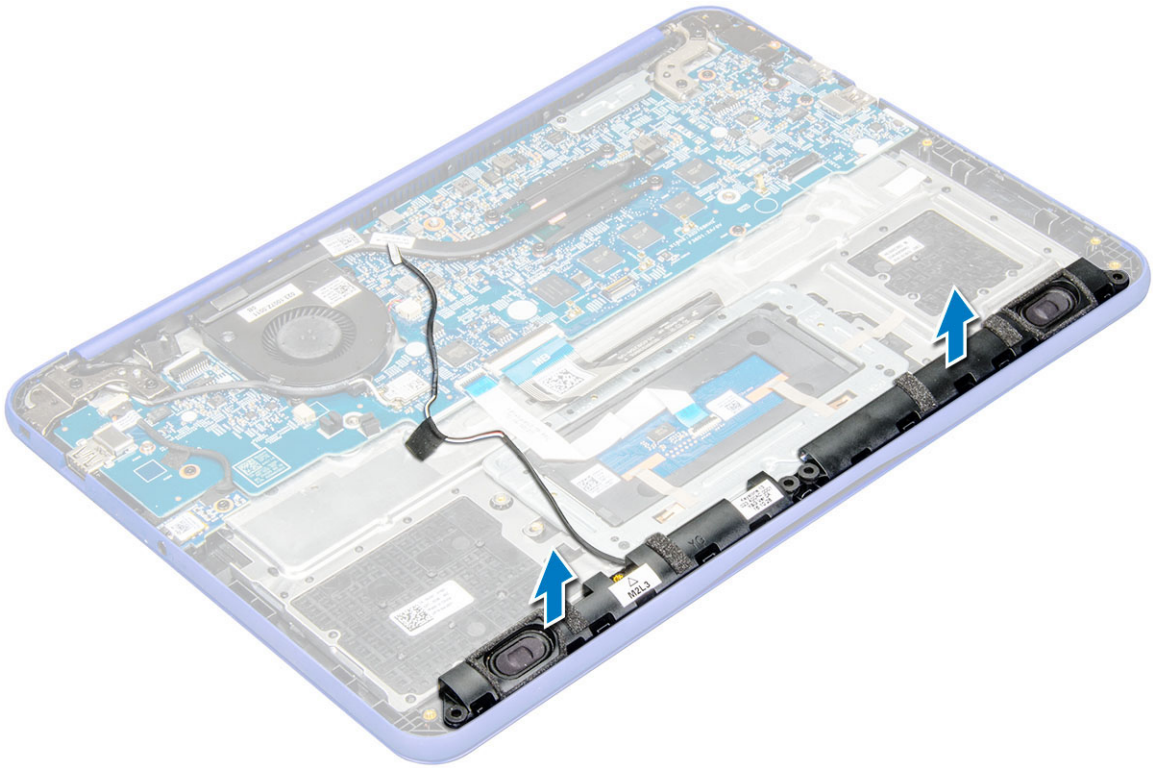
b Lift the speaker cable off from the cable guide [2].

c Remove the adhesive tape that secures the speaker cable to the computer [3].

d Unroute the speaker cable from the routing channel [4].



4 Remove the speakers from the computer.



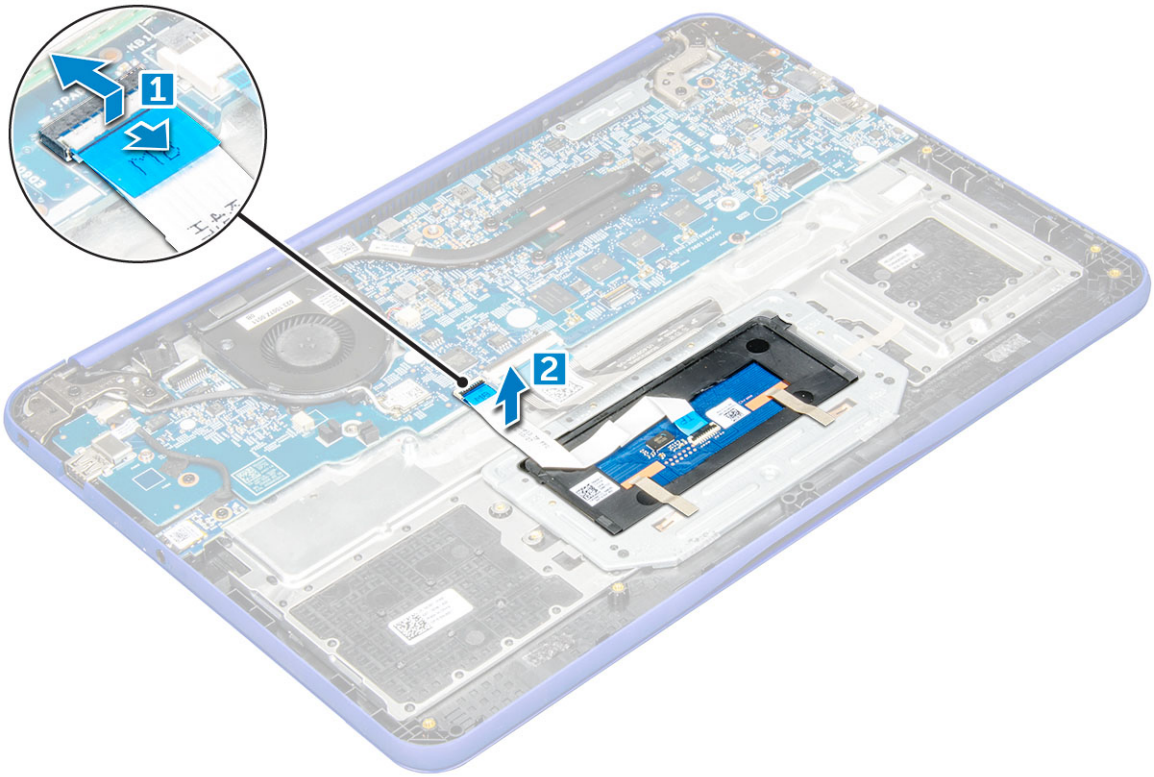
Installing the speakers

1 Place the speakers into the slots on the computer.
2 Route the speaker cable through the routing channel.
3 Affix the adhesive tape to secure the speaker cable to the computer.
4 Connect the speaker cable to the connector on the system board.
5 Install the:
   a battery
   b base cover
   c microSD card
6 Follow the procedure in After working inside your computer.

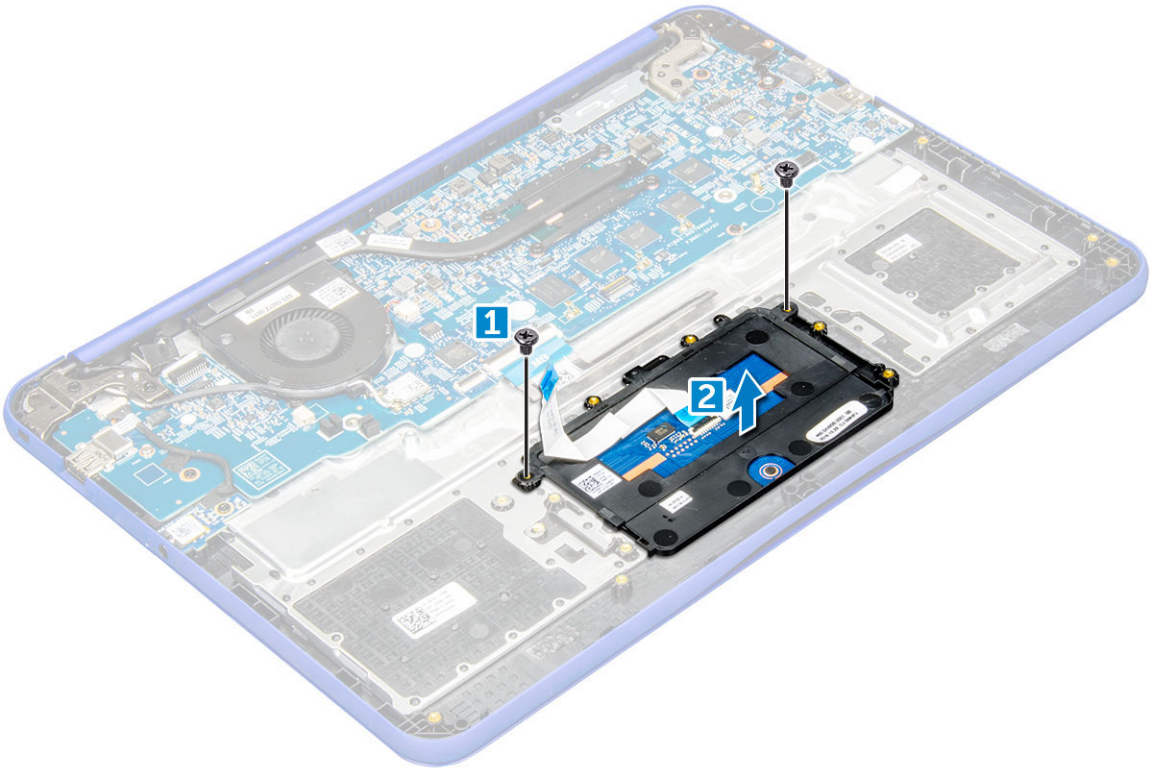
Touchpad panel

Removing the touchpad

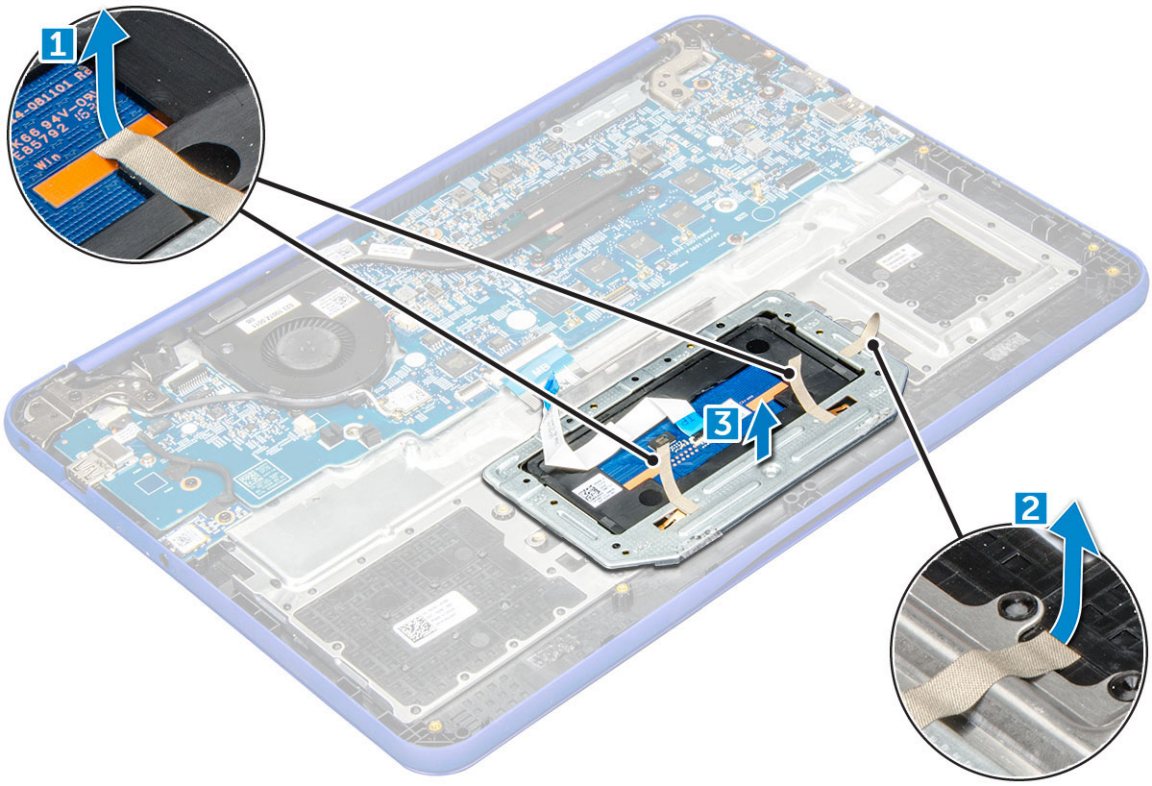
1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
3 To remove touchpad cable:
   a Lift the latch and disconnect the touchpad cable from the computer [1].
   b Lift the touchpad cable off from the system board [2].



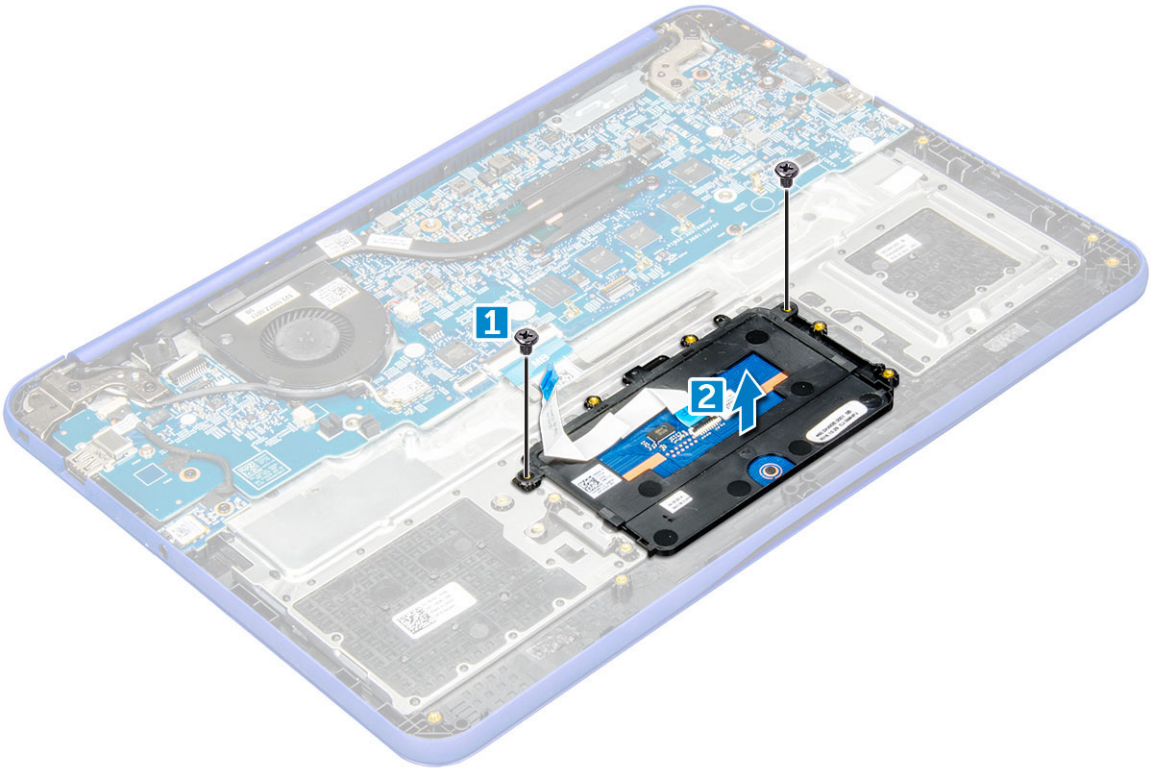
4 Remove the M2xL3 screws that secure the metal bracket to the touchpad on the computer.



5 Peel off the adhesive tapes [1] and [2] and then remove the metal bracket from the system [3].



6 Remove the M2xL3 screws that secure the touchpad to the system [1] and then lift the touchpad from the system [2].



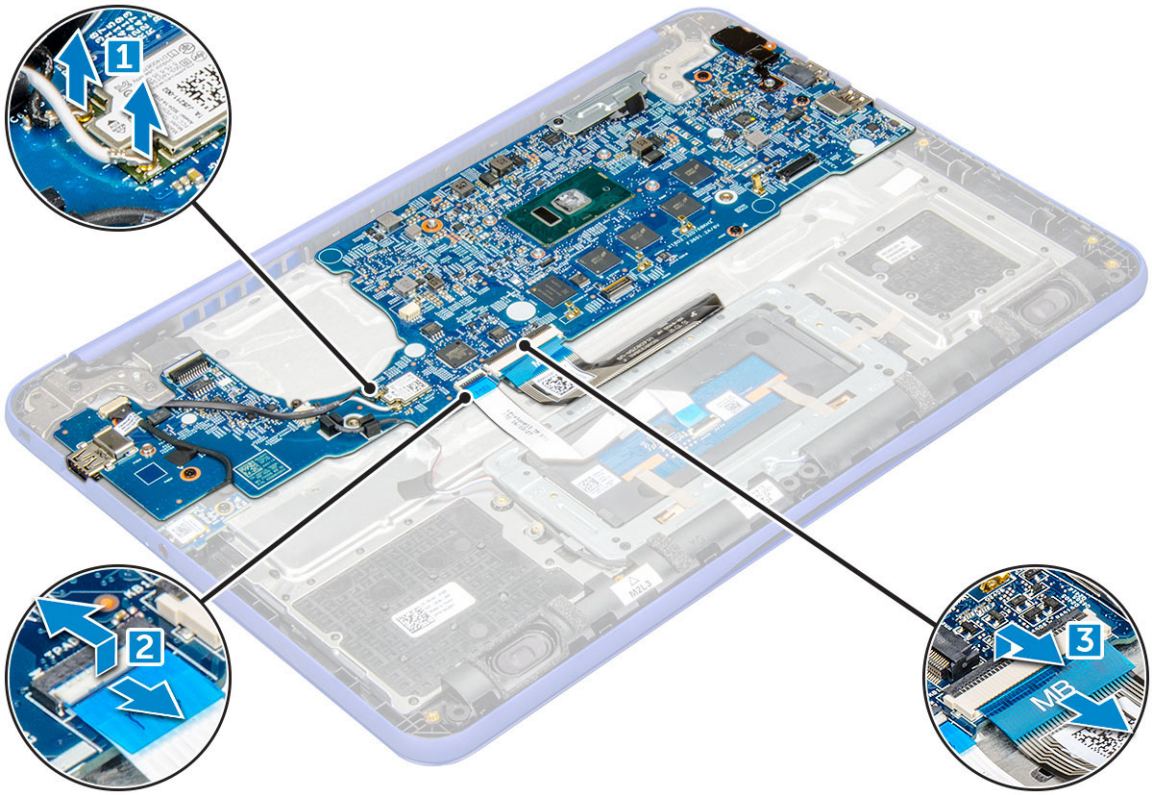
Installing the touchpad

1 Place the touchpad into the slots on the computer.
2 Tighten the M2xL3 screws that secure the touchpad to the system.
3 Affix the adhesive tape that secures the touchpad cable to the touchpad.
4 Place the metal bracket and tighten the M2xL3 screws that secure the metal bracket to the touchpad..
5 Connect the touchpad cable to its connector on the system board.
6 Install the:
   a battery
   b base cover
   c microSD card
7 Follow the procedure in After working inside your computer.

System board

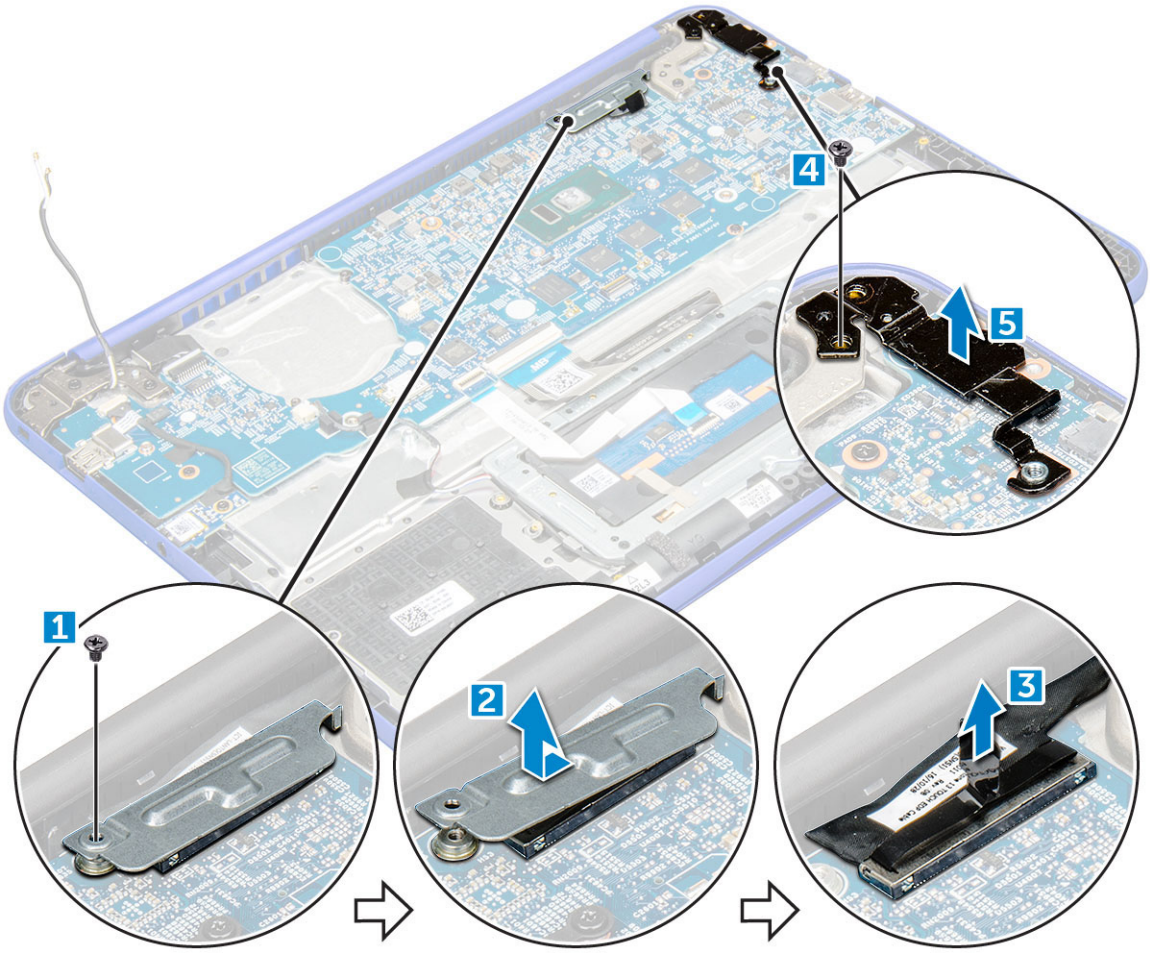
Removing the system board

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
   d display assembly
3 Disconnect the following cables from their connectors:
   a WLAN antenna cables from the WLAN card [1].
   b Touchpad cable from its connector on the system board [2].
   c Keyboard cable from its connector on the system board [3].



4 Then,

a Remove the screw on the metal bracket covering the display cable connector [1].
b Lift the metal bracket off the display cable connector [2].
c Disconnect the display cable from its connector on the system board [3].
d Remove the screw securing the retaining metal bracket to the system board [4].
e Lift the retaining metal bracket off the system board [5].

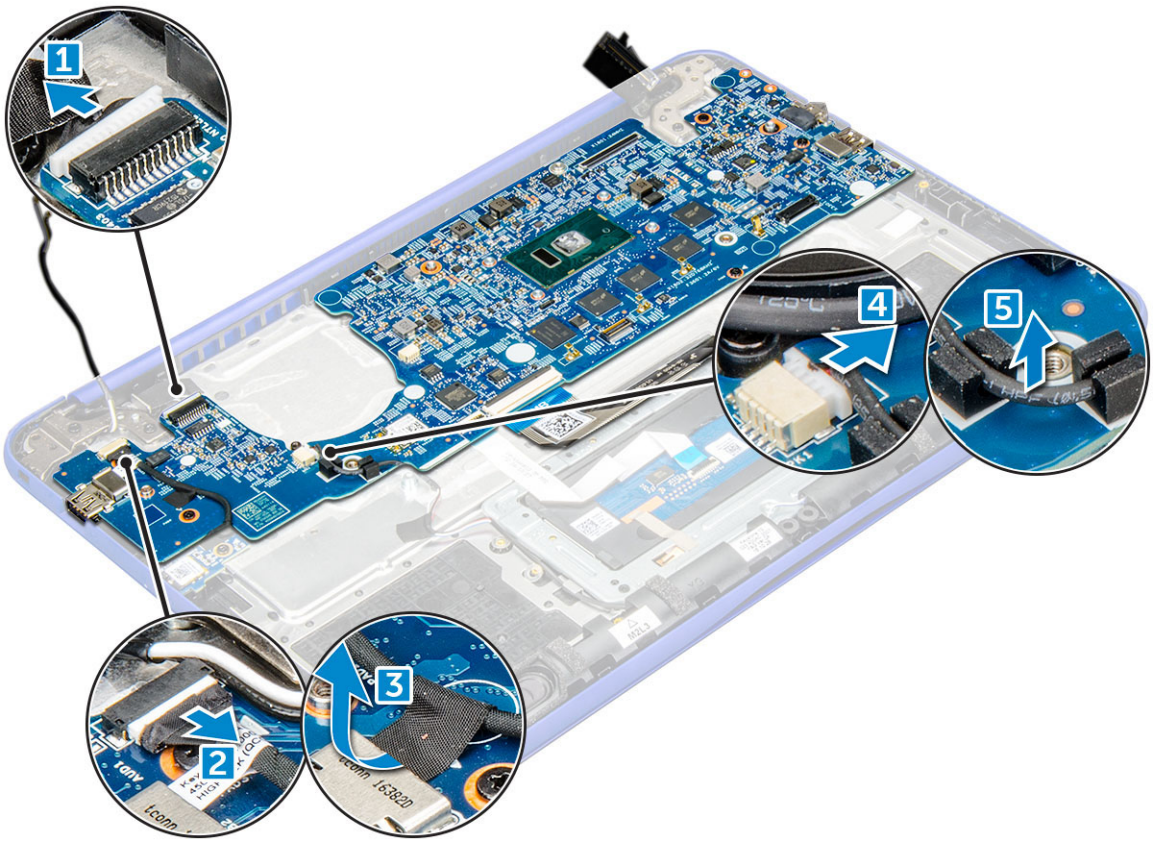


5 Then:

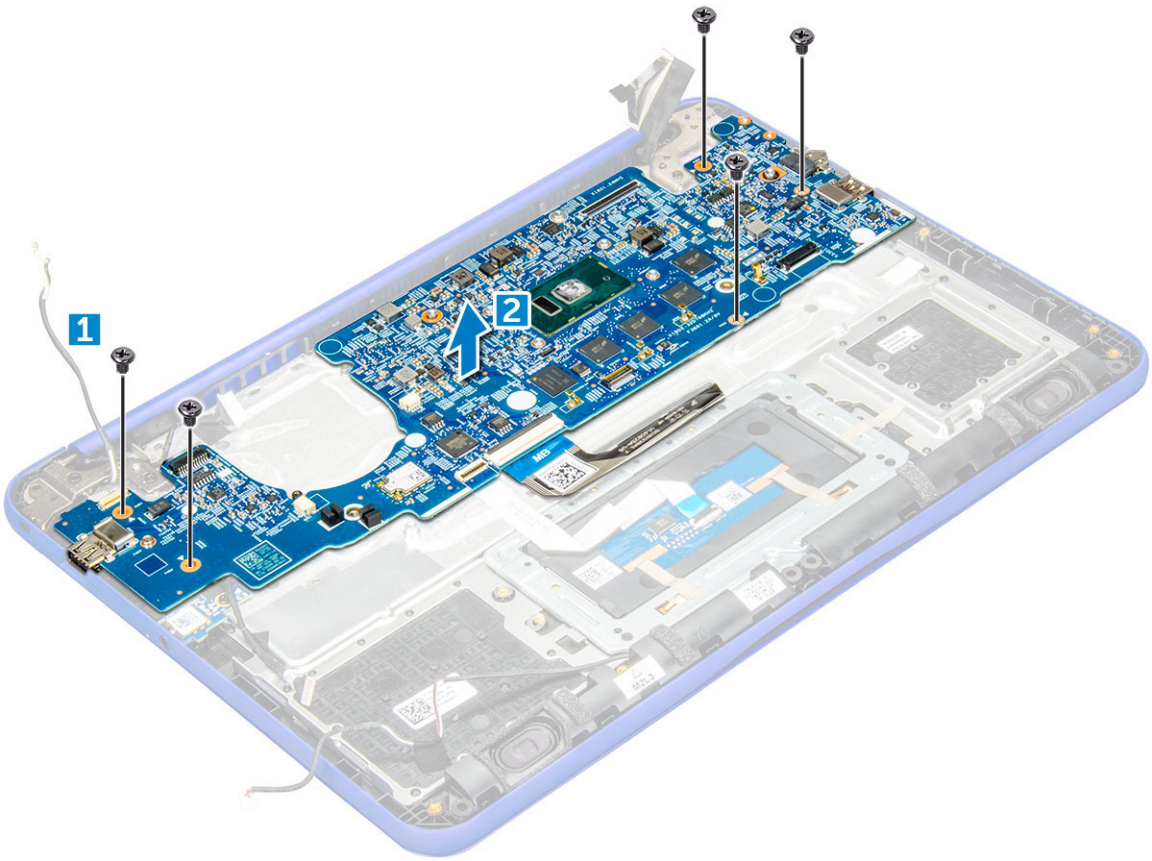
a Disconnect the <engineering input> from its connector on the system board [1].

b Disconnect the audio board connector [2] and peel off the adhesive securing the cable to the system board [3].

c Disconnect the speaker cable from its connector [4] and unroute the cable from the cable guide [5].



6 Remove the M2xL3 screws and lift the system board off the computer.



Installing the system board

1 Align the system board with the screw holders on the computer.
2 Tighten the M2xL3 screws to secure the system board to the computer.
3 Route the speaker through the cable guide and connect the speaker cable to the its connector.
4 Affix the adhesive of the audio board cable to the system board and connect the audio board cable to its connector.
5 Connect the <engineering input> cable to its connector on the system board.
6 Replace the metal retaining bracket and tighten the screw to secure it to the system board.
7 Connect the display assembly cable to its connector.
8 Place the metal bracket on the display cable connector and tighten the screw.
9 Connect the keyboard and touchpad cables to their connectors on the system board.
10 Connect the antenna cables to the WLAN card.
11 Install the:
   a display assembly
   b battery
   c base cover
   d microSD card
12 Follow the procedure in After working inside your computer.

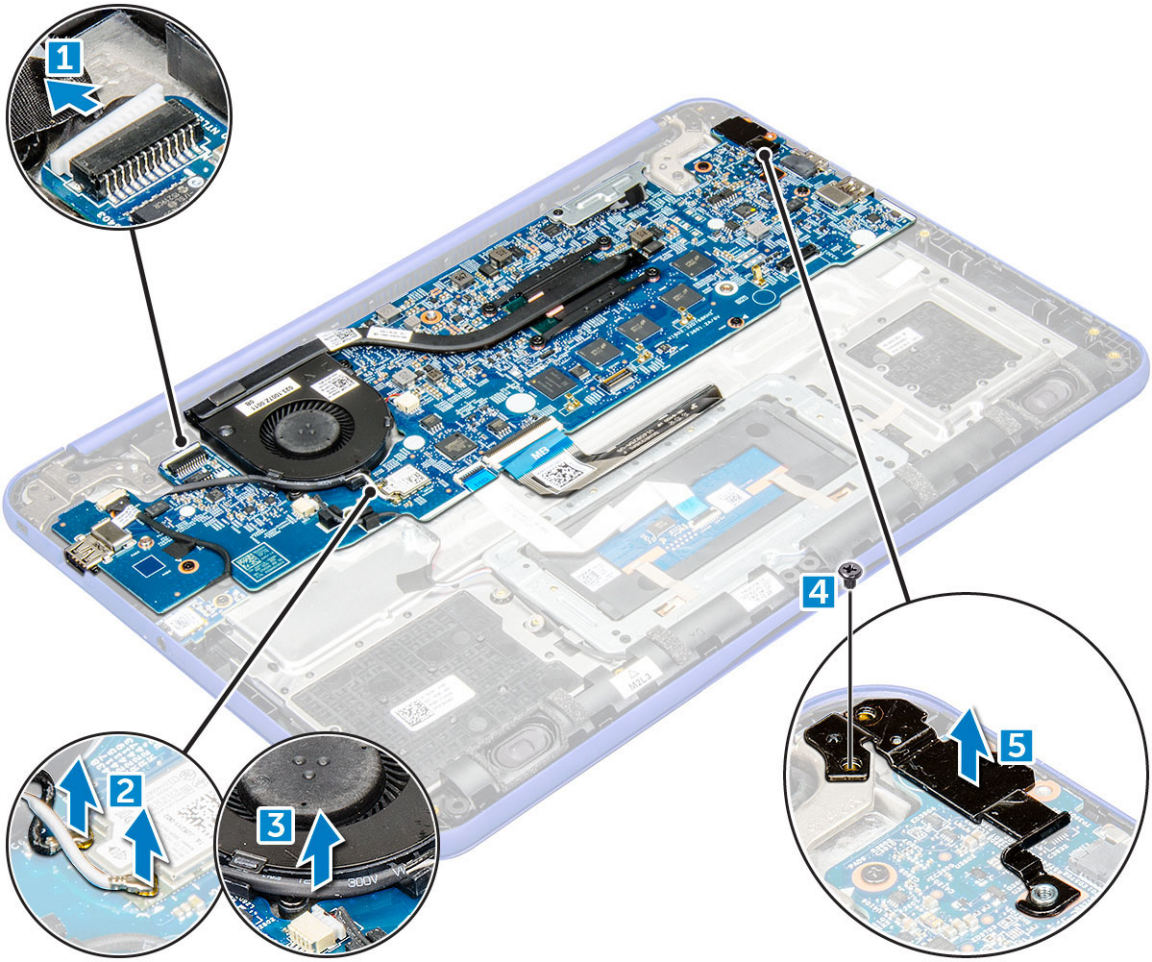
Display assembly

Removing the display assembly

1 Follow the procedure in Before working inside your computer.

> **CAUTION: The touch LCD Assembly is pre-assembled with the LCD bezel, touch sensor daughter board, touch sensor cable, display cable, and the camera module and hence cannot be further torn down and must be replaced as an assembly.**

2 Remove the:
   a microSD card
   b base cover
   c battery
3 Then:
   a Disconnect the eDP cable [1].
   b Disconnect the antenna cables from the WLAN card [2].
   c Unroute the WLAN cable from the its routing guide on the fan [3].
   d Remove the M1.6xL2 screw securing the power port to the display hinge [4].
   e Remove the power port from the system board [5].



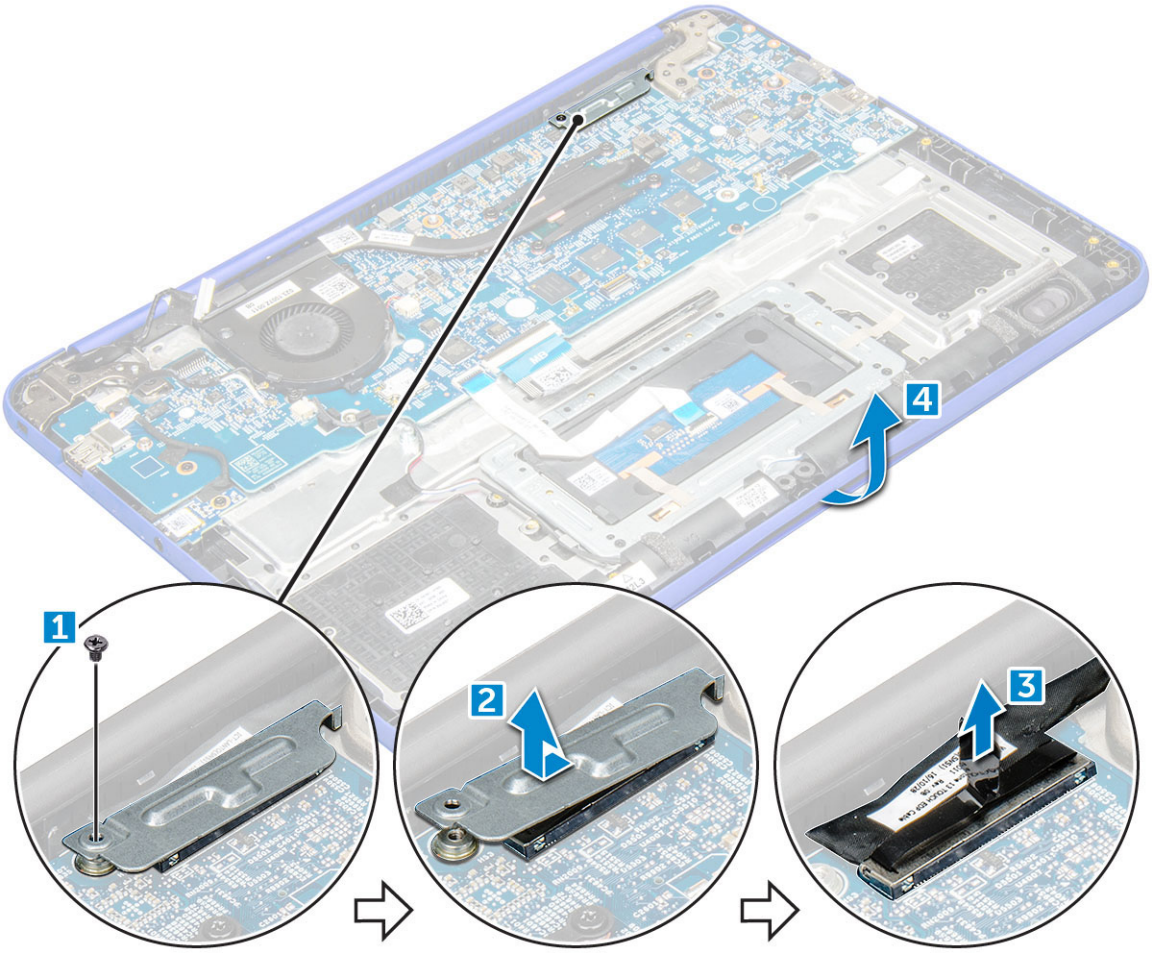
4 Then, do the following to remove the display:

a Remove the M1.6xL2 screw securing the metal bracket covering the display cable connector [1].

b Remove the metal bracket off the computer [2].

c Disconnect the display cable from its connector on the system board [3].

d Flip over the computer [4].



5 Remove the M2xL4 screws [1] and lift the display assembly off the computer [2].

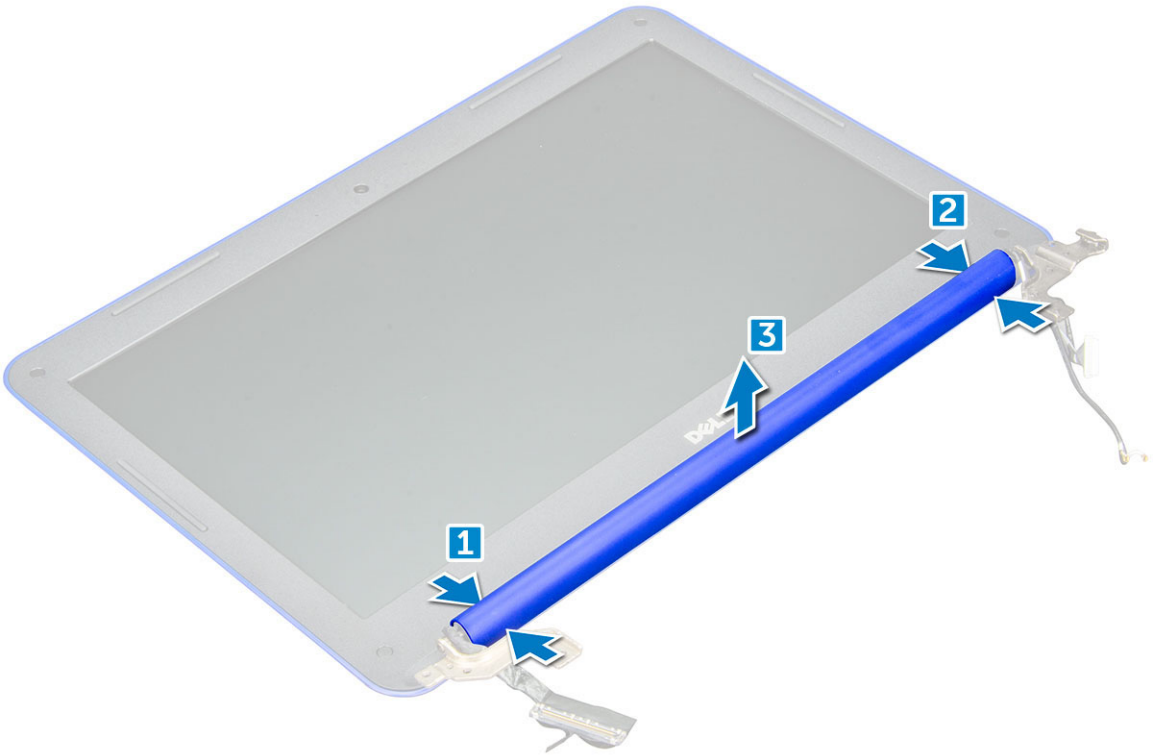
Installing the display assembly

1 Place the display assembly to align with the screw holders on the computer.
2 Tighten the M1.6xL2 screws to secure the display assembly to the computer.
3 Turn over the computer.
4 Connect the display cable to the connector.
5 Place the metal bracket over the display connector and tighten the screw to secure the display cable to the computer.
6 Replace the power port on the system board and tighten the screw to secure it to the display hinge.
7 Route the WLAN card cable to its routing guide on the fan and then reconnect the antenna cables to the WLAN card.
8 Connect the eDP cable to its connector on the system board.
9 Install the:
   a battery
   b base cover
   c microSD card
10 Follow the procedure in After working inside your computer

Hinge Cap

Removing the hinge cap

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD card
   b base cover
   c battery
   d display assembly
3 To remove the hinge cap:
   a Press on the left hinge cap to release it from the display assembly [1].
   b Press on the right hinge cap to release it from the display assembly [2].
   c Remove the hinge cap from the computer [3].



Installing the hinge cap

1 Place the hinge cap on the display assembly.
2 Press the left side of the hinge cap to snap it into place.
3 Press the right side of the hinge cap to snap it into place.
4 Install the:
   a display assembly
   b battery
   c base cover
   d microSD card
5 Follow the procedure in After working inside your computer.

LCD Bezel

Removing the LCD Bezel

1 Follow the procedure in Before working inside your computer.

NOTE: These instructions are applicable only for systems with a non-touch screen display.

2 Remove the:

a microSD card
b base cover
c battery
d display assembly
e hinge cap

3 Remove the M2xL4 screws that secure the bezel to the cover.

4 Using a plastic scribe, gently pry the bezel loose from the cover.

Installing LCD Bezel

1 Replace the bezel and gently press on the edges to snap the bezel into place.
2 Tighten the screws to secure the LCD bezel to the cover of the computer.
3 Install the:
   a hinge cap
   b display assembly
   c battery
   d base cover
   e microSD card
4 Follow the procedure in After working inside your computer

LCD Panel

Removing the LCD Panel

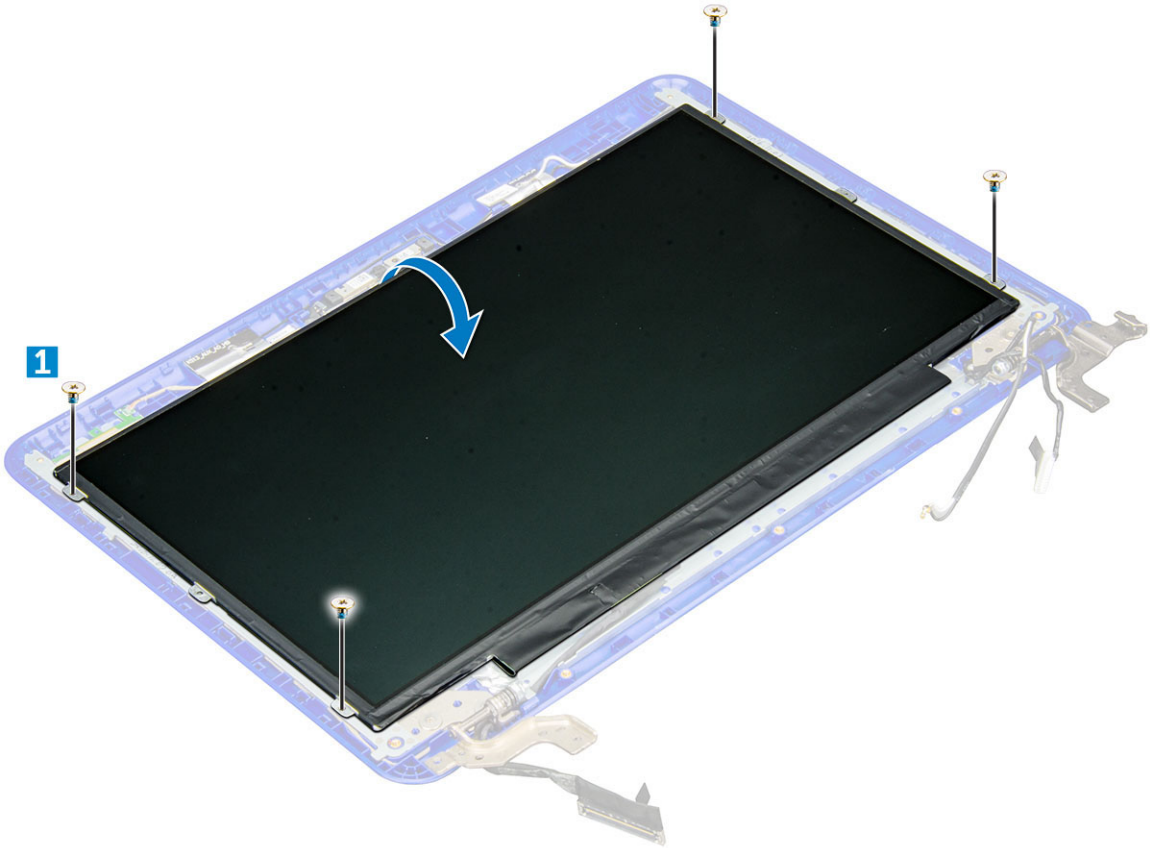
1 Follow the procedure in Before working inside your computer.

NOTE: These instructions are applicable only for systems with a non-touch screen display.

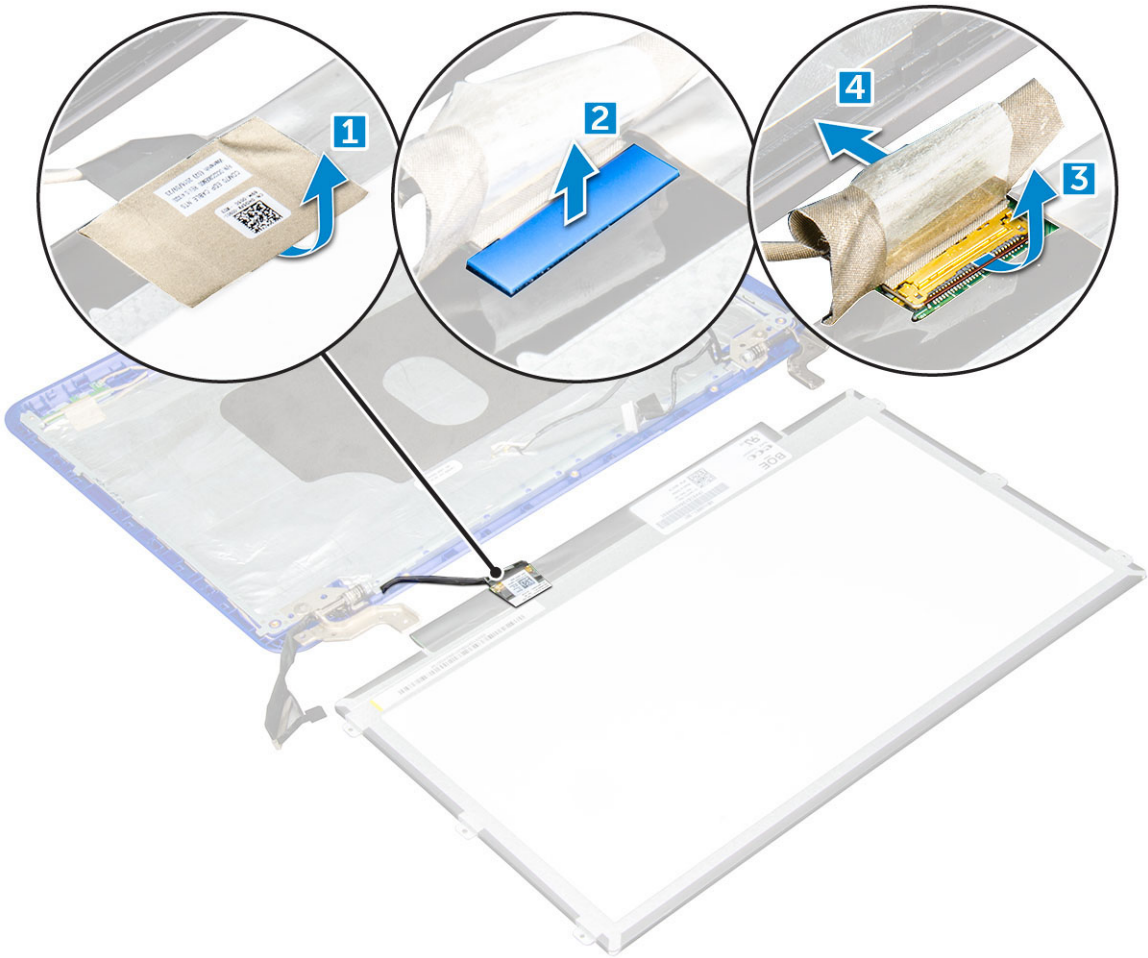
2 Remove the:
   a microSD
   b base cover
   c battery
   d display assembly

e hinge cap
f LCD bezel

3 Remove the M1.6xL2 screws securing the LCD panel to the metal bracket and flip over the LCD panel.



4 Lift up the adhesive sticker [1] to expose the foam padding [2]. Then, disconnect the cable from the LCD panel [3] and remove the connector from the panel [4].



Installing the LCD Panel

1 Connect the LCD cable to its connector.
2 Replace the foam padding.
3 Affix the adhesive sticker.
4 Place the LCD panel on the cover of the computer.
5 Tighten the screws to secure the LCD panel to the metal bracket.
6 Replace the bezel and gently press on the edges to snap the bezel into place.
7 Tighten the screws to secure the LCD bezel to the cover of the computer.
8 Install the:
   a LCD bezel
   b hinge cap
   c display assembly
   d battery
   e base cover
   f microSD card
9 Follow the procedure in After working inside your computer

Camera

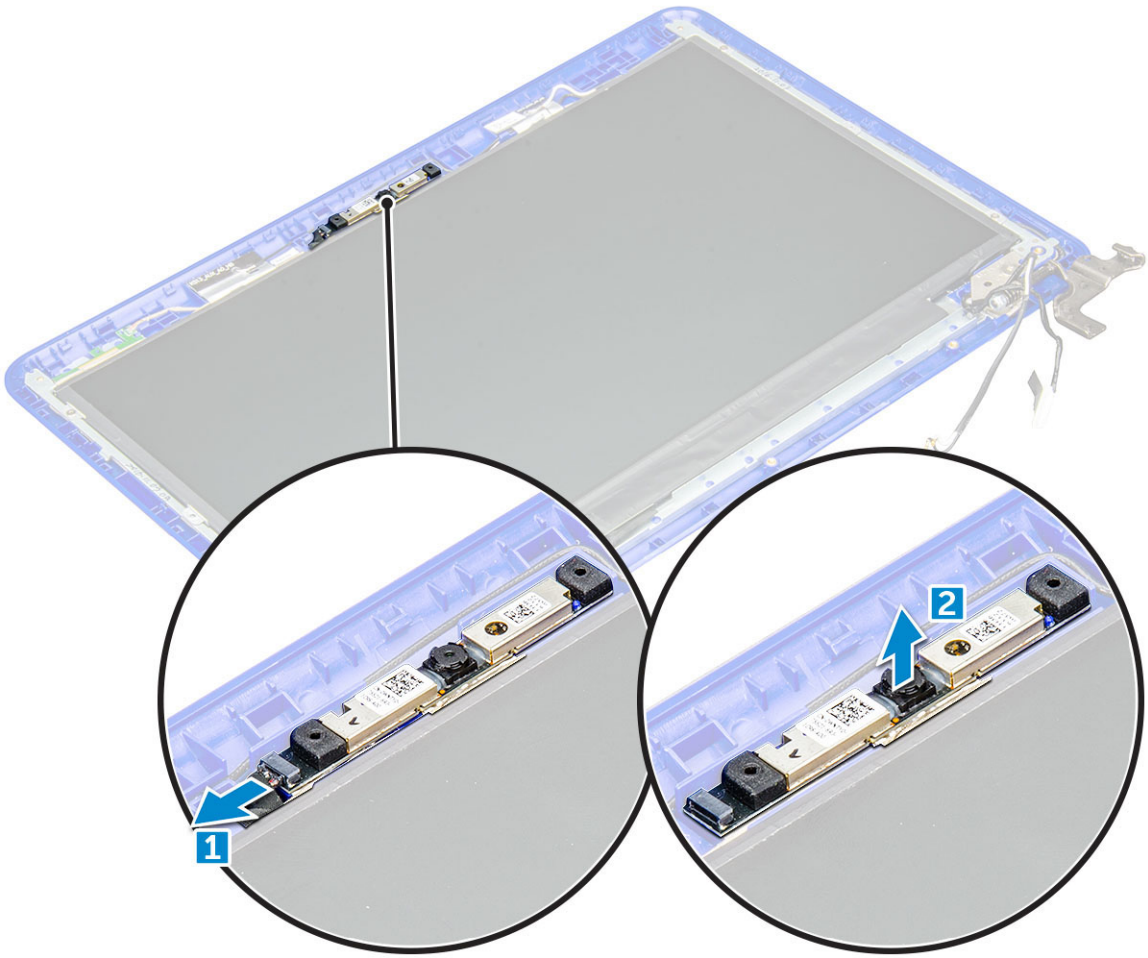
Removing the camera

1 Follow the procedure in Before working inside your computer.

NOTE: These instructions are applicable only for systems with a non-touch screen display.

2 Remove the:
   a microSD
   b base cover
   c battery
   d LCD bezel
   e hinge cap
   f LCD bezel

3 Disconnect the camera cable [1] and remove the camera module from the LCD assembly [2].



Installing the camera

1 Place the camera module in its slot on the LCD assembly.
2 Connect the camera cable to its connector on the camera.
3 Replace the bezel and gently press on the edges to snap the bezel into place.

4 Tighten the screws to secure the LCD bezel to the cover of the computer.
5 Install the:
   a hinge cap
   b battery
   c base cover
   d microSD card
6 Follow the procedure in After working inside your computer

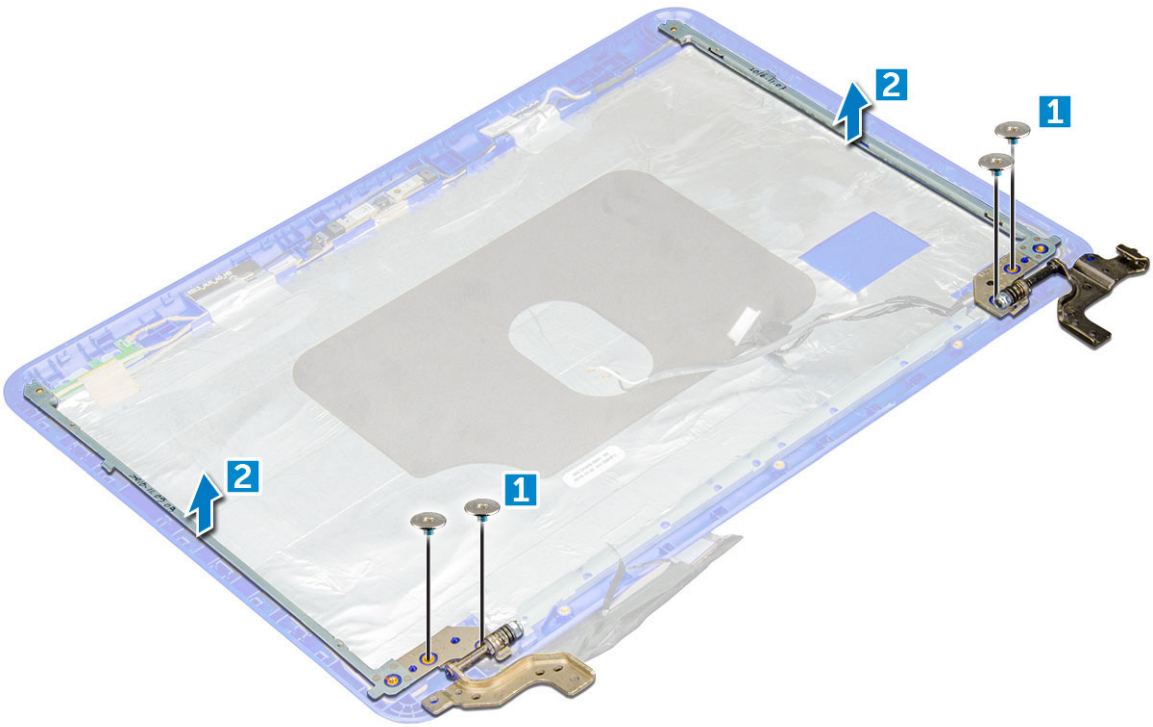
LCD Hinge

Removing the LCD Hinge

1 Follow the procedure in Before working inside your computer.

NOTE: These instructions are applicable only for systems with a non-touch screen display.

2 Remove the:
   a microSD card
   b base cover
   c battery
   d display assembly
   e hinge cap
   f LCD bezel
3 Remove the M1.6xL2 screws that secure the LCD hinge to the metal bracket of the LCD panel and remove the metal bracket off the computer [2].



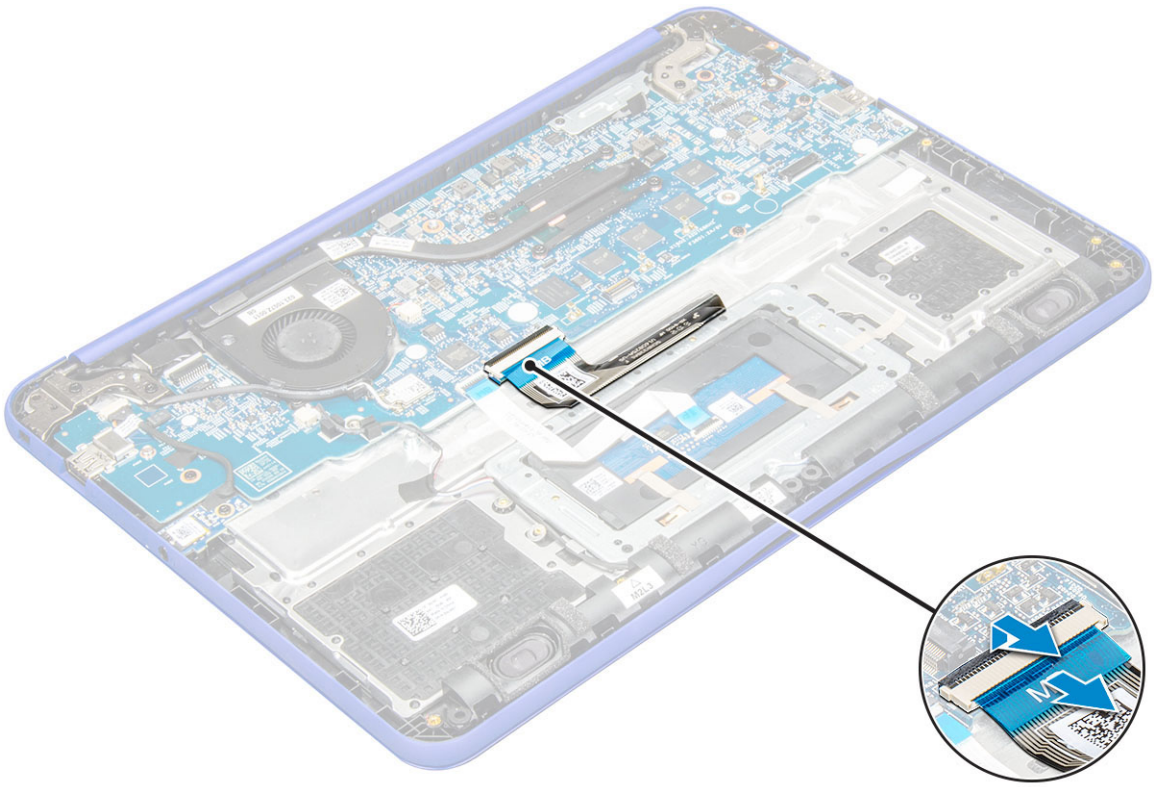
Installing the LCD Hinge

1 Align the LCD hinges to the screw holes on the computer cover.
2 Tighten the screws to secure the hinges to the metal bracket of the LCD assembly.
3 Install the:
   a LCD bezel
   b hinge cap
   c display assembly
   d battery
   e base cover
   f microSD card
4 Follow the procedure in After working inside your computer

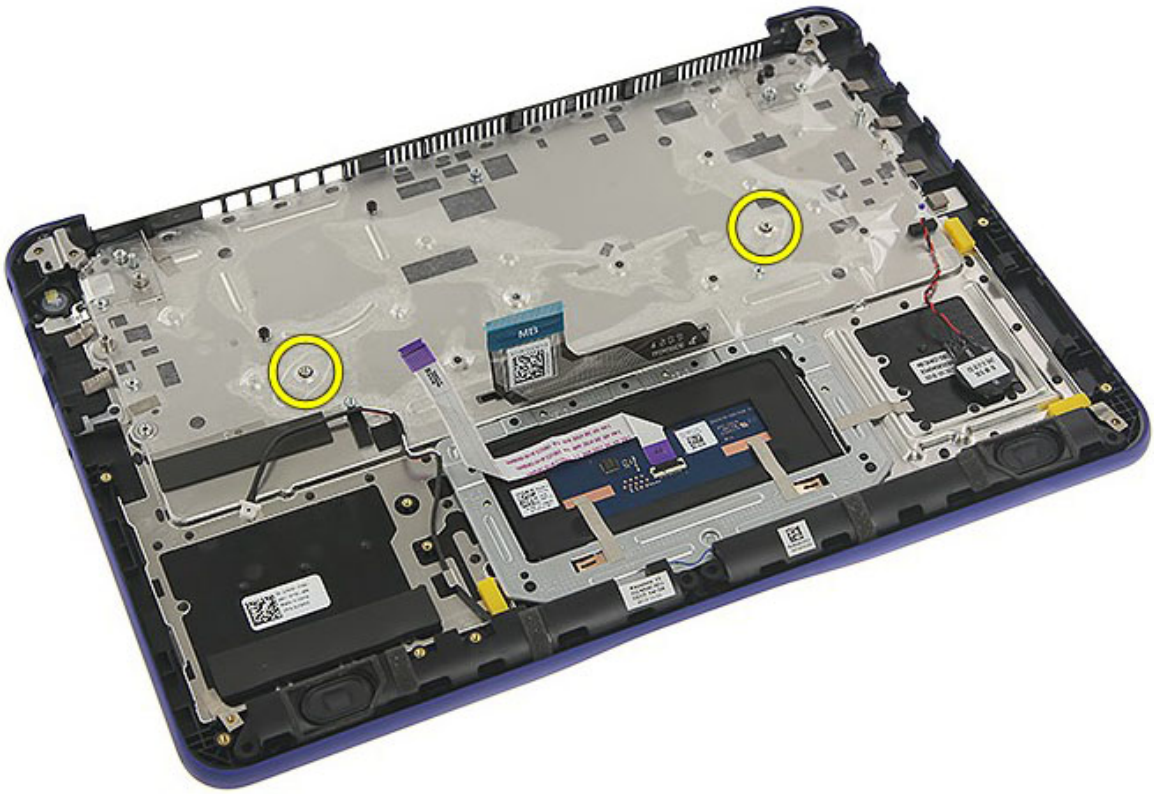
Keyboard

Removing the keyboard

1 Follow the procedure in Before working inside your computer.
2 Remove the:
   a microSD
   b base cover
   c battery
3 Disconnect the keyboard cable from the system board.



4 Hold the sides of the palm rest assembly securely while pushing into the two release holes using a plastic scribe.



5 Gently pry up the lower edge of the keyboard from the computer.

CAUTION: As you remove the keyboard from the palmrest, carefully pull out the keyboard cable from the opening on the palmrest.

6 Remove the keyboard away from the computer.

Installing the keyboard

1 Align the keyboard trim with the tabs on the computer and press it until it clicks into place .

> **CAUTION: When reinstalling the keyboard, insert the keyboard cable into the opening on the palmrest first, before you slot the keyboard into the top latches.**

2 Connect the keyboard cable on the system board.

3 Install the:

- a battery
- b base cover
- c microSD

4 Follow the procedure in After working inside your computer.

Palm rest

Removing the palmrest

1 Follow the procedure in Before working inside your computer

2 Remove the:

- a microSD card
- b base cover

c battery
d keyboard
e heatsink
f fan
g audio board
h speakers
i touchpad
j display assembly
k system board

NOTE: The component you are left with is the palmrest.

3 Install the following components on the new palmrest.

a system board
b display assembly
c touchpad
d speakers
e audio board
f fan
g heatsink
h keyboard
i battery
j base cover
k microSD card

4 Follow the procedure in After working inside your computer

3

Product Specifications

This topic details the product specifications of the Dell Chromebook 13 (3380).

Table 1. Chromebook 13 (3380) Product Specifications

Features	Chromebook 13 (3380)
Processor	• Intel Celeron Processor 3855U (15W, 2M cache, 1.60 GHz) • Intel Core i3–6006U Processor (15W.3M cache, 2.0GHz)
Operating System	Google Chrome OS
Chipset	Intel Skylake (integrated with processor)
Security	Browser based security with hardware TPM: Phishing and malware, SSL certificates, content settings
Dimension	Front Height: 0.906 inches (23 mm) Back Height: 20.8 mm Width: 13.1 inches (332.9 mm) Depth: 9.13 inches (231.8mm)
Weight	3.63 lb (1.6448 kg)
Display	• 13.3” HD 16:9 (1366 X 768) Anti Glare, non touch • 13.3” HD 16:9 (1366 x 768) Touch with Corning® Gorilla® Glass NBT
Graphics	Intel HD Graphics
Memory	• 4G (LPDDR3) 4 GB 1866 MHz
AC Adapter	• 65 W Type-C AC adapter
Battery	4-cell lithium ion (56 Whr Prismatic No ExpressCharge)
Audio Codec	MAX98357A AMP
Integrated Microphone	Akustica AKU240 digital-output MEMS microphone
Primary Storage	16/32/64 GB eMMC storage
Connectivity	• Intel Dual Band Wireless-AC 7265 802.11AC Wi-Fi + BT 4.0 LE Wireless Card • Bluetooth: 4.0
Multimedia	• Stereo Speakers • Webcam 720p • microSD Card Reader

Features	Chromebook 13 (3380)
Ports and Slots	• 2 x USB 3.1 Gen 1 with BC1.2 • 1 x USB Type-C (supports USB 3.1 Gen 1, DisplayPort, and power delivery charging) • 1 x HDMI 1.4a (Out) • Universal Audio Jack • microSD card reader • Noble Wedge lock slot
Internal MiniCard Slots (M.2)	
Warranty	• 1 year onsite repair/service • ProSupport with NBD Onsite • Premium Phone Support In-Home • 1-4 years warranty extension options.
Multiple Display Options	A connector is available for an external HDMI display up to 1080p
Dock Options	N/A
Regulatory and Environmental Compliance	Regulatory and product certification for US and EMEA

4

Software

This section provides information about the operating system, commands, and bundled software for the Dell Chromebook 13 (3380).

Topics:

- Operating System
- View system information
- Dell activity light

Operating System

This page contains information about the operating system used by the Dell Chromebook 13 (3380).

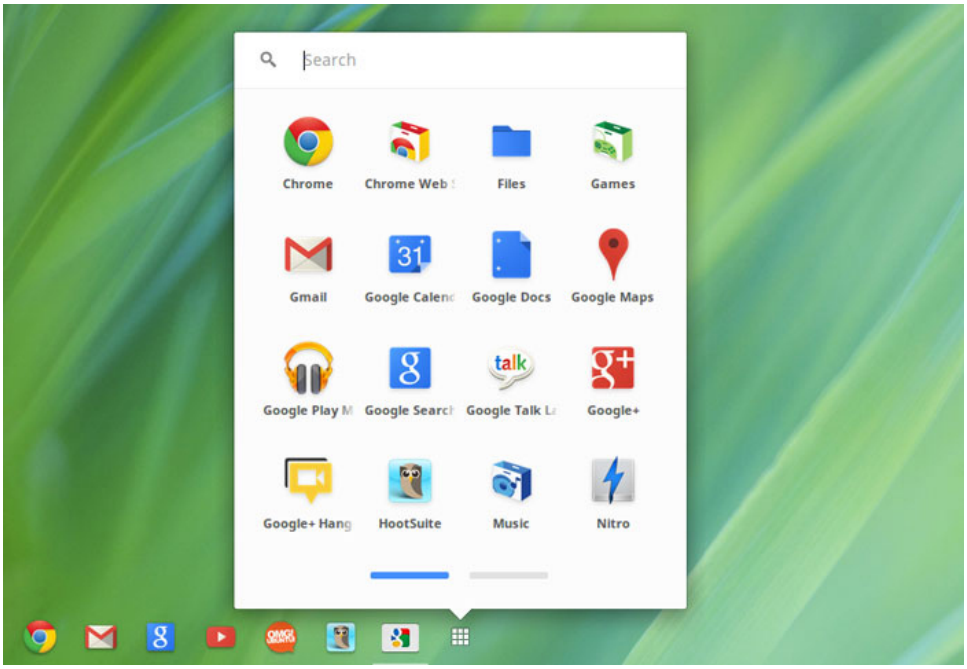
Chrome OS

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
- Synchronization ability
- 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
- The latest Intel Core processors
- Fun games
- Built-in support for popular file types and external devices
- New feature: Android apps from the Google Play Store also work in Chrome now.

For more information about the Chrome OS, please visit the **Chrome OS training page**

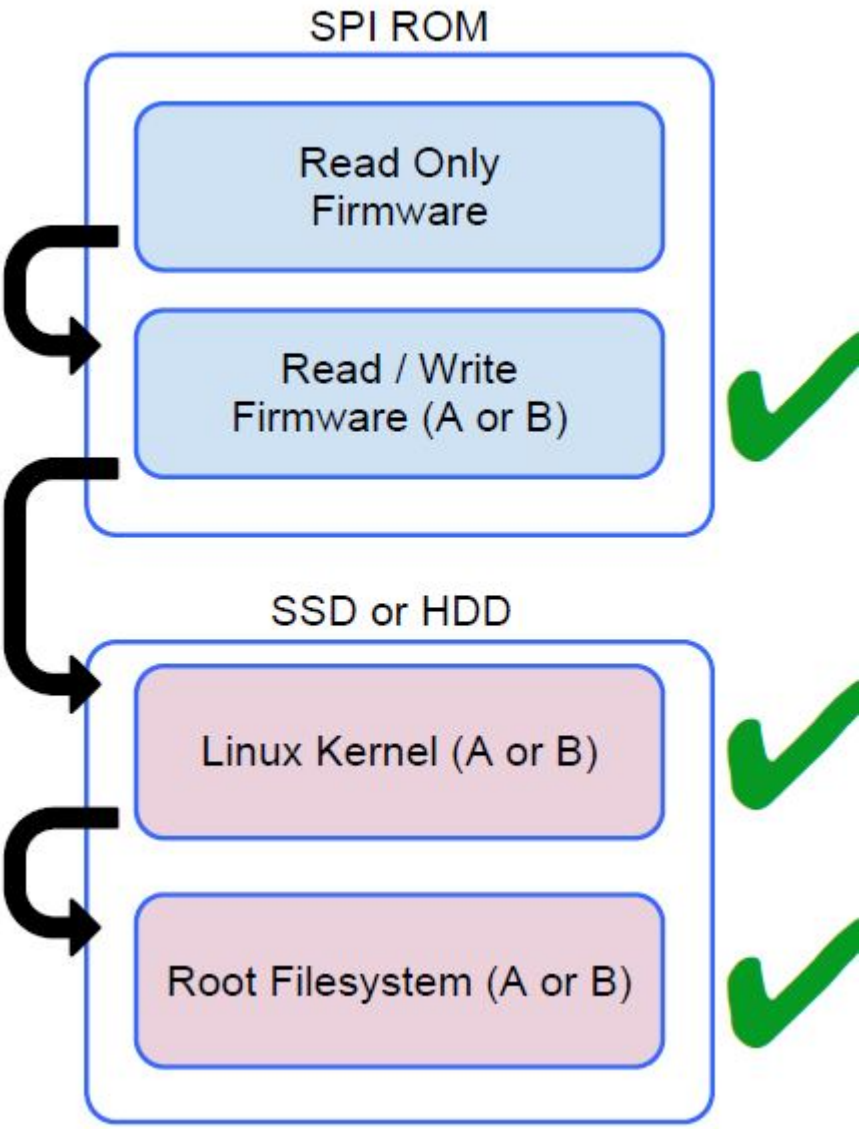


Verified Boot

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.

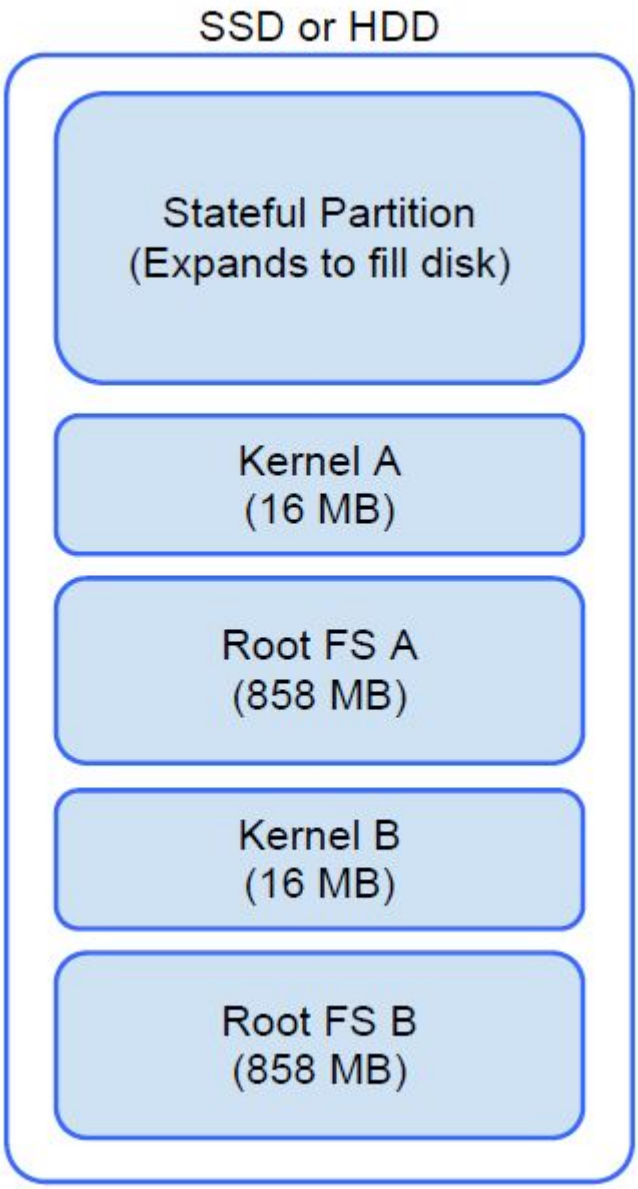
If a verification step fails and there is no backup option, the machine enters recovery mode.

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.



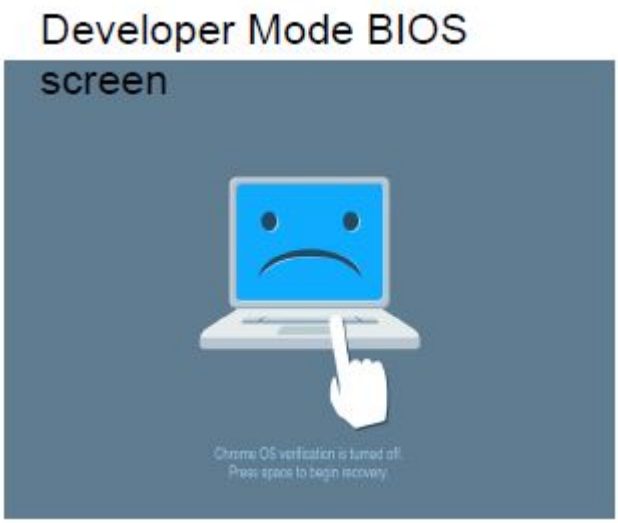
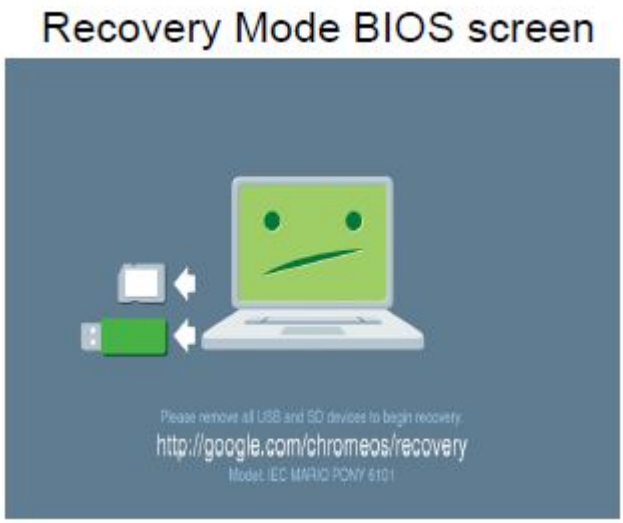
Disk Partition Map

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.


SSD or HDD
Stateful Partition
(Expands to fill disk)
Kernel A
(16 MB)
Root FS A
(858 MB)
Kernel B
(16 MB)
Root FS B
(858 MB)

Developer and Recovery Mode

Table 2. 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 + 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. Chromebook does not boot other operating systems such as Windows or OS X.

Chromium OS vs ChromeOS

Table 3. Difference between Chromium OS and ChromeOS

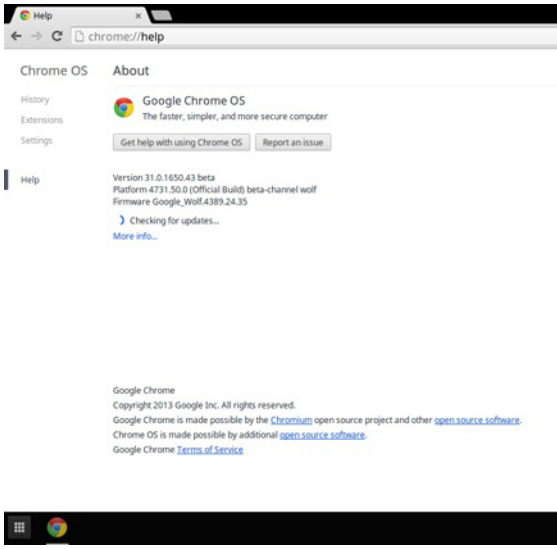
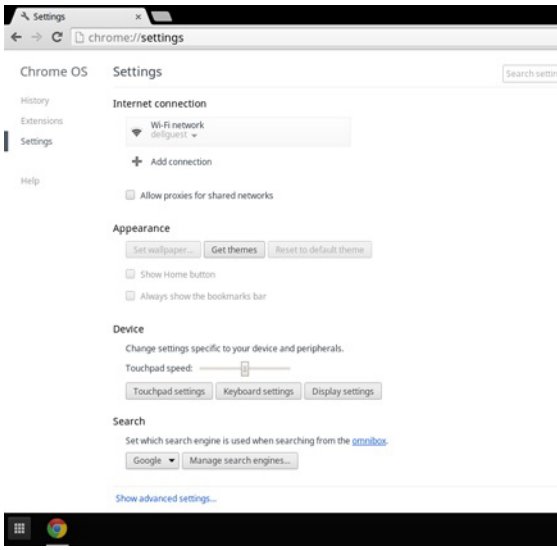
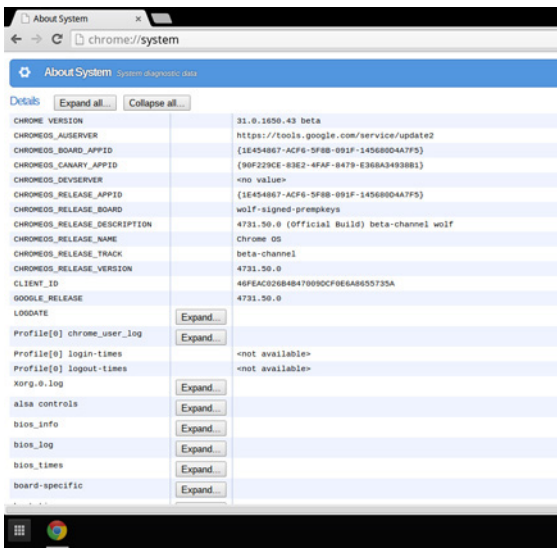
Difference between Chromium OS and ChromeOS	
Chromium OS	**Chrome OS**
• Is an open source project: http://www.chromium.org/chromium-os • Runs on regular PCs and Chrome devices	• Is based on Chromium OS • Only runs on Chrome devices with required hardware features (TPM, RO firmware, recovery button, developer switch) • Includes additional licensed features such as the Netflix plugin, video codecs, and fonts

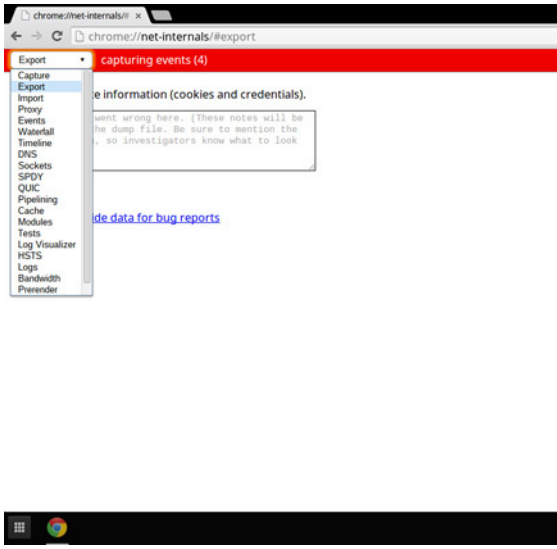
View system information

This page contains all the information about viewing system information for the Dell Chromebook 13 (3380).

Dell Chromebook 13 (3380) 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 4. View System Information

Commands	Action and Purpose	Screenshot
Chrome:help	View basic OS information.	
Chrome:settings	View information such as screen resolution options (Device > Display settings), touchpad, and other basic hardware information.	
Chrome:system	View advanced system information such as Google Chrome version, BIOS information, CPU information, memory information, network status, power supply information, etc.	

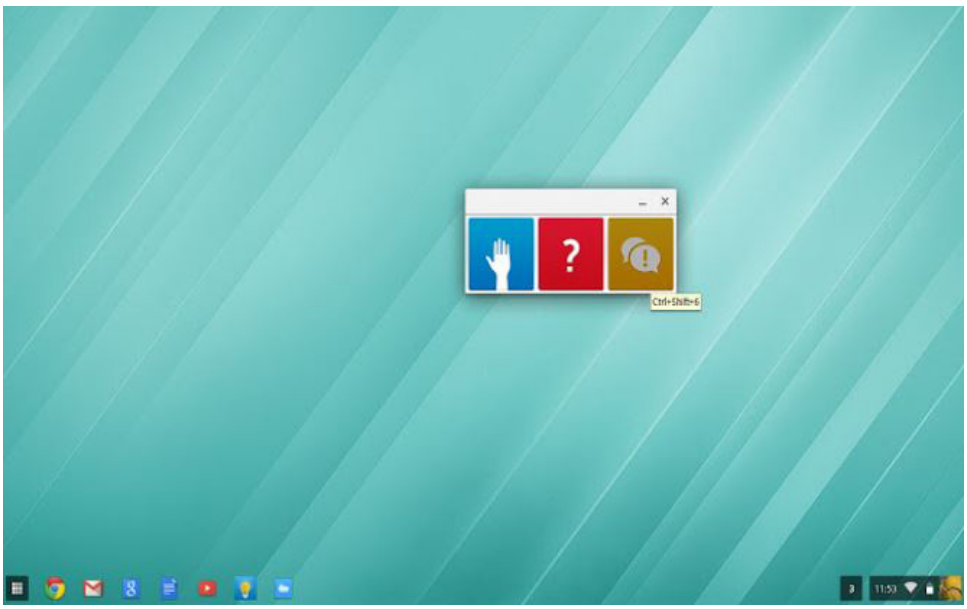
Commands	Action and Purpose	Screenshot
Chrome:net-internals	View advanced networking information.	

Dell activity light

This page contains all the information about the Dell Bright Light software that is used to control Dell Activity Light.

Overview

Dell Activity Light can be used as an indicator for the interaction between school teacher and student, and Dell has designed a software over this feature. The application will not be factory installed when product RTS, but it can be downloaded and installed via the web-store through the following link: **https://chrome.google.com/webstore/detail/dell-led/klhphccnhmdlnljpdljjhehlmplnmini**



Raise your Hand/Answer Question/Discussion buttons

Students can either click the on-screen button or press keyboard hot key to on/off the Ask question LED. The on-screen button can be the Chrome application in the menu or the shortcut icon on the task bar.

MultiColor Poll

Students can vote with different LED color by either clicking the on-screen button (suggested) or pressing keyboard hot key.

5

Technology and components

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

Topics:

- Keyboard
- Touchpad
- Integrated Microphone

Keyboard

Dell Chromebook 13 (3380) keyboards have a few extra features to help you browse the web effortlessly and 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. The image below shows the keyboard layout.

Keyboard keys function

The Chrome device keyboard is designed to help you get to the things you need the most. The table below is an overview of the special keys on the top row of the keyboard:

Table 5. Special keys

Special keys	
	Go to the previous page in browser history (F1)
	Go to the next page in browser history (F2)
	Reload current page (F3)
	Open your page in fullscreen mode (F4)
	Switch to your next tab or window (F5)
	Decrease screen brightness (F6)
	Increase screen brightness (F7)
	Mute (F8)
	Decrease the volume (F9)
	Increase the volume (F10)
	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. If you are using a regular keyboard the Windows key in between **Ctrl** and **Alt** will work as the search key. To turn Caps Lock on temporarily, press **Alt** + **Search**

Adjust special keys and Caps Lock

Chromebooks come with a special search key to help quickly search the web. To type capital letters, users can make the search key work like the Caps Lock key. Similarly, you can also adjust the way the **Ctrl** and **Alt** keys work on the Settings page.

Change key behavior

1 Sign in to Chromebook
2 Click the status area in the lower-right corner, where the account picture appears.
3 Select **Settings**.
4 In the Device section, click **Keyboard settings**.
5 Use the menus to adjust the behavior of the search, Ctrl, and Alt keys.
6 Click **OK**.

Keyboard shortcut keys

Table 6. Shortcut keys

Shortcut keys	
Shortcut	**Function**
Esc	Stop the loading of your current page
Alt + Up arrow	Page up
Alt + Down arrow	Page down
Alt + Left arrow (**Backspace**)	Go to previous page in your browsing history
Alt + Right arrow(**Shift** + **Backspace**)	Go to the next page in your browsing history
Ctrl + Right arrow	Move to the end of the next word
Ctrl + Down arrow	Move to the start of the previous word
Ctrl + **Alt** + Up arrow	Home
Ctrl + **Alt** + Down arrow	End
Ctrl + **Alt** + Right arrow	Select next word or letter
Ctrl + **Alt** + Left arrow	Select previous word or letter
Ctrl + **Alt** + **Z**	Enable or disable accessibility features if you're not signed in with a Google Account. If you're signed in, you can configure the accessibility feature on the Settings page.
Ctrl + **Alt** + **/**	Open the list of available keyboard shortcuts
Ctrl + **Shift** + **D**	Save all open pages in the current window as bookmarks in a new folder
Ctrl + **Shift** + **G** or**Shift** + **Enter**	Go to the previous match for the input in the find bar
Ctrl + **Shift** + **B**	Toggle the display of the bookmarks bar. Bookmarks appear on the New Tab page if the bar is hidden.
Ctrl + **Shift** + **I**	Toggle the display of the Developer Tools panel
Ctrl + **Shift** + **J**	Toggle the display of the DOM Inspector
Ctrl + **Shift** + **L**	Locks the screen
Ctrl + **Shift** + **N**	Open a new window in incognito mode
Ctrl + **Shift** + **B**	Toggle the bookmark bar
Ctrl + **Shift** + **Q**	Sign out Google Account
Ctrl + **Shift** + **Q (twice)**	Sign out Google Account on Chrome OS
Ctrl + **Shift** + **R**	Reload your current page without using cached content
Ctrl + **Shift** + **T**	Reopen the last tab being closed. Google Chrome remembers the last 10 tabs being closed.
Ctrl + **Shift** + **V**	Paste content from the clipboard as plain text
Ctrl + **Shift** + **W**	Close the current window
Ctrl + **.**	Display hidden files in the Files app
Ctrl + **?**	Go to the Help Center
Ctrl + **0**	Reset zoom level

Shortcut keys

Shortcut	Function
Ctrl + **1** through **Ctrl** + **8**	Go to the tab at the specified position in the window
Ctrl + **9**	Go to the last tab in the window
Ctrl + **A**	Select everything on the page
Ctrl + **C**	Copy selected content to the clipboard
Ctrl + **D**	Save your current webpage as a bookmark
Ctrl + **F**	Search your current webpage
Ctrl + **G** or **Enter**	Go to the next match for the input in the find bar
Ctrl + **H**	Open the History page
Ctrl + **J**	Open the Downloads page
Ctrl + **K** or **Ctrl** + **E**	Perform a search. Type a search term after the question mark in the address bar and press Enter.
Ctrl + **L** or **Alt** + **D**	Select the content in the address bar
Ctrl + **N**	Open a new window
Ctrl + **O**	Open a file in the browser
Ctrl + **P**	Print your current page
Ctrl + **R**	Reload your current page
Ctrl + **S**	Save your current page
Ctrl + **T**	Open a new tab
Ctrl + **U**	View page source
Ctrl + **V**	Paste content from the clipboard
Ctrl + **W**	Close the current tab
Ctrl + **X**	Cut
Ctrl + **Z**	Undo the last action
Ctrl + **Backspace**	Delete the previous word
Ctrl + **Tab**	Switch to next tab
Ctrl + **Enter**	Add www. and .com to your input in the address bar and open the resulting URL
Ctrl + **Shift** + **Tab**	Go to the previous tab in the window
Ctrl + **Shift** + **Refresh**	Rotate screen 90 degrees
Ctrl + **Shift** + **)**	Reset screen scale
Ctrl + **Shift** + **+**	Increase screen scale
Ctrl + **Shift** + **-**	Decrease screen scale
Ctrl + **Shift** + **Refresh**	Rotate screen 90 degrees
Ctrl + **+**	Zoom in on the page
Ctrl + **-**	Zoom out on the page
Alt + **click a link**	Open the link you clicked in a new background tab
Alt + **1** through **Alt** + **8**	Go to the window at the specified position
Alt + **9**	Go to the last window open

Shortcut keys	
Shortcut	**Function**
Alt + **E** or **Alt** + **F**	Open the Chrome menu on the browser toolbar
Alt + **Backspace**	Delete the next letter (forward delete)
Alt + **Tab**	Go to the next window that have opened
Alt + **Shift** + **Tab**	Go to the previous window that have opened
Alt + **Shift** + **M**	Open the Files app
Alt + **Shift** + **B**	Place focus on the bookmarks bar. Use the actions listed for Shift +Alt+T to move the focus.
Shift + **Alt** + **S**	Opens the status area in the bottom-right corner of the screen
Shift + **Alt** + **L**	Place focus on the launcher • Press Tab or the right arrow to focus on the next item in the toolbar • Press Shift+Tab or the left arrow to focus on the previous item in the toolbar • Press Space or Enter to activate buttons, including page actions and browser actions • Press Shift + Volume increase to open the context menu for the button (if available) • Press Esc to return focus to the page
Shift + **Search** + **Volume Up**	Open right-click menus for focused items
Shift + **Esc**	Open the Task Manager

To see more shortcuts, simply press Ctrl+Alt+? To open the keyboard viewer on your screen.

Touchpad

This page contains information for Dell Chromebook 13 (3380) touchpad gestures.

The following table lists some gestures and actions supported by the Chromebook touchpad:

Table 7. Touchpad gestures

Touchpad gestures	
Gestures	**Explanation**
	Simply move your finger across the touchpad.

Touchpad gestures

Gestures	Explanation
Move the Cursor	
	Press down on the lower half of the touchpad. Since tap-to-click is enabled by default, you can quickly tap the touchpad to click.
Single Click	
	Click the touchpad with two fingers.
Right Click	
	Place two fingers on the touchpad and move them up and down to scroll vertically, left and right to scroll horizontally. If you have Australian scrolling enabled, move two fingers up to scroll down. (It works in the same way as say, your smartphone or tablet.) If you have multiple browser tabs open, you can also swipe left and right with three fingers to quickly move between tabs.
Scroll	
Swipe	Quickly move two fingers left or right to go backward or forward on web pages or while using apps.
	Click the item you want to move with one finger. With a second finger, move the item. Release both fingers to drop the item at its new location.
Drag and Drop	

Integrated Microphone

This page contains all the information about the Dell Chromebook 13 (3380) integrated microphone.

Akustica AKU240 is an HD Voice quality, top port, digital output MEMS microphone in a small 4.0 x 3.0 x 1.0 mm package. The robust digital output stream from the AKU240 is virtually immune to all forms of Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) allowing the microphone to be integrated anywhere on the platform regardless of proximity to displays, the Wi-Fi antennae, or other sources of interference that would degrade the signal of conventional analog microphones. For the device manufacturer, this translates to a higher degree of design flexibility by providing a consistent SNR level regardless of environment, resulting in shorter design cycles.

The output of the microphone is pulse density modulated (PDM), a single-bit digital output stream designed to enable the multiplexing of stereo microphone data onto a single wire. With a user selectable Left/Right channel option, the AKU240 is ideal for use in multiple microphone applications.

Key features

- Digital MEMS Microphone with PDM (pulse density modulation) output
- Excellent acoustic performance with 63 dB SNR
- Compatible with Microsoft Windows 8 and Intel Ultrabook Requirements for Digital Microphones
- Tightly controlled sensitivity of -26 dBFS +/- 2 dB
- Robust digital-output immune to RF/EM interference
- Matched microphones in frequency and phase response for array applications
- Output supports dual-microphone, single-wire multiplexing ·Industry standard microphone interface compatible with multiple codecs.
- Low current power-down mode
- Lead-free surface-mountable and RoHS2 compliant
- Halogen-free in accordance with IEC61249-2-21
- Thin profile, SMT packaging
- Industry-standard package of 4.00 x 3.00 x 1.00 mm

Typical applications

- Ultrabooks
- Mobile phones
- Media tablets
- eReaders
- Microphone arrays
- Webcams and camera modules

Diagnostics and Troubleshooting

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 Chromebook, first check if your Chromebook supports Bluetooth. You will then need to pair it with the accessory.

To see if you can use the Bluetooth accessories with your Chromebook, click the status area in the lower right corner, where your account picture appears. If you see the Bluetooth icon bt on or bt off in the menu, your Chromebook supports Bluetooth. If you do not see either of these icons, your Chromebook does not support Bluetooth. If your 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 Chromebook, you will need to pair them. Here is how:

1. Sign in to your 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 bt off or click Enable Bluetooth in the menu. Your Chromebook will automatically begin scanning for available Bluetooth devices.
5. Pick the device you want to add from the list of available Bluetooth devices and click **Connect**.
6. Follow the instructions on the 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: Just got your Chromebook or Chromebox? 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.

Basic troubleshooting

This page contains all the information for Dell Chromebook 13 (3380) basic troubleshooting.

NOTE: Refer to Google Help Center for the online troubleshooter.

NOTE: Resetting the Chromebook, also known as Powerwash, can be attempted before Recovering the Chromebook. Recovering the Chromebook is the last resort.

Power issues

Table 8. Power Issue

Power issues	
Issue	**Possible solutions**
Chromebook does not Power On	If the Chromebook does not turn on, follow these steps: 1 Remove all external devices. a If the 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 Chromebook still does not start or exhibits the same problem, do not reconnect anything, and continue troubleshooting. 2 The battery life might be too low. Plug the Chromebook into the AC adapter and let it charge for at least an hour and try turning it on again. **NOTE: When a new Chromebook is used for the first time, the battery is still in shipping mode. To resolve this issue, turn off the Chromebook and plug in the AC adapter and turn on the Chromebook again.** 3 Depending on the Chromebook you have, you may see a power indicator light close to the charging port. If you have let the Chromebook charge and the light is not coming on, perform a hard reset by pressing Refresh + Power. 4 Use a different AC adapter with the same power voltage. 5 Remove the AC adapter and turn on with the battery power only. 6 If the above steps did not resolve the issue, perform a hard reset. **NOTE: You can perform a hard reset by pressing Refresh + Power.**

Display issue

Table 9. Display issue

Display issue	
Issue	**Possible solutions**
Screen is Blank	If the 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: 1 Make sure the Chromebook is on. If you are using the battery, plug the Chromebook in and press the power button. 2 Restart the Chromebook by holding the power button down until the device turns off, then turn it back on again. 3 Reset or Recover the Chromebook.

Audio, screen and camera issues

Table 10. Audio, screen, and camera issues

Audio, screen and camera issues	
Issues	**Possible solutions**
Audio issues	If you hear static or the volume from the speakers is very low when attempting to listen to audio: 1 Make sure the device is not muted. Try adjusting the volume. 2 Try rebooting the Chromebook. 3 Try playing audio from various sources, including YouTube and audio files stored locally on the Chromebook. If the speakers are not responding when attempting to listen to audio: 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 Chromebook. 3 Try rebooting the Chromebook. 4 If audio still does not respond, try Reset or Recover the Chromebook
Screen issues	If the screen is not operating properly (images are too dark or no image is appearing): 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 Chromebook 4 If the screen issues persist, try Reset or Recover the Chromebook.
Camera issues	If the camera is not operating properly (blurry images or poor performance): 1 Check that the camera is not being blocked or covered by a privacy screen or other obstruction. 2 Try using different apps that use the camera. Try a Google+ Hangout or the onboard camera app 3 Try rebooting the Chromebook 4 If the camera issues persist, try Reset or Recover the Chromebook.

Bluetooth issue

Table 11. Bluetooth issue

Bluetooth issue	
Issue	**Possible solutions**
Bluetooth issues	If you run into issues while attempting to pair or use a Bluetooth device with the Chromebook, try the following steps to resolve the issue: 1 First, make sure that the Bluetooth device you're trying to pair is supported by the Chromebook. Check with the device vendor for compatibility. Chrome does not support driver installation, so specialized devices may not work. 2 Try disabling and re-enabling Bluetooth connectivity from the status area in the lower-right corner. 3 Try restarting the Chromebook. 4 If you are still encountering issues with Bluetooth, try Reset or Recover the Chromebook.

Touchpad / Hotkeys Issues

Table 12. Touchpad / Hotkeys Issues

Touchpad / Hotkeys issues	
Issue	**Possible solutions**
Touchpad not responding	If the touchpad has stopped responding, try the following steps to resolve the issue. Try moving the cursor after each step: 1 Tap the Esc key several times. 2 Drumroll the fingers across the touchpad for a few seconds. 3 Restart the Chrome OS by holding down the power button until the device turns off, and then turn it back on again. 4 If the cursor still does not move when using the touchpad, try logging in from the Guest account using the tab key to navigate. 5 If users experience touchpad 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. 6 If none of the above steps work, try Reset or Recover the Chromebook.
Top row of keys (Hotkeys) not responding	If a hotkey (like the volume or brightness keys) is not responding, try the following troubleshooting steps, making sure to test the keys after each one: 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. 2 If the backward or forward buttons do not work, check 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.

Touchpad / Hotkeys issues	
Issue	**Possible solutions**
	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 Reset or Recover the Chromebook.

Chrome OS issue

Table 13. Chrome OS issue

Chrome OS issues	
He's Dead, Jim ! error message	If the Chromebook becomes slow or unresponsive, and the **He's Dead, Jim!** error message appears, the system could be running low on memory. **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.** 1 If the page wasn't 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 theGoogle knowledge base
Chrome OS is missing or damaged	If the 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**: Perform a system recovery. See performing Recover Chromebook for more information.
Chrome OS stops responding and nothing moves on the computer display	If the Chrome OS stops responding and nothing moves on the computer display: 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 Chromebook.
Lost / Forget Sign in password (Chrome OS)	If you lost/forget the sign in password to the Chromebook: 1 1. Check if this is a managed device (Enterprise enrolled device). a If this is a managed device, please contact the administrator to have them reset the password via Google Admin Console. b If this is not a managed device, please proceed with the following steps. 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 don't know my password, and then enter the e-mail address that you use to sign in to Google. 5 Click Continue and follow the on-screen instructions to reset the password.
Other Chromebook lock up or freeze symptoms that are not listed here.	If none of the above symptoms match the Chromebook's issue, refer to Google Help Center for the online troubleshooter and more help.

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:

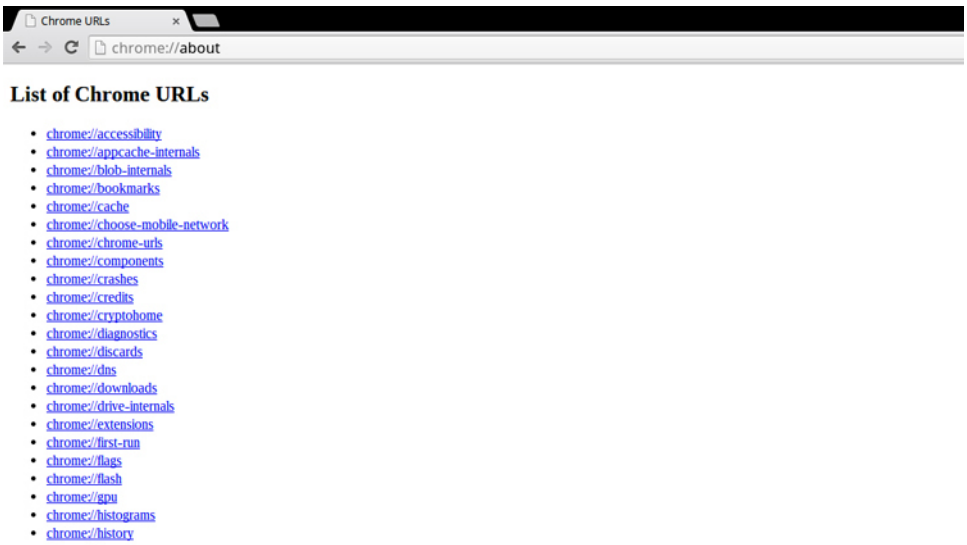


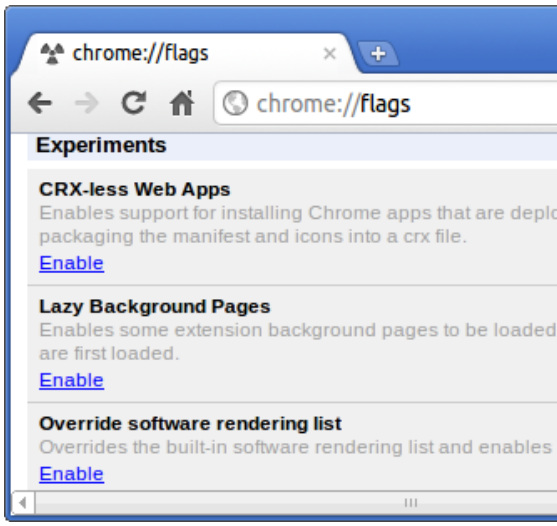
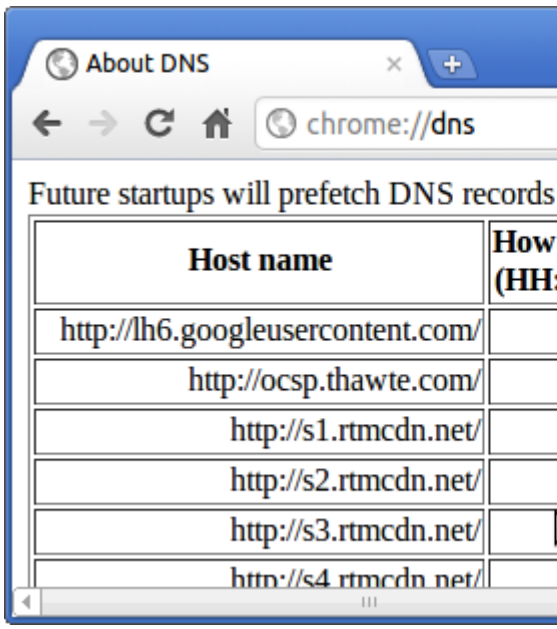
Table 14. Chrome browser shortcuts

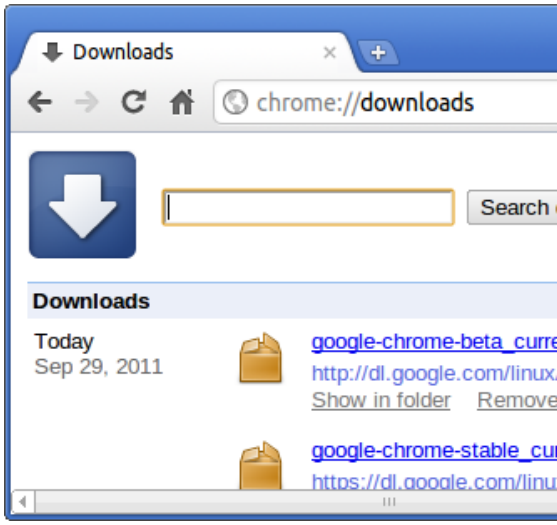
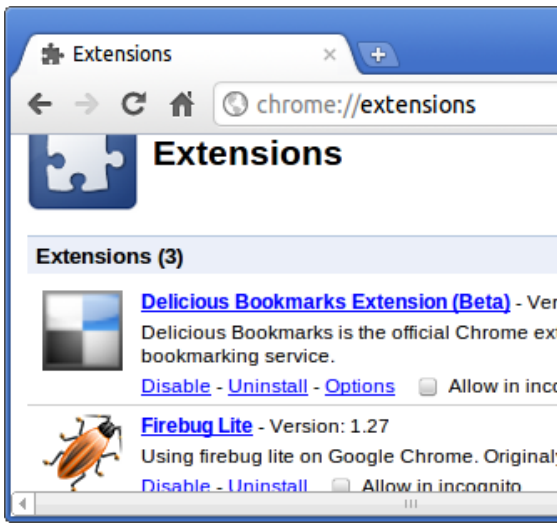
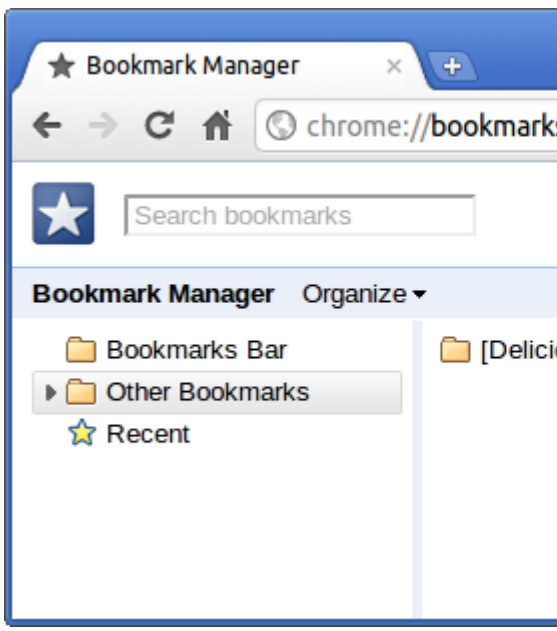
Purpose	Browser Shortcut	Explanation
System Information	chrome://system/	"Who am I".. BIOS version, and so on
Basic Connectivity Diags	chrome://diagnostics/	Test for NIC and Internet connection
Chrome Information	chrome://version	More "Who am I" type of stuff
Create Recovery USB Stick	chrome://imageburner/	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

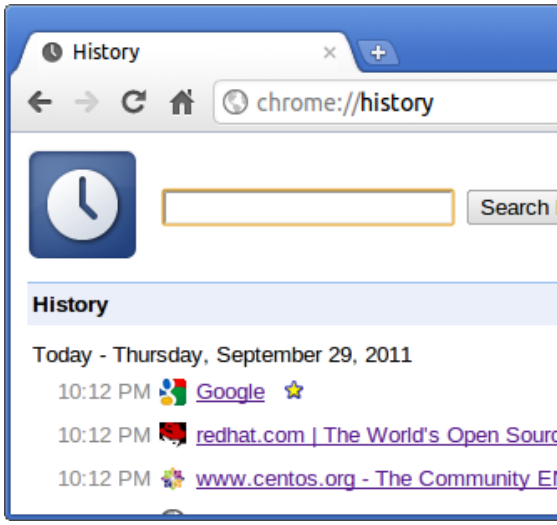
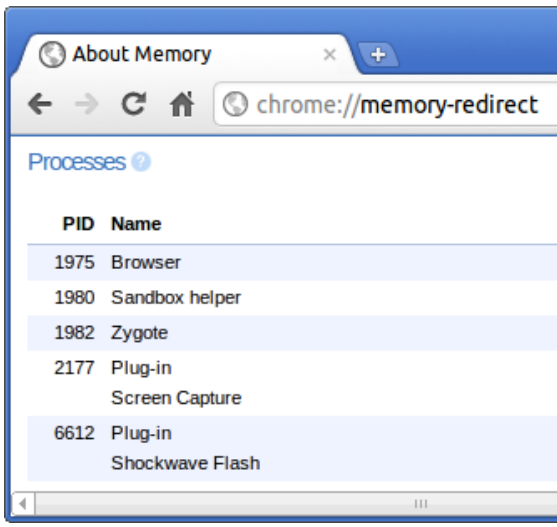
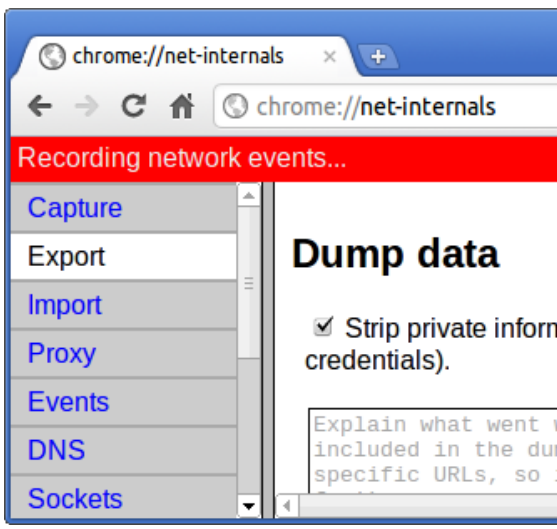
Purpose	Browser Shortcut	Explanation
Histogram	chrome://histograms	Actual work and I/O audit
Credits	chrome://credits	References to all module/libs contributions and their respective wiki/license URLs
Crash Reporting	chrome://crashes	Shows detailed crash report, if the feature was enabled
Apps RAM Utilization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

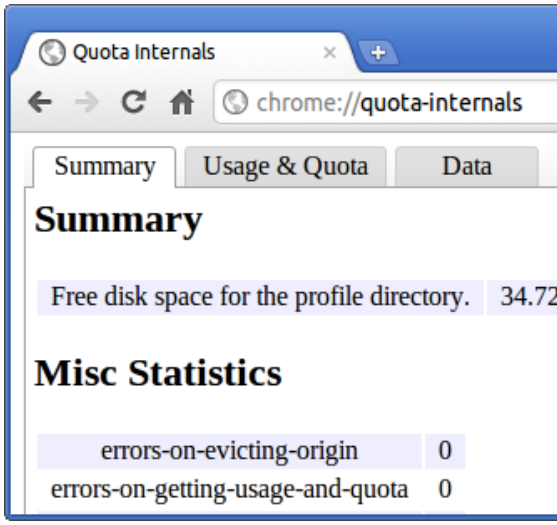
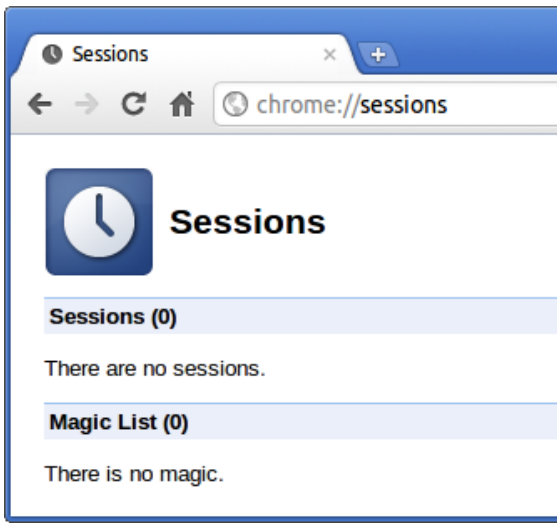
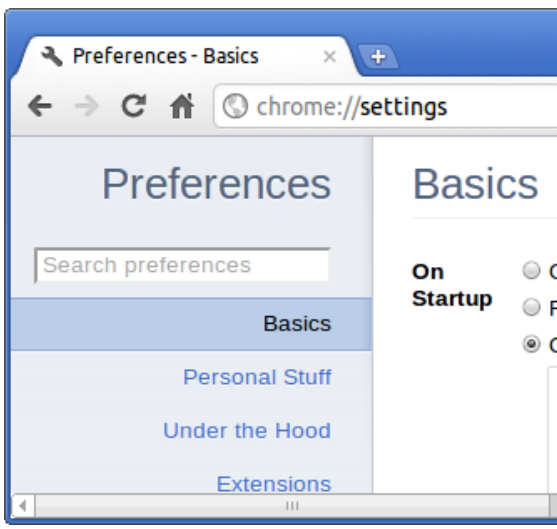
Following are the 12 most helpful chrome:// commands that you should know:

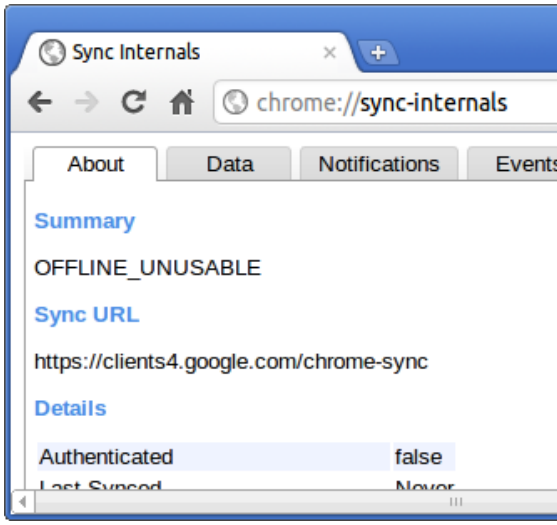
Table 15. Helpful chrome commands

Chrome Commands	Purpose	Screenshot
chrome://flags	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.	
chrome://dns	This displays the list of hostnames for which the browser will prefetch the DNS records.	

Chrome Commands	Purpose	Screenshot
chrome://downloads	This is also available from the Menu > Downloads. Shortcut key is Ctrl+J.	
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	Purpose	Screenshot
chrome://quota-internals	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.	
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	Purpose	Screenshot
chrome://sync-internals	This gives information about the Chrome sync feature, including the Sync URL used by Google, and sync statistics.	

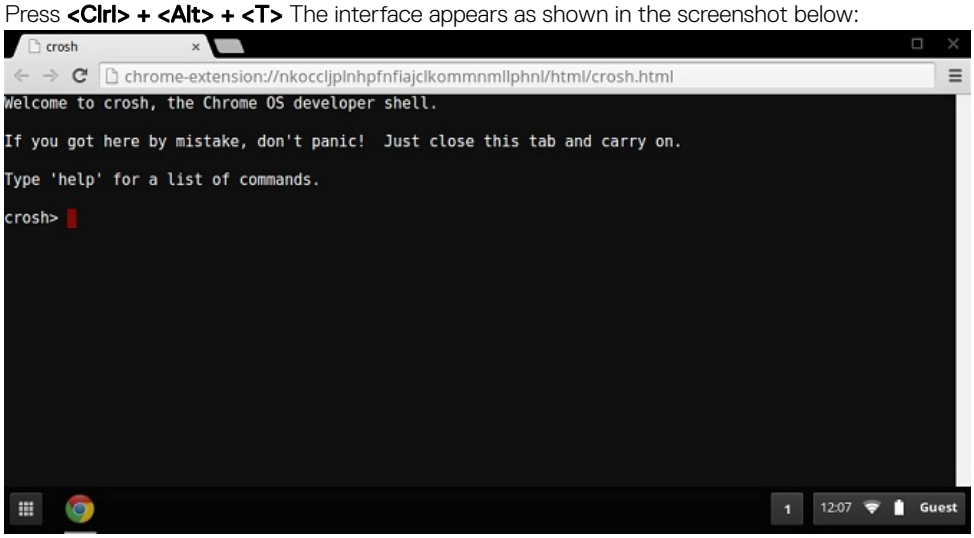
CROSH

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 16. 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 **<Clrt> + <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 17. Advanced help command

Command	Purpose
battery_test[<test length>]	Tests the battery discharge rate for a given number of seconds. No argument defaults to a 300 s test.
bt_console [<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.
chaps_debug [start|stop|<log_level>]	Sets the chaps debug logging level. No arguments will start verbose logging.
connectivity	Shows connectivity status.
experimental_storage<status|enable|disable>	Enables or disables experimental storage features.
ff_debug [<tag_expr>] [--help] [--list_valid_tags] [--reset]	Adds and removes flimflam debugging tags.
memory_test	Performs extensive memory testing on the available free memory.
modem <command> [args...]	Interacts with the 3G modem. Run **modem help** for detailed help.
modem_set_carrier carrier-name	Configures the modem for the specified carrier.
network_diag[--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
network_logging <wifi|cellular|ethernet>	Enables a predefined set of tags useful for debugging the specified device.
p2p_update [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

Command	Purpose
	peers in the network and shares the downloaded updates with them. Run this command without arguments to see the current state.
rlz < status | enable | disable>	Enables or disables RLZ.
rollback	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.
route [-n] [-6]	Displays the routing tables.
set_apn [-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.
set_apn - c	Clears the APN to be used, so that the default APN is used instead.
set_arpgw <true | false>	Turns on the extra network state checking to make sure the default gateway is reachable.
set_cellular_ppp [-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.
set_cellular_ppp -c	Clears any existing PPP username and PPP password for an existing cellular connection.
sound <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
storage_status	Reads storage device SMART health status, vendor attributes, and error logs.
storage_test_1	Performs a short offline SMART test.
storage_test_2	Performs an extensive readability test.
syslog <message>	Logs a message to system log.
tpcontrol{status | taptoclick [on|off] sensitivity [1-5] | set <property>< value>} tpcontrol {syntp [on|off]}	Allows the user to manually adjust advanced touchpad settings.
tracepath [-n] <destination>[/port]	Traces the path/route to a network host.
update_over_cellular [enable|disable]	Enables or disables the auto updates over cellular networks. Run without arguments to see the current state.
upload crashes	Uploads available crash reports to the crash server.
wpa_debug [<debug_level>] [--help] [--list_valid_level] [--reset]	Sets the wpa_supplicant debugging level.
xset m [acc_mult[/acc_div] [thr]] xset m default	Tweaks the mouse acceleration rate.
xset r rate [delay [rate]]	Tweaks the autorepeat rates. The delay is the number of milliseconds before autorepeat starts. The rate is the number of repeats per second.
xset r [keycode] < on|off >	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 Chromebook 13 (3380).
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 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 Chromebook and a power outlet.
2 Turn on and sign in to the 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 Check the result to confirm that the battery is charging.

Check battery health

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

1 Disconnect the AC adapter from the Chromebook.
2 Turn on and sign in to 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 Battery is Unknown, the battery might need to be replaced.

Checking memory

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

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

1 Turn on and sign in to Chromebook.
2 Open the Chrome browser.
3 Press CTRL + ALT + T to open CROSH.
4 Type memory_test into CROSH, and then press Enter.
5 A diagnostic screen displays the result of the memory test passed without any errors.

Example of a memory test failure.

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 1.Turn on and sign in to 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.
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.

Reset Chromebook

This page contains all information about resetting the Dell Chromebook 13 (3380).
All local user data stored on the 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 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 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 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 Chromebook, sign out first before you press on `Ctrl+Alt+Shift+R`, then click **Restart**. Once the Chromebook is restarted, click **Reset**.)

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

Recovering Chromebook

This page contains information about recovering the Dell Chromebook 13 (3380).

Recovering the Chromebook

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

NOTE: All account information and data stored on your 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 will need the following:

- A Chrome device, Windows, Mac, or 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 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	Create a recovery flash drive by using the Image Burner. The tool may not be available in all languages. 1 Type chrome://imageburner into the omnibox (browser's address bar) . 2 Run the tool and follow the instructions that appear on your screen. **NOTE: When recovering your Chromebook, make sure to create the recovery flash drive on the same model.**
Windows Instructions	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 Run the tool and follow the instructions that appear on your screen. 3 After you recover your 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.
Mac Instructions	Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages. 1 Click this link to download the Recovery Tool. 2 Run the tool and follow the instructions that appear on your screen. 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.
Linux Instructions	Create a recovery flash drive by using the Recovery Tool. The tool may not be available in all languages. 1 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**

Operating System	Instructions
	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 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 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 Chromebook will automatically restart.

You should now be able to start your Chromebook as normal. Because the data stored on your 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, 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.

NOTE: Dell does not support the use of the Developer Mode or non-standard OS versions.

Troubleshooting Tips

Table 19. Troubleshooting tips

Question	Solution
I am unable to recover my Chromebook	To help ensure that you are running the latest version of Chrome OS once you recover your 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: 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.
You successfully recovered your 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.

Question	Solution
You successfully recovered your Chromebook but now Windows does not recognize the whole size of the USB or SD card used for recover.	After you have completed recovery, you need to format your USB or SD card using the recovery tool.

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Contacting Dell

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

Dell provides several online and telephone-based support and service options. Availability varies by country and product, and some services may not be available in your area. To contact Dell for sales, technical support, or customer service issues:

1 Go to **Dell.com/support.**
2 Select your support category.
3 Verify your country or region in the **Choose a Country/Region** drop-down list at the bottom of the page.
4 Select the appropriate service or support link based on your need.