Dell Latitude 7424 Rugged Extreme

Setup and Specifications Guide

Regulatory Model: P86G
Regulatory Type: P86G001

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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Contents

1

Chassis Overview

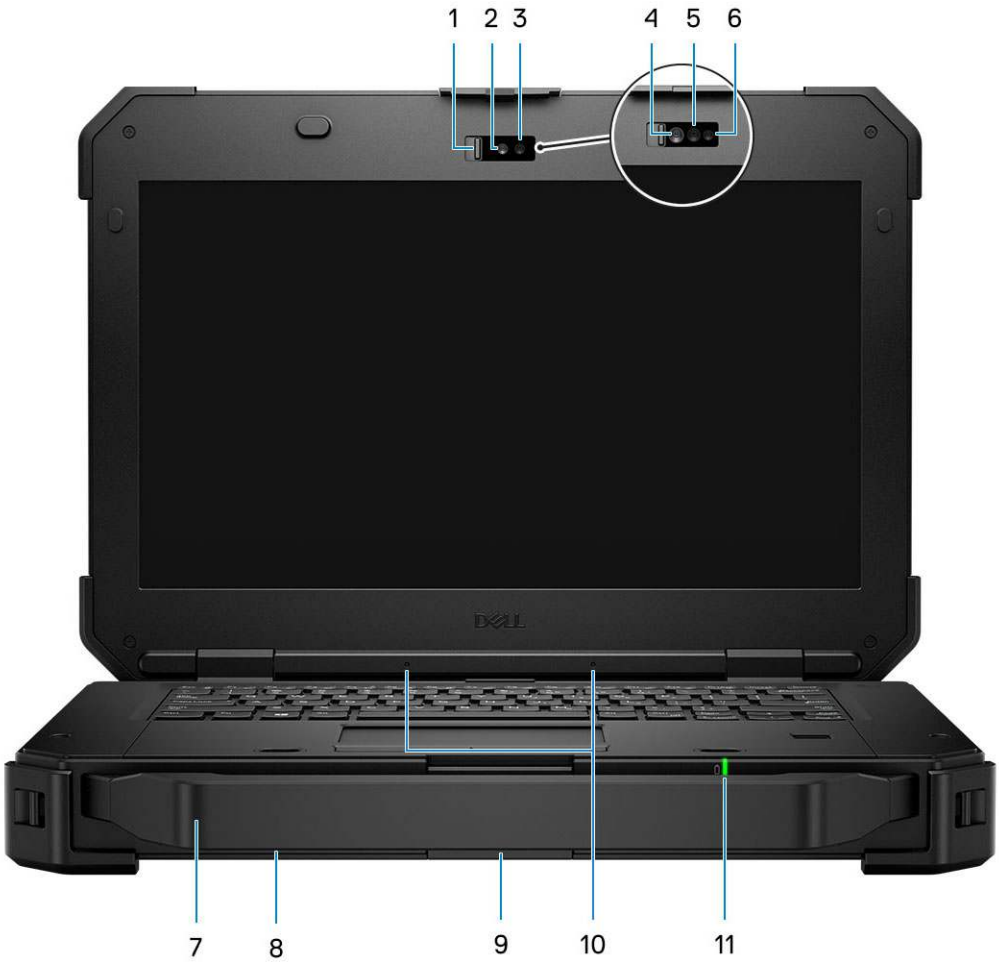
This chapter illustrates the multiple chassis views along with the ports and connectors called out.

Topics:

Top view

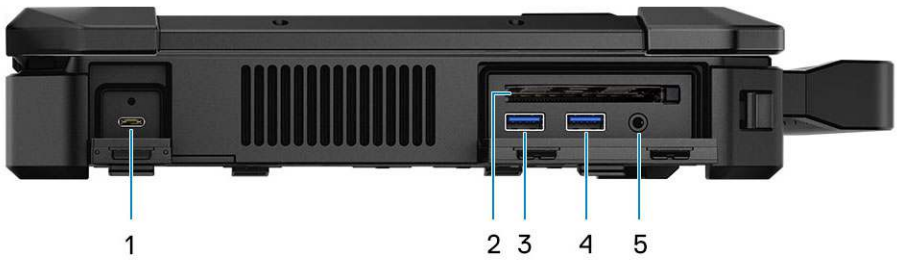
1	Power button	2	Keyboard
3	Touchpad	4	Fingerprint reader (optional)

Front View



1	Camera Shutter	2	RGB Camera
3	RGB Camera status LED	4	IR Camera
5	IR Emitter	6	IR Camera status LED
7	Handle	8	Speakers
9	LCD Latch	10	Microphone array
11	Battery Status LED		

Left Side View



1 USB 3.0 Type-C Port with PD

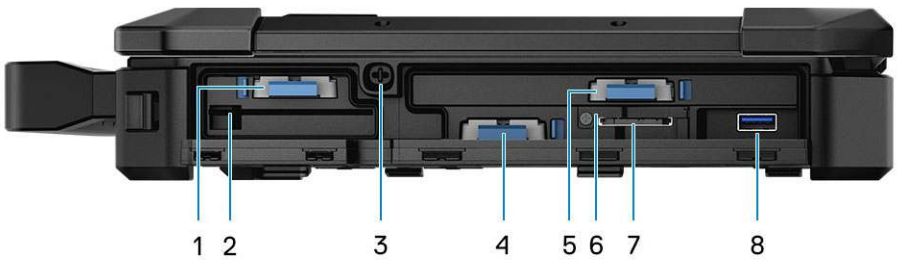
2 ExpressCard reader/PCMCIA (optional)

3 USB 3.0 Type-A Port(With PowerShare)

4 USB 3.0 Type-A Port

5 3.5 mm Universal audio port

Right Side View



1 Secondary SSD

2 Smart card reader

3 Stylus garage

4 Primary SSD

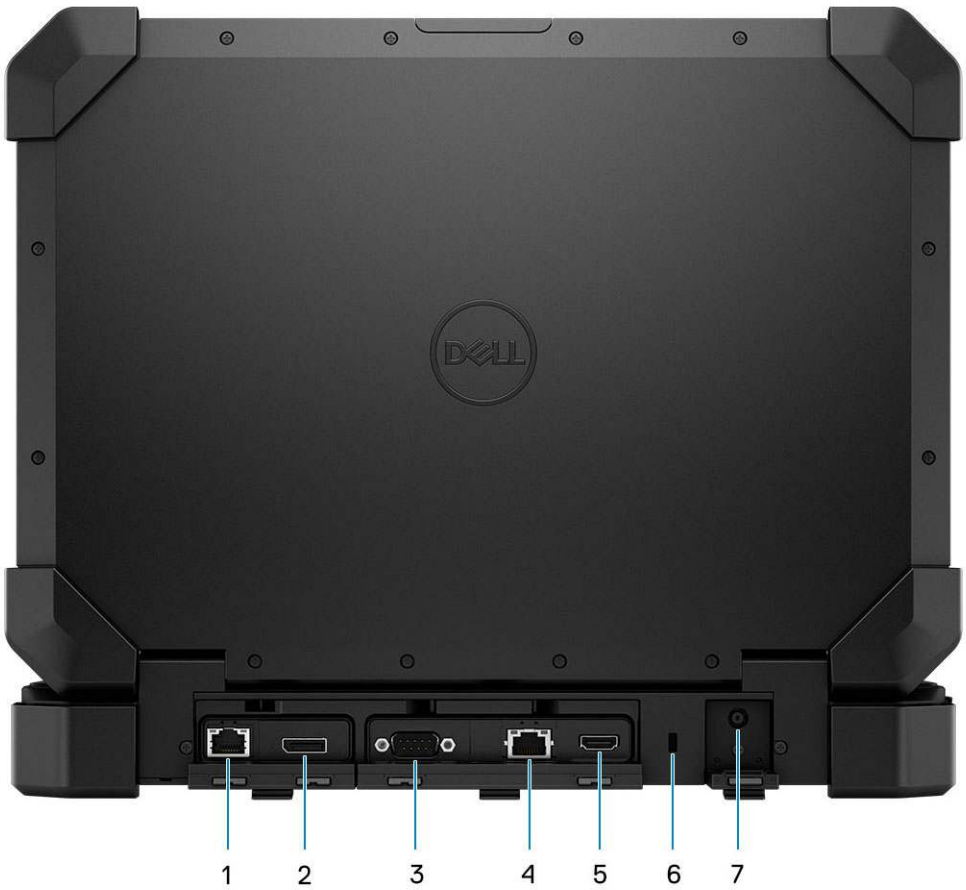
5 Optical Drive / Optional third SSD

6 Sim card cover / lock

7 SD Card Reader

8 USB 3.0 Type-A Port (recessed USB, supports mini USB connection with doors shut)

Back View



1 Ethernet Port (Optional Rear configurable I/O)

2 DisplayPort (Optional Rear configurable I/O)

3 Serial Port

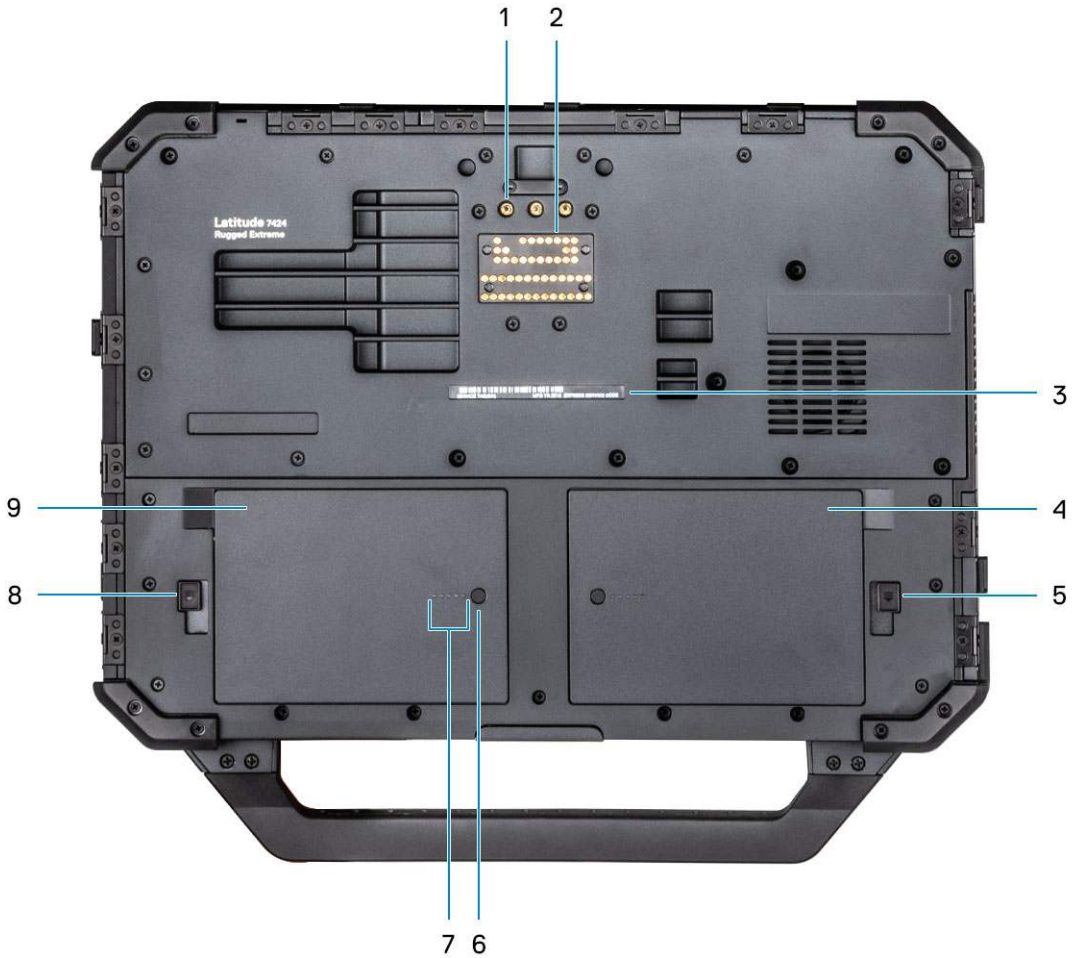
4 Ethernet Port

5 HDMI 2.0 Port

6 Kensington Lock Slot

7 DC-In(Power) Port

Bottom View



1	Radio frequency pass-through connectors	2	Docking port
3	Service tag sticker	4	Battery -1
5	Battery -1 Latch	6	Battery charge indicator button
7	Battery charge indicator LED	8	Battery -2 Latch
9	Battery -2 (Optional)		

2

System information

This chapter provides detailed product specifications and the comparison with its predecessors.

Topics:

- Technical specifications
- Product Comparison

Technical specifications

NOTE: Offerings may vary by region. The following specifications are only those required by law to ship with your computer. For more information about the configuration of your computer, go to Help and Support in your Windows operating system and select the option to view information about your computer.

System information

Table 1. System information

Chipset	• Intel Kaby Lake U Dual Core (integrated with processor) • Intel Kaby Lake U Quad Core(integrated with processor) • Intel Sky Lake U Dual Core (integrated with processor)
DRAM bus width	64-bit
FLASH EPROM	SP1 128 Mbits
PCIe bus	100 Mhz
External bus frequency	DMI 3.0-8GT/s

Base

Table 2. Base configurations

Base
• Intel Dual-Core i3-7130U Kaby Lake processor, Intel HD 620 UMA graphics, TPM
• Intel Quad-Core i5-8350U Kaby Lake processor, Intel UHD 620 UMA graphics, TPM, vPro
• Intel Quad-Core i5-8350U Kaby Lake processor, AMD Radeon 540(2GB/64-Bit) Discreet graphics, TPM, vPro
• Intel Quad-Core i5-8350U Kaby Lake processor, AMD Radeon RX540(4GB/128-Bit) Discreet graphics, TPM, vPro
• Intel Quad-Core i7-8650U Kaby Lake processor, AMD Radeon 540(2GB/64-Bit) Discreet graphics, TPM, vPro
• Intel Quad-Core i7-8650U Kaby Lake processor, AMD Radeon RX540(4GB/128-Bit) Discreet graphics, TPM, vPro
• Intel Dual-Core i5-6300U Sky Lake processor, Intel HD 520 UMA graphics, TPM

Processor

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

Table 3. Processor specifications

Type	UMA Graphics
Intel Dual-Core i3-7130U Kaby Lake processor, Cache: 3 MB / # of Thread(T): 4 / Base Frequency : 2.7 GHz / Thermal Design Power (TDP): 15 W)	Intel HD Graphics 620
Intel Quad-Core i5-8350U Kaby Lake processor (6 MB / 8T / 1.7 GHz / 15 W)	Intel UHD Graphics 620
Intel Quad-Core i7-8650U Kaby Lake processor (8 MB / 8T / 1.9 GHz / 15 W)	Intel UHD Graphics 620
Intel Dual-Core i5-6300U Sky Lake processor (3MB / 4T / 2.4 Ghz / 15W	Intel HD Graphics 520

Memory

Table 4. Memory specifications

Minimum memory configuration	8 GB
Maximum memory configuration	32 GB
Number of slots	Two DDR4 SODIMM slots
Maximum memory supported per slot	16 GB
Memory options	• 8 GB - 2 x 4 GB • 16 GB - 2 x 8 GB • 32 GB - 2 x 16 GB
Type	DDR4 SDRAM (Non-ECC memory only)
Speed	• 2400 MHz Kayby Lake • 2133 MHz Sky Lake

System board connectors

Table 5. Internal M.2 System board connectors

M.2 (Socket 1, Key A)	Wireless Local Area Network (WLAN) / Wireless Gigabit Alliance (WiGig)
M.2 (Socket 3, Key M)	SATA / PCIe x 2 or x 4 SSD
M.2 (Socket 2, Key B)	SSD include capacity / Wireless Wide Area Network (WWAN)

Storage

Table 6. Storage specifications

Type	Form factor	Interface	Security option	Capacity
Primary Storage (SSD, FIPS, SED, Opal)	None / PCIe M.2 2280 (Tool-free removable dual-sided M.2 compatible carrier sled)	M.2 2280 SSD PCIe x4	FIPS, SED, Opal	• 128 GB • 256 GB • 512 GB • 1 TB • 2 TB • 256 GB / 512GB FIPS 140-2 compliant SED • 1TB OPAL SED
Secondary Storage/ Cache (SSD)	None / M.2 SATA 3 SSD (Tool-free removable storage)	M.2 SATA 3 / M.2 2280 PCIe x4	None	• 256 GB • 512 GB • 1 TB
Third Storage/Cache (Replaces ODD airbay)	None / M.2 2280 (M.2 PCIe/SATA SSD (Tool-free removable storage) / 9.5 mm ODD	M.2 SATA 3 / M.2 2280 PCIe x4/	None	• 256 GB • 512 GB • 1 TB • 8x DVD-ROM 9.5 mm Optical Drive • 8x DVD+/-RW 9.5 mm Optical Drive • 6x BD-RE 9.5 mm Optical Drive

Media card-reader

Table 7. Media-card reader specifications

Type	One SD-card slot
Supported cards	• SD • SDHC • SDXC

External Ports and connectors

Table 8. External Ports and connectors

Expansion Slot	ExpressCard / PCMCIA
USB	• One USB 3.1 Gen 1 Type-A port with Power on/Wake-up support • Two USB 3.1 Gen 1 Type-A port • One USB 3.1 Gen 1 Type-C port with PowerShare
Security	Kensington T-Bar Slot
Docking port	• USB Type-C Monitor Stand/Dock • Latitude USB Type-C Dock • Dell Rugged Family Pogo Dock (backward compatible with Gen 2)
Audio	• Universal audio jack (Global Headset Jack + mic phone in + line in support) • No / Noise reduction dual array microphones
Video	• HDMI 2.0
Network adapter	One RJ-45 connector
Serial port	One legacy Serial RS-232 port
Rear Configurable IO Space	• 2nd Gigabit RJ-45 + 2nd RS-232 • 2nd Gigabit RJ-45 + Fischer Rugged USB • 2nd Gigabit RJ-45 + VGA OUT • 2nd Gigabit RJ-45 + DisplayPort OUT (full-size)
SIM card reader	One micro SIM card reader

Audio

Table 9. Audio specifications

Controller	ACL3254
Type	Mono-channel
Speakers	One
Interface	• Universal Stereo headset/mic combo • Rugged quality speakers • Noise reducing array microphones
Internal speaker amplifier	2 W (RMS)

Display

Table 10. Display specifications

Type	Full HD Touch
Screen size (Diagonal)	14 inch (16:9)
Screen technology	FHD (1920x1080)
Display	Touch (10 finger PCAP Glove/Water/Stylus capable)
Native resolution	1920x1080
High definition	Yes
Luminance	Outdoor Viewable(OV) :1000 NIT
Height	173.95 mm / 6.85 (display area)
Width	309.4 mm / 12.18 inch
Megapixels	2.07
Pixels Per Inch (PPI)	157
Pixel pitch	0.161 mm
Color depth	16.2M colors (OV)
Contrast ratio (typical)	1500 (OV)
Response time (max)	35 ms
Refresh rate	60 Hhz

Horizontal viewing angle	85/85°
Vertical viewing angle	85/85°
Stylus support	Yes, Passive

Graphics Specifications

Table 11. Graphics specifications

Controller	Type	CPU Dependency	Graphics memory type	Capacity	External display support	Maximum resolution
Intel HD 620 Graphics	UMA	Intel Core i3 - 7130U	Integrated	Shared system memory	HDMI 2.0	4096×2304 @60 Hz
Intel UHD 620 Graphics	UMA	Intel Core i5 - 8350U Intel Core i7 - 8650U	Integrated	Shared system memory	HDMI 2.0	4096×2304 @60 Hz
Intel HD 520 Graphics	UMA	Intel Core i5-6300U	Integrated	Shared system memory	HDMI 2.0	4096×2304 @60 Hz
AMD Radeon 540	Discreet	Intel Core i5 - 8350U Intel Core i7 - 8650U	Discreet	Dedicated, 2 GB DDR5	HDMI 2.0 Additional video ports via Rear Configurable IO Space • VGA • DisplayPort	4096×2304 @60 Hz
AMD Radeon RX540	Discrete	Intel Core i5 - 8350U Intel Core i7 - 8650U	Discreet	Dedicated, 4 GB DDR5	HDMI 2.0 Additional video ports via Rear Configurable IO Space • VGA • DisplayPort	4096×2304 @60 Hz

NOTE: Additional video ports via Rear Configurable IO Space is available with discreet graphics solution only.

Camera

Table 12. Camera specifications

Resolution	Camera: • Still image: 0.92 megapixels • Video: 1280x720 at 30 fps

	Infrared camera (optional): • Still image: 0.30 megapixels • Video: 340x340 at 60 fps
Diagonal viewing angle	• Camera - 86.7 degrees • Infrared camera - 70 degrees

Communication

Table 13. Communication specifications

Ethernet	Integrated Intel i219LM 10/100/1000 Mb/s Ethernet (RJ-45) with Intel Remote Wake UP, PXE and Jumbo frames support. (2nd NIC in rear configurable IO space)
Wireless LAN(Optional)	• Intel Dual Band Wireless AC 8265 (802.11ac) 2x2 + Bluetooth 4.1 • Intel Dual Band Wireless AC 8265 (802.11ac) 2x2 (No BT)
Wireless WAN(Optional)	Dell Wireless 5821E Qualcomm Snapdragon X20 LTE
Global Positioning System(GPS) Module (Optional)	U-blox NEO-M8 dedicated GPS card

Smart card reader

Table 14. Contactless smart card

Type	FIPS 201 Contacted / Contactless Smart Card reader
ISO certification	ISO14443A

Keyboard

Table 15. Keyboard specifications

Number of keys	• 83 keys: US English, Thai, French-Canadian, Korean, Russian, Hebrew, English-International • 84 keys: UK English, French Canadian Quebec, German, French, Spanish (Latin America), Nordic, Arabic, Canada Bilingual • 85 keys: Brazilian Portuguese • 87 keys: Japanese
Size	Six row keyboard • X= 19.05 mm key pitch • Y= 19.05 mm key pitch
Backlit keyboard	None / RGB Backlight / Rubberized Sealed

Layout	QWERTY / AZERTY / Kanji

Touchpad

Table 16. Touchpad specifications

Resolution	• Horizontal: 305 • Vertical: 305
Dimensions	• Width: 4.13 inch (105 mm) • Height: 2.36 inch (60 mm)
Multi-touch	Supports 2 - fingers multi-touch

Battery

Table 17. Battery Specifications

Type	• 3-cell 51 Whr (ExpressCharge) • 3-cell 51 Whr (Long-Life Cycle, includes 3 year limited warranty)
Dimension	• Length: 128.4 mm (5.05 inch) • Width: 86.3 mm (3.39 inch) • Height: 15.3 mm (0.60 inch)
Weight (maximum)	237.00 g (0.52 lb)
Voltage	51 WHr - 11.4 VDC
Life span	300 discharge/recharge cycles
Charging time when the computer is off (approximate)	4 hours
Operating time	Varies depending on operating conditions and can significantly reduce under certain power-intensive conditions
Temperature range: Operating	0°C to 60°C (32°F to 140°F)
Temperature range: Storage	-40°C to 70°C (-40°F to 158°F)
Coin-cell battery	3 V, CR2032, lithium ion

Power adapter

Table 18. Power adapter specifications

Type	• 19.5 V @ 130 W & 90 W adapters through 7.4 mm Normal and Elbow Barrel • USB Type-C with PD (Power Distribution) • Via Dock supporting a NVDC charger architecture
Input Voltage	100 VAC to 240 VAC
Input current (maximum)	• 90 W - 2.34 A • 130 W - 3.5 A
Adapter size	7.4 mm
Input frequency	50 Hz to 60 Hz
Output current	• 90 W - 9.23 A (continuous) • 130 W - 12.31 A (continuous)
Rated output voltage	19.5 VDC
Temperature range (Operating)	0º to 40º C (32º to 104º F)
Temperature range (Non-Operating)	40º to 70º C (-40º to 158º F)

Physical system dimensions

Table 19. Physical system dimensions

Chassis weight (pounds / kilograms)	7.6 / 3.5 (includes handle)

Table 20. Chassis dimensions

Height (inches / centimeters)	13.96 / 35.45
Width (inches / centimeters)	9.79 / 24.86
Depth (inches / centimeters)	2.01 / 5.11
Shipping weight (pounds / kilograms – includes packaging materials)	10.78 / 4.89

Table 21. Packaging parameters

Height (inches / centimeters)	37.5 / 14.76
Width (inches / centimeters)	7.6 / 3.0
Depth (inches / centimeters)	31.9 / 12.56

Computer environment

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

Table 22. Computer environment

	Operating	Storage
Temperature range	-29°C to 63°C (-20.2°F to 145.4°F)	-51°C to 71°C (-59.8°F to 159.8°F)
Relative humidity (maximum)	10% to 80% (non-condensing) **NOTE: Maximum dew point temperature = 26°C**	10% to 95% (non-condensing) **NOTE: Maximum dew point temperature = 33°C**
Vibration (maximum)	0.26 GRMS	1.37 GRMS
Shock (maximum)	105 G †	40 G‡
Altitude (maximum)	-15.2 m to 3048 m (-50 ft to 10,000 ft)	-15.2 m to 10,668 m (-50 ft to 35,000 ft)

* Measured using a random vibration spectrum that simulates user environment.

† Measured using a 2 ms half-sine pulse when the hard drive is in use.

‡ Measured using a 2 ms half-sine pulse when the hard-drive head is in parked position.

Regulatory and Environmental Compliance

Table 23. Regulatory and Environmental Compliance specifications

- Energy Star Version 7¶
- EPEAT Silver Registered*
- TAA configurations available
- Haz Loc
- MIL 810G

* : For specific country participation and rating, please see www.epeat.net

¶ : Available on select configurations offered with single hard drive with both UMA and Discreet chipset.

Operating system

Table 24. Operating system

Operating systems supported	• Windows 10 Professional (64 bit) • Windows 10 Professional Enterprise • Windows 10 LTSB • Windows 7 via Dell CFI †

NOTE: † Supported on Intel Dual-Core i5-6300U SkyLake processor only.

Hardware and Software Security

Table 25. Hardware Security

Hardware Security	Available
TPM 2.0 FIPS 140-2 Certified, TCG Certified* * TCG certification (February 2018)	Yes, Discreet TPM 2.0 IC (Backward downgradable to 1.2)
BIOS disable TPM (China/Russia)	Yes
Optional Control Vault 2.0 Advanced Authentication with FIPS 140-2 level 3 certification (HW authentication configurations)	Yes, TCG Certified (February 2018)
Optional hardware authentication bundle 2: • FIPS 201 contacted smart card • Control Vault 2.0	Yes
Optional hardware authentication bundle 4: • Touch finger print reader • FIPS 201 contacted smart card • Contactless smart card • NFC • Control Vault 2.0	Yes NEXT Fingerprint reader/Smart Card Reader/Contactless SC
Security lock slot (Kensington T-Bar Lock Slot)	Yes
SED (Opal 2.0 - SATA Interface)	Yes
Statement of Non-Volatility	Yes
Bundle 6 Control Vault 2 and touch fingerprint	Yes
POA: Power On Authentication	Yes(Supported with Fingerprint reader only)

Table 26. Software Security

Software security	Available
Latitude Security software per software functional plan/cycle list	Yes
D-Pedigree for BIOS (Secure Supply Chain Functionality) provides:	Yes

- Secure Supply Chain for a Product covers BIOS Image Integrity
- Chain of Custody
- Part Traceability

Product Comparison

Table 27. Product comparison with predecessor model

	Latitude 7414	Latiude 7424 Rugged Extreme
Processor	• 6th Generation Intel Sky Lake (15 W) Dual Core i3/i5/i7	• 6th Generation Intel Sky Lake (15 W) Dual Core i5 • 7th Generation Intel Kaby Lake U (15 W) Quad Core i5/i7, Dual Core i3 • 8th Generation Intel Kaby Lake U (15 W) Quad Core i5/i7
Chipset	Intel CM238 chipset (H Quad Core)	Intel Kaby Lake / Sky Lake (integrated with the processor)
Memory	DDR4 2133 MHz; 2 SoDIMM slots supporting up to 32 GB (U Dual Core)	• DDR4 2133 MHz; 2 SoDIMM slots supporting up to 32 GB (SkyLake U) • DDR4 2400 MHz; 2 SoDIMM slots supporting up to 32 GB (KabyLake U)
Storage	• None • 2.5" HDD: Up to 1 TB, hybrid, OPAL SED options • SSD M.2 2280 SATA: Up to 512 GB, OPAL SED options • 5.25" ODD (Optional)	• SSD M.2 2280 PCIe: Up to 1 TB, FIPS, OPAL, SED options • SSD M.2 2280 SATA: Up to1 TB, FIPS, OPAL, SED options • 5.25" ODD (Optional, can be used as third drive)
Graphics	**Integrated** Intel HD 520 Graphics (Integrated in Intel 6th generation processors OR Radeon R7 M360 (Discreet)	**Integrated** • Intel HD Graphics 620 (Integrated in Intel 7th generation processors) • Intel UHD Graphics 620 (Integrated in Intel 8th generation processors) • Intel HD 520 Graphics (Integrated in Intel 6th generation processors) **Discrete** • AMD Radeon 540, 2 GB GDDR5 • AMD Radeon RX540, 4 GB GDDR5
Audio	Realtek ALC3235 Controller	Waves MaxxAudio 7.5
Communication	• Integrated Intel i219 10/100/1000 Mb/s Ethernet • Wi-Fi 802.11a/b/g/n/ac with Bluetooth 4.2 • WWAN 4G LTE Full Mini Card (optional) • Optional dedicated u-blox NEO-M8 GPS card	• Integrated Intel i219 10/100/1000 Mb/s Ethernet • Wi-Fi 802.11a/b/g/n/ac with Bluetooth 4.2 • WWAN 4G LTE Full Mini Card (optional) • Bluetooth 4.2 • Optional dedicated u-blox NEO-M8 GPS card

	Latitude 7414	Latiude 7424 Rugged Extreme
I/O connectors	• Three USB 3.0 ports(One with PowerShare) • One USB 2.0 • HDMI 1.4 • VGA Port • Two RJ-45 NIC ports • Two RS-232 Serial ports • One microphone/stereo headphone/ speakers connector • one micro-SIM slot with security feature	• Four USB 3.1 Gen 1 ports (One with PowerShare and Power on/Wake-up support) • HDMI 2.0 (Discrete) • One USB Type-C port(Supports charging) • Universal audio jack (Global Headset Jack + mic phone in + line in support) • RJ-45 connector • Serial RS-232 port Rear I/O space can be configured with RJ-45 along with following options: • Serial RS-232 • VGA or • DisplayPort
Operating system	• Windows 10 Pro 64 bit • Windows 10 Home 64 bit	• Windows 10 Pro 64 bit • Windows 10 Home 64 bit • Windows 10 LTSB
BIOS	UEFI BIOS	UEFI BIOS
AC adapter	• 65 W adapter, 7.4 mm barrel • 65 W BFR/PVC halogen free adapter, 7.4 mm barrel • 90 W adapter, 7.4 mm barrel	• 19.5 V @ 60 W & 90 W adapters through 7.4 mm DC-IN jack • USB Type-C with PD
Battery	• 6 Cell 65 Whr • 9 Cell 91 Whr	• 3 Cell 51 Whr ExpressCharge capable battery • 3 Cell 51 Whr Battery (Long-Life Cycle)
Weight (Pounds/Kilogram)	7.8 / 3.54	7.6 / 3.5 (includes handle)

3

BIOS overview

CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

NOTE: Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

Topics:

Boot menu

Press <F12> when the Dell logo appears to initiate a one-time boot menu with a list of the valid boot devices for the system. Diagnostics and BIOS Setup options are also included in this menu. The devices listed on the boot menu depend on the bootable devices in the system. This menu is useful when you are attempting to boot to a particular device or to bring up the diagnostics for the system. Using the boot menu does not make any changes to the boot order stored in the BIOS.

The options are:

- UEFI Boot:
  - Windows Boot Manager
-
- Other Options:
  - BIOS Setup
  - BIOS Flash Update
  - Diagnostics
  - Change Boot Mode Settings

Navigation keys

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

Keys	Navigation
Up arrow	Moves to the previous field.

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

System setup options

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

General options

Table 28. General

Option	Description
System Information	This section lists the primary hardware features of your computer. The options are: · **System Information** · **Memory Configuration** · **Processor Information** · **Device Information**
Battery Information	Displays the battery status and the type of AC adapter connected to the computer.
Boot Sequence	Allows you to change the order in which the computer attempts to find an operating system. The options are: · **Windows Boot Manager** · **Boot List Option:** Allows you to change the boot list options. Click one of the following options: – **Legacy External Devices** – **UEFI**—Default
Advanced Boot Options	Allows you to Enable Legacy Option ROMs. The options are: · **Enable Legacy Option ROMs**—Default · **Enable Attempt Legacy Boot**

Option	Description
UEFI Boot Path Security	Allows you to control whether the system prompts the user to enter the Admin password when booting to a UEFI boot path. Click one of the following options: · **Always, Except Internal HDD**—Default · **Always** · **Never**
Date/Time	Allows you to set the date and time. The change to the system date and time takes effect immediately.

System configuration

Table 29. System Configuration

Option	Description
Integrated NIC	Allows you to configure the integrated network controller. Click one of the following options: · **Disabled** · **Enabled** · **Enabled w/PXE**—Default
Onboard Unmanaged NIC	Allows you to enable / disable onboard USB LAN controller.
Serial Port 1 **Serial Port 2**	Allows you to configure(disable and re-mapping) the serial port(s). Click one of the following options: · **Disabled** · **Com1**—Default (Port is configured with 3F8h with IRQ 4 · **Com3** (Port is configured with 3E8h with IRQ 4 **NOTE: Serial Port 2 is available when the system has Serial Port in the rear configurable I/O space.**
SATA Operation	Allows you to configure the operating mode of the integrated SATA hard-drive controller. Click one of the following options: · **Disabled** · **AHCI** · **RAID On**—Default **NOTE: SATA is configured to support RAID mode.**
SMART Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. This technology is part of the S.M.A.R.T (Self Monitoring Analysis and Reporting Technology) specification. This option is disabled by default. · **Enable SMART Reporting**

Option	Description
USB Configuration	Allows you to enable or disable the internal/integrated USB configuration. The options are: · **Enable USB Boot Support** · **Enable External USB Ports** · **Disable Docking Station Devices except video (Default : Unchecked)** Rest all the options are set by default. **NOTE: USB keyboard and mouse always work in the BIOS setup irrespective of these settings.**
USB PowerShare	This field configures the USB PowerShare feature behavior. This option allows you to charge external devices using the stored system battery power through the USB PowerShare port (disabled by default). · **Enable USB PowerShare**
Audio	Allows you to enable or disable the integrated audio controller. By default, the **Enable Audio** option is selected. The options are: · **Enable Microphone** · **Enable Internal Speaker** This option is set by default.
Keyboard Illumination	This option lets you choose the operating mode of the keyboard illumination feature The options are: · **Disabled** · **25%** · **50%** · **75%** · **100%**
Keyboard Backlight Timeout on AC	Allows to define the timeout value for the keyboard backlight when an AC adapter is plugged in the system. The Keyboard Backlight tiemout value is only in effect when the backlight is enabled. · **5 seconds** · **10 seconds**—Default · **15 seconds** · **30 seconds** · **1 minute** · **5 minutes** · **15 minutes** · **Never**
Keyboard Backlight Timeout on Battery	Allows to define the timeout value for the keyboard backlight when the system is running only on battery power. The Keyboard

Option	Description
	Backlight tiemout value is only in effect when the backlight is enabled. · **5 seconds** · **10 seconds**—Default · **15 seconds** · **30 seconds** · **1 minute** · **5 minutes** · **15 minutes** · **Never**
RGB Keyboard Backlight	This option allows to enable / select backlight color or configure RGB intensity values to activate two custom backlight colors. The options are: · **White** · **Red** · **Green** · **Blue** · **Custom1** · **Custom2**
Touchscreen	This option controls whether the touchscreen is enabled or disabled
Stealth mode Control	This option allows configuration of Dell Stealth mode feature. **Configurable control features:** · **Onboard LEDs** · **LCD screen** · **Speakers** · **Fans** · **Radio** · **GPS receiver** · **WLAN radio** · **WWAN radio.**
Miscellaneous devices	Allows you to enable or disable various on board devices. · **Enable PC Card** · **Enable Camera**—Default · **Enable Hard Drive Free Fall Protection** · **Enable Dedicated GPS Radio** · **Enable Secure Digital (SD) Card** · **Secure Digital (SD) Card Boot** - Disabled · **Secure Digital Card (SD) Read-Only Mode** - Disabled · **Enable Rugged Dock NIC PXE Support** - Disabled

Video screen options

Table 30. Video

Option	Description
LCD Brightness	Allows you to set the display brightness depending upon the power source. On Battery(50% is default) and On AC (100 % default).

Security

Table 31. Security

Option	Description
Admin Password	Allows you to set, change, or delete the administrator(admin) password. The entries to set password are: · **Enter the old password:** · **Enter the new password:** · **Confirm new password:** Click **OK** once you set the password. **NOTE: For the first time login, "Enter the old password:" field is marked to "Not set". Hence, password has to be set for the first time you login and then you can change or delete the password.**
System Password	Allows you to set, change, or delete the System password. The entries to set password are: · **Enter the old password:** · **Enter the new password:** · **Confirm new password:** Click **OK** once you set the password. **NOTE: For the first time login, "Enter the old password:" field is marked to "Not set". Hence, password has to be set for the first time you login and then you can change or delete the password.**
Strong Password	Allows you to enforce the option to always set strong password. · **Enable Strong Password** This option is not set by default.
Password Configuration	You can define the length of your password. Min = 4, Max = 32
Password Bypass	Allows you to bypass the System password and the Internal HDD password, when it is set, during a system restart. Click one of the options: · **Disabled**—Default

Option	Description
	• **Reboot bypass**
Password Change	Allows you to change the System password when the administrator password is set. • **Allow Non-Admin Password Changes** This option is set by default.
Non-Admin Setup Changes	Allows you to determine whether changes to the setup options are allowed when an Administrator Password is set. If disabled the setup options are locked by the admin password. • **Allow Wireless Switch Changes** This option is not set by default.
UEFI Capsule Firmware Updates	Allows you to update the system BIOS via UEFI capsule update packages. • **Enable UEFI Capsule Firmware Updates** This option is set by default.
TPM 2.0 Security	Allows you to enable or disable the Trusted Platform Module (TPM) during POST. The options are: • **TPM On**—Default • **Clear** • **PPI Bypass for Enable Command**—Default • **PPI Bypass for Disbale Command** • **PPI Bypass for Clear Command** • **Attestation Enable**—Default • **Key Storage Enable**—Default • **SHA-256**—Default
Computrace (R)	Allows you to activate or disable the optional Computrace software. The options are: • **Deactivate** • **Disable** • **Activate**—Default
OROM keyboard Access	Allows you to enable or disable Option ROM configuration screens via hotkeys during boot. • **Enable**—Default • **Disable** • **One Time Enable**
Admin Setup Lockout	Allows you to prevent users from entering Setup when an administrator password is set. • **Enable Admin Setup Lockout** This option is not set by default.
Master Password Lockout	Allows you to disable master password support. • **Enable Master Password Lockout** This option is not set by default.

Option	Description
	NOTE: Hard Disk password should be cleared before the settings can be changed.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protection. · **SMM Security Mitigation** This option is not set by default.

Secure boot

Table 32. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable the Secure Boot Feature. · **Secure Boot Enable**—Default
Secure Boot Mode	Changes to the Secure Boot operation mode modifies the behaviour of Secure Boot to allow evaluation of UEFI driver signatures. Choose one of the option: · **Deployed Mode**—Default · **Audit Mode**
Expert Key Management	Allows you to enable or disable Expert Key Management. · **Enable Custom Mode** This option is not set by default. The Custom Mode Key Management options are: · **PK**—Default · **KEK** · **db** · **dbx**

Intel Software Guard Extensions options

Table 33. Intel Software Guard Extensions

Option	Description
Intel SGX Enable	This field specifies you to provide a secured environment for running code/storing sensitive information in the context of the main OS. Click one of the following options: · **Disabled** · **Enabled**

Option	Description
	• **Software controlled**—Default
Enclave Memory Size	This option sets **SGX Enclave Reserve Memory Size** Click one of the following options: • **32 MB** • **64 MB** • **128 MB**—Default

Performance

Table 34. Performance

Option	Description
Multi Core Support	This field specifies whether the process has one or all cores enabled. The performance of some applications improves with the additional cores. • **All**—Default • **1** • **2** • **3**
Intel SpeedStep	Allows you to enable or disable the Intel SpeedStep mode of processor. • **Enable Intel SpeedStep** This option is set by default.
C-States Control	Allows you to enable or disable the additional processor sleep states. • **C states** This option is set by default.
Intel TurboBoost	Allows you to enable or disable the Intel TurboBoost mode of the processor. • **Enable Intel TurboBoost** This option is set by default.
Hyper-Thread Control	Allows you to enable or disable the HyperThreading in the processor. • **Disabled** • **Enabled**—Default

Power management

Table 35. Power Management

Option	Description
Lid Switch	Allows you to enable or disable the lid switch from automatically turning on / off the screen when the lid is closed.
AC Behavior	Allows you to enable or disable the computer from turning on automatically when an AC adapter is connected. • **Wake on AC** This option is not set by default.
Auto On Time	Allows you to set the time at which the computer must turn on automatically. The options are: • **Disabled**—Default • **Every Day** • **Weekdays** • **Select Days** This option is not set by default.
USB Wake Support	Allows you to enable USB devices to wake the system from standby. • **Enable USB Wake Support** • **Wake on Dell USB-C Dock** This option is not set by default.
Wireless Radio Control	This option if enabled, will sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN and/or WWAN). Upon disconnection from the wired network the selected wireless radio will ne enabled. • **Control WLAN radio** • **Control WWAN radio** This option is not set by default.
Wake on LAN	This option allows the computer to power up from the off state when triggered by a special LAN signal. Wake-up from the Standby state is unaffected by this setting and must be enabled in the operating system. This feature only works when the computer is connected to AC power supply. • **Disabled**—Default - Does not allow the system to power on by special LAN signals when it receives a wake-up signal from the LAN or wireless LAN. • **LAN Only** - Allows the system to be powered on by special LAN signals. • **WLAN Only** - Allows the system to be powered on by special WLAN signals. • **LAN or WLAN** - Allows the system to be powered on by special LAN or WLAN signals.
Peak Shift	Allows you enable of disable the Peak shift feature. This feature when enabled minimizes the AC power usage at times of peak demand. Battery doesnot charge between the Peak Shift start and end time Peak Shift Start and End Time can be configured for all weekdays This option set the battery threshold value (15 % to 100 %)

Option	Description
Advanced Battery Charge Configuration	This option enables you to maximize the battery health. By enabling this option, your system uses the standard charging algorithm and other techniques, during the non-work hours to improve the battery health. Advanced Battery Charge Mode can be configured for all weekdays
Battery #1 Charge Configuration **Battery #2 Charge Configuration**	Allows you to select the charging mode for the battery. The options are: • **Adaptive**—Default • **Standard** - Fully charges your battery at a standard rate. • **ExpressCharge**- The battery charges over a shorter period of time using Dell's fast charging technology. • **Primarily AC use** • **Custom** If Custom Charge is selected, you can also configure Custom Charge Start and Custom Charge Stop. **NOTE: All charging mode may not be available for all the batteries.**
Type-C connector Power	This option allows you to set maximum power that can be drawn from the Type-C connector. The options are: • **7.5 Watts**—Default • **15 Watts**
Power Usage Mode	This field lets you choose the system power usage mode. The options are: • **Power Saver** • **Balanced** — Default. • **High Performance**

Post behavior

Table 36. POST Behavior

Option	Description
Adapter Warnings	Allows you to enable or disable the system setup (BIOS) warning messages when you use certain power adapters. • **Enable Adapter Warnings**—Default
Keypad (Embedded)	Allows you to one of the two methods to enable the keypad that is embedded in the internal keyboard. • **Fn Key Only** : The keypad is only enabled when you hold down the Fn key (Default) • **By Num Lock** : The keypad is enabled only when the NumLock LED is on.
Numlock Enable	Allows you to enable or disable the Numlock function when the system boots. • **Enable Numlock**—Default

Option	Description
Fn Lock Options	Allows you to let hot key combinations Fn + Esc toggle the primary behavior of F1–F12, between their standard and secondary functions. If you disable this option, you cannot toggle dynamically the primary behavior of these keys. • **Fn Lock**—Default Click one of the following options: • **Lock Mode Disable/Standard** • **Lock Mode Enable/Secondary**—Default
Fastboot	Allows you to speed up the boot process by bypassing some of the compatibility steps. Click one of the following options: • **Minimal**—Default • **Thorough** • **Auto**
Extended BIOS POST Time	Allows you to create an additional preboot delay. Click one of the following options: • **0 seconds**—Default • **5 seconds** • **10 seconds**
Full Screen Logo	Allows you to display full screen logo, if your image matches screen resolution. • **Enable Full Screen Logo** This option is not set by default.
Warnings and Errors	Allows you to select different options to either stop, prompt and wait for user input, continue when warnings are detected but pause on errors, or continue when either warnings or errors are detected during the POST process. Click one of the following options: • **Prompt on Warnings and Errors**—Default • **Continue on Warnings** • **Continue on Warnings and Errors**
MAC Address Pass-Through	This feature replaces the external NIC MAC address (in a supported dock or dongle) with selected MAC address from the system. Click one of the following options: • **Passthrough MAC Address**—Default • **Integrated NIC 1 MAC Address** • **Disabled**

Manageability

Table 37. Manageability

Option	Description
USB Provision	This option lets you to provision Intel AMT using provisioning file stored on local USB storage
MEBx Hotkey	This option allows you to enable or disable hotkey (Ctrl +P) functionality at Dell logo to enter Management Engine BIOS Extension (MEBx)

Virtualization support

Table 38. Virtualization Support

Option	Description
Virtualization	This option specifies whether a Virtual Machine Monitor (VMM) can utilize the additional hardware capabilities provided by the Intel Virtualization technology. · **Enable Intel Virtualization Technology** This option is set by default.
VT for Direct I/O	Enables or disables the Virtual Machine Monitor (VMM) from utilizing the additional hardware capabilities provided by the Intel Virtualization technology for direct I/O. · **Enable VT for Direct I/O** This option is set by default.
Trusted Execution	This option allows Measured Virtual Machine Monitor (MVMM) to use additional hardware capabilities provisioned by Intel Trusted Execution Technology · **Enable Trusted Execution** **NOTE: The Intel Virtualization Technology, VT for direct I/O and TPM has to be enabled and activated for this feature to work.**

Wireless options

Table 39. Wireless

Option	Description
Wireless Switch	Allows to set the wireless devices that can be controlled by the wireless switch. The options are: · **WWAN** · **GPS (on WWAN Module)** · **WLAN**

Option	Description
	• **Bluetooth** All the options are enabled by default.
Wireless Device Enable	Allows you to enable or disable the internal wireless devices. The options are: • **WWAN/GPS** • **WLAN** • **Bluetooth** All the options are enabled by default.

Maintenance

Table 40. Maintenance

Option	Description
Service Tag	Displays the service tag of your computer.
Asset Tag	Allows you to create a system asset tag if an asset tag is not already set. This option is not set by default.
BIOS Downgrade	Allows you to flash previous revisions of the system firmware. • **Allow BIOS Downgrade** This option is set by default.
Data Wipe	Allows you to securely erase data from all internal storage devices. • **Wipe on Next Boot** This option is not set by default.
Bios Recovery	**BIOS Recovery from Hard Drive**—This option is set by default. Allows you to recover the corrupted BIOS from a recovery file on the HDD or an external USB key. **BIOS Auto-Recovery**— Allows you to recover the BIOS automatically. **NOTE: BIOS Recovery from Hard Drive field should be enabled.** **Always Perform Integrity Check**—Performs integrity check on every boot.

System logs

Table 41. System Logs

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

Boot Sequence

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

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

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

- Removable Drive (if available)
- STXXXX Drive

  NOTE: XXX denotes the SATA drive number.
- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

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

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

Updating the BIOS in Windows

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

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

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

   NOTE: Choose the appropriate category to reach the product page
5. Select your computer model and the **Product Support** page of your computer appears.
6. Click **Get drivers** and click **Drivers and Downloads**.
   The Drivers and Downloads section opens.
7. Click **Find it myself**.

8 Click **BIOS** to view the BIOS versions.

9 Identify the latest BIOS file and click **Download**.

10 Select your preferred download method in the **Please select your download method below** window, click **Download File**.
The **File Download** window appears.

11 Click **Save** to save the file on your computer.

12 Click **Run** to install the updated BIOS settings on your computer.
Follow the instructions on the screen.

Updating BIOS on systems with BitLocker enabled

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

Updating your system BIOS using a USB flash drive

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

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

1 Download the BIOS update .EXE file to another system.

2 Copy the file e.g. O9010A12.EXE onto the bootable USB Flash drive.

3 Insert the USB Flash drive into the system that requires the BIOS update.

4 Restart the system and press F12 when the Dell Splash logo appears to display the One Time Boot Menu.

5 Using arrow keys, select **USB Storage Device** and click Return.

6 The system will boot to a Diag C:\> prompt.

7 Run the file by typing the full filename e.g. O9010A12.exe and press Return.

8 The BIOS Update Utility will load, follow the instructions on screen.

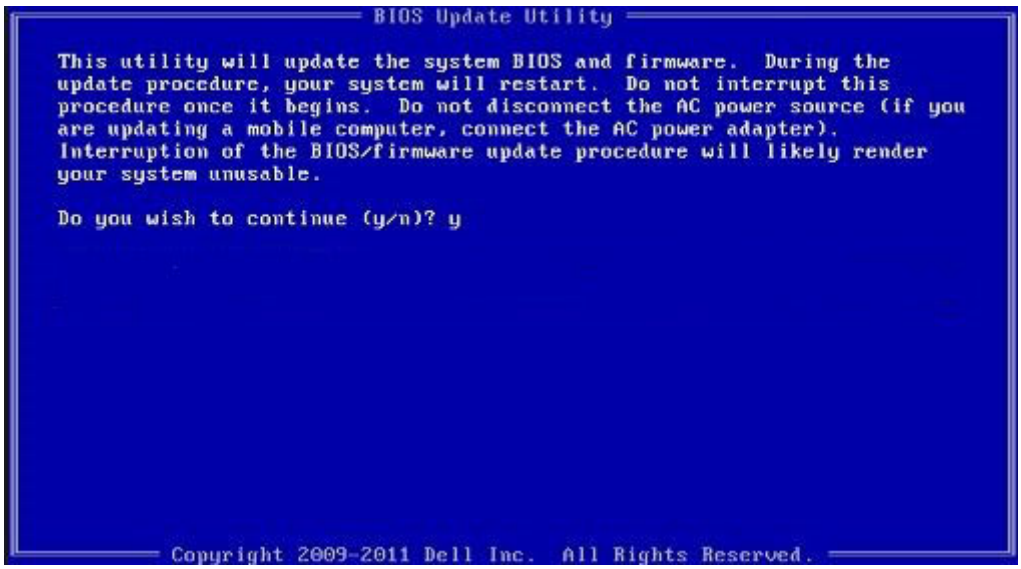


Figure 1. DOS BIOS Update Screen

Updating the Dell BIOS in Linux and Ubuntu environments

If you want to update the system BIOS in a Linux environment such as Ubuntu, see http://www.dell.com/support/article/sln171755.

System and setup password

Table 42. System and setup password

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

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

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

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

NOTE: System and setup password feature is disabled.

Assigning a system setup password

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

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

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

Deleting or changing an existing system setup password

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

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.

The **System Security** screen is displayed.

2 In the **System Security** screen, verify that **Password Status** is **Unlocked**.

3 Select **System Password**, alter or delete the existing system password and press Enter or Tab.

4 Select **Setup Password**, alter or delete the existing setup password and press Enter or Tab.

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

5 Press Esc and a message prompts you to save the changes.

6 Press Y to save the changes and exit from System Setup.

The computer reboot.

4

Software

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

Topics:

- Operating system
- Downloading drivers

Operating system

Table 43. Operating system

Operating systems supported	• Windows 10 Professional (64 bit) • Windows 10 Professional Enterprise • Windows 10 LTSB • Windows 7 via Dell CFI †

NOTE: † Supported on Intel Dual-Core i5-6300U SkyLake processor only.

Downloading drivers

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

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

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

5

Getting help

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.