Dell OptiPlex 5070 Micro

Setup and Specifications

Regulatory Model: D10U
Regulatory Type: D10U003
October 2021
Rev. A01

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.

© 2018 - 2019 Dell Inc. or its subsidiaries. All rights reserved. Dell, EMC, and other trademarks are trademarks of Dell Inc. or its subsidiaries. Other trademarks may be trademarks of their respective owners.

Contents

Chapter 1: Set up your computer....5

Chapter 2: Chassis....7
- Front view....7
- Back view....8

Chapter 3: System specifications....9
- Chipset....9
  - Processor....9
- Memory....12
- Intel Optane Memory....12
- Storage....13
- System board connectors....14
- External ports and connectors....14
- Graphics and Video Controller....15
- Communications—Wireless....15
- Input devices....16
- Accessories....16
- Environmental....17
- Regulatory and environmental compliance....17

Chapter 4: System setup....19
- BIOS overview....19
- Entering BIOS setup program....19
- Navigation keys....19
- One time boot menu....20
- System setup options....20
  - General options....20
  - System information....21
  - Video screen options....22
  - Security....22
  - Secure boot options....23
  - Intel Software Guard Extensions options....24
  - Performance....24
  - Power management....25
  - Post behavior....26
  - Manageability....26
  - Virtualization support....26
  - Wireless options....27
  - Maintenance....27
  - System logs....28
  - Advanced configuration....28
- Updating the BIOS....28
  - Updating the BIOS in Windows....28

Updating the BIOS in Linux and Ubuntu....28
Updating the BIOS using the USB drive in Windows....28
Updating the BIOS from the F12 One-Time boot menu....29
System and setup password....30
Assigning a system setup password....30
Deleting or changing an existing system setup password....30
Clearing BIOS (System Setup) and System passwords....31

Chapter 5: Software....32
Downloading drivers....32
System device drivers....32
Serial IO driver....32
Security drivers....32
USB drivers....33
Network adapter drivers....33
Realtek Audio....33
Storage controller....33

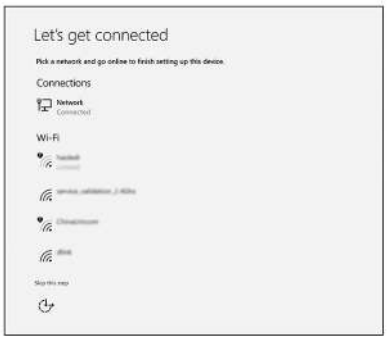
Chapter 6: Getting help....34
Contacting Dell....34

1

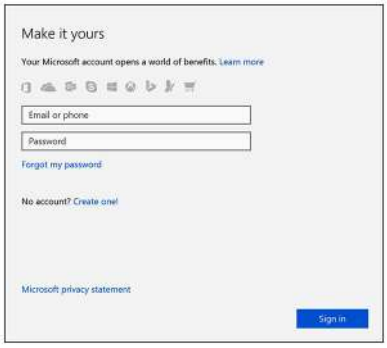
Set up your computer

1. Connect the keyboard and mouse.
2. Connect to your network using a cable, or connect to a wireless network.
3. Connect the display.

   NOTE: If you ordered your computer with a discrete graphics card, the HDMI and the display ports on the back panel of your computer are covered. Connect the display to the discrete graphics card.
4. Connect the power cable.
5. Press the power button.
6. Follow the instructions on the screen to finish Windows setup:
   a. Connect to a network.



   b. Sign-in to your Microsoft account or create a new account.



7. Locate Dell apps.

Table 1. Locate Dell apps

	Register your computer
	Dell Help & Support

Table 1. Locate Dell apps (continued)

	
	SupportAssist — Check and update your computer

2

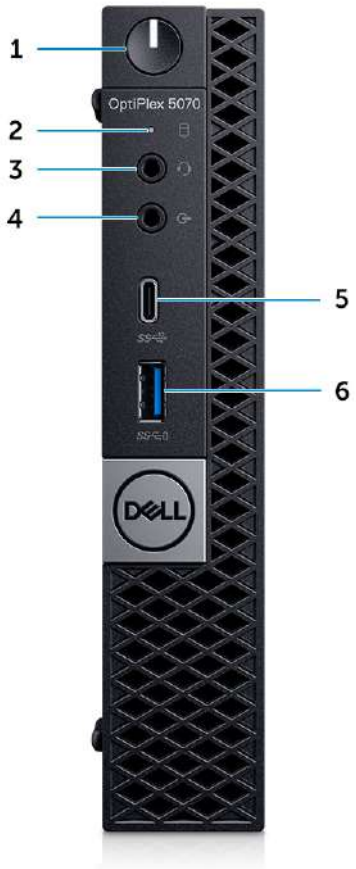
Chassis

This chapter illustrates the multiple chassis views along with the ports and connectors and also explains the FN hot key combinations.

Topics:

- Front view
- Back view

Front view



1. Power button and power light
2. Hard drive activity light
3. Headset/Universal audio jack port
4. Line-out port
5. USB 3.1 Gen 2 Type-C port with PowerShare
6. USB 3.1 Gen 1 port with PowerShare

Back view

3

System 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.

Topics:

- Chipset
- Memory
- Intel Optane Memory
- Storage
- System board connectors
- External ports and connectors
- Graphics and Video Controller
- Communications—Wireless
- Input devices
- Accessories
- Environmental
- Regulatory and environmental compliance

Chipset

Table 2. Chipset

	Tower/ Small form factor/ Micro
Chipset	Intel Q370 Chipset
Non-volatile memory on chipset	
BIOS Configuration Serial Peripheral Interface (SPI)	256 Mbit (32 MB) located at SPI_FLASH on chipset
Trusted Platform Module (TPM) 2.0 Security Device (Discrete TPM Enabled)	24 KB located at TPM 2.0 on chipset
Firmware-TPM (Discrete TPM disabled)	By default the Platform Trust Technology feature is visible to the OS
NIC EEPROM	LOM configuration contained within LOM e-fuse – no dedicated LOM EEPROM

Processor

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

Device Guard (DG) and Credential Guard (CG) are the new security features that are only available on Windows 10 Enterprise today.

Device Guard is a combination of enterprise-related hardware and software security features that, when configured together, will lock a device down so that it can only run trusted applications. If it is not a trusted application, it cannot run.

Credential Guard uses virtualization-based security to isolate secrets (credentials) so that only privileged system software can access them. Unauthorized access to these secrets can lead to credential theft attacks. Credential Guard prevents these attacks by protecting NTLM password hashes and Kerberos Ticket Granting Tickets

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

Table 3. Processor

Intel Core Processors 9th Gen Core CPUs (Offered offline only)	Tower/ Small Form Factor	Micro	GSP	DG/CG Ready
Intel® Pentium G5420 (2 Cores/4MB/4T/ 3.8GHz/65W); supports Windows 10/Linux	x			x
Intel® Pentium G5420T (2 Cores/4MB/4T/ 3.2GHz/35W); supports Windows 10/Linux		x		
Intel® Pentium G5600 (2 Cores/4MB/4T/ 3.9GHz/65W); supports Windows 10/Linux	x			x
Intel® Pentium G5600T (2 Cores/4MB/4T/ 3.3GHz/35W); supports Windows 10/Linux		x		
Intel® Core™ i3-9100 (4 Cores/6MB/4T/ 3.6GHz to 4.2GHz/65W); supports Windows 10/Linux	x			x
Intel® Core™ i3-9100T (4 Cores/6MB/4T/ 3.1GHz to 3.7GHz/35W); supports Windows 10/Linux		x		x
Intel® Core™ i3-9300 (4 Cores/8MB/4T/ 3.7GHz to 4.3GHz/65W); supports Windows 10/Linux	x			x
Intel® Core™ i3-9300T (4 Cores/8MB/4T/ 3.2GHz to 3.8GHz/35W); supports Windows 10/Linux		x		x
Intel® Core™ i5-9400 (6 Cores/9MB/6T/ 2.9GHz to 4.1GHz/65W); supports Windows 10/Linux	x		x	x
Intel® Core™ i5-9400T (6 Cores/9MB/6T/ 1.8GHz to 3.4GHz/35W); supports Windows 10/Linux		x	x	x
Intel® Core™ i5-9500 (6 Cores/9MB/6T/ 3.0GHz to 4.4GHz/65W); supports Windows 10/Linux	x		x	x
Intel® Core™ i5-9500T (6 Cores/9MB/6T/ 2.2GHz to 3.7GHz/35W); supports Windows 10/Linux		x	x	x
Intel® Core™ i5-9600 (6 Cores/9MB/6T/ 3.1GHz to 4.6GHz/65W); supports Windows 10/Linux	x		x	x
Intel® Core™ i5-9600T (6 Cores/9MB/6T/ 2.3GHz to 3.9GHz/35W); supports Windows 10/Linux		x	x	x
Intel® Core™ i7-9700 (8 Cores/12MB/8T/ 3.0GHz to 4.7GHz/65W); supports Windows 10/Linux	x		x	x

Table 3. Processor (continued)

Intel Core Processors 9th Gen Core CPUs (Offered offline only)	Tower/ Small Form Factor	Micro	GSP	DG/CG Ready
Intel® Core™ i7-9700T (8 Cores/12MB/8T/ 2.0GHz to 4.3GHz/35W); supports Windows 10/Linux		x	x	x

Table 4. Processor

Intel Core Processors 8th Gen Core CPUs (Offered offline only)	Tower	Small Form Factor	Micro	GSP	DG/CG Ready
Intel Core i7-8700 (6 Cores/12 MB/12T/up to 4.6 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No	GSP	Yes
Intel Core i5-8500 (6 Cores/9 MB/6T/up to 4.1 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No	GSP	Yes
Intel Core i5-8400 (6 Cores/9 MB/6T/up to 4.0 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No	GSP	Yes
Intel Core i3-8300 (4 Cores/8 MB/4T/3.7 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No		Yes
Intel Core i3-8100 (4 Cores/6 MB/4T/3.6 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No		Yes
Intel Pentium Gold G5500 (2 Cores/4 MB/4T/3.8 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No		Yes
Intel Pentium Gold G5400 (2 Cores/4 MB/4T/3.7 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No		Yes
Intel Celeron G4900 (2 Cores/2 MB/2T/up to 3.1 GHz/65 W); supports Windows 10/Linux	Yes	Yes	No		Yes
Intel Core i7-8700T (6 Cores/12 MB/12T/up to 4.0 GHz/35 W); supports Windows 10/Linux	No	No	Yes	GSP	Yes
Intel Core i5-8500T (6 Cores/9 MB/6T/up to 3.5 GHz/35 W); supports Windows 10/Linux	No	No	Yes	GSP	Yes
Intel Core i5-8400T (6 Cores/9 MB/6T/up to 3.3 GHz/35 W); supports Windows 10/Linux	No	No	Yes	GSP	Yes
Intel Core i3-8300T (4 Cores/8 MB/4T/3.2 GHz/35 W); supports Windows 10/Linux	No	No	Yes		Yes
Intel Core i3-8100T (4 Cores/6 MB/4T/3.1 GHz/35 W); supports Windows 10/Linux	No	No	Yes		Yes
Intel Pentium Gold G5500T (2 Cores/4 MB/4T/3.2 GHz/35 W); supports Windows 10/Linux	No	No	Yes		
Intel Pentium Gold G5400T (2 Cores/4 MB/4T/3.1 GHz/35 W); supports Windows 10/Linux	No	No	Yes		
Intel Celeron G4900T (2 Cores/2 MB/2T/2.9 GHz/35 W); supports Windows 10/Linux	No	No	Yes		

Memory

NOTE: Memory modules should be installed in pairs of matched memory size, speed, and technology. If the memory modules are not installed in matched pairs, the computer will continue to operate, but with a slight reduction in performance. The entire memory range is available to 64-bit operating systems.

Table 5. Memory

	Tower	Small Form Factor	Micro
Type: DDR4 DRAM Non-ECC Memory	2666 MHz on i5 and i7 processors (performs at 2400 MHz on Celeron, Pentium and i3 processors)		
DIMM Slots	4	4	2 (SoDIMM)s
DIMM Capacities	Up to 64 GB	Up to 64 GB	Up to 32 GB
Minimum Memory	4 GB	4 GB	4 GB
Maximum System Memory	64 GB	64 GB	32 GB
DIMMs/Channel	2	2	1
UDIMM support	Yes	Yes	No
Memory configurations:			
4 GB = 1 x 4 GB	Yes	Yes	Yes
8 GB = 2 x 4 GB and 1 x 8 GB	Yes	Yes	Yes
16 GB = 2 x 8 G B and 1 x 16 GB	Yes	Yes	Yes
32 GB = 4 x 8 GB	Yes	Yes	No
32 GB = 2 x 16 GB	Yes	Yes	Yes
64 GB = 4 x 16 GB	Yes	Yes	No

Intel Optane Memory

NOTE: Intel Optane memory cannot replace DRAM entirely. However, these two memory technologies complement each other within the PC.

Table 6. M.2 16 GB Intel Optane

	Tower/Small form factor/Micro
Capacity (TB)	16 GB
Dimensions (inches) (W x D x H)	22 x 80 x 2.38
Interface type and Maximum speed	PCIe Gen2
MTBF	1.6 M hours
Logical Blocks	28,181,328
Power Source:	
Power Consumption (reference only)	Idle 900 mW to 1.2 W, Active 3.5 W
Environmental Operating Conditions (Non-Condensing):	
Temperature Range	0°C to 70°C

Table 6. M.2 16 GB Intel Optane (continued)

	Tower/Small form factor/Micro
Relative Humidity Range	10 to 90%
Op Shock (@2 ms)	1,000G
Environmental Non-Operating Conditions (Non-Condensing):	
Temperature Range	-10°C to 70°C
Relative Humidity Range	5 to 95%

Storage

Table 7. Storage

	Tower	Small Form Factor	Micro
Bays:			
Optical Drives Supported	1 Slim	1 Slim	0
Hard Drive Bay Supported (Internal)	1 x 3.5”/2 x2 .5”	1 x 3.5" or 2 x 2.5"	1 x 2.5"
Hard Drives Supported 3.5”/2.5” (maximum)	1/2	1/2	0/1
Interface:			
SATA 2.0	1	1	0
SATA 3.0	3	2	1 (HDD)
M.2 Socket 3 (for SATA / NVMe SSD)	1	1	1
M.2 Socket 1 (for WiFi/BT card)	1	1	1
3.5” Drives:			
3.5 inch 500 GB 7200 RPM Hard Disk Drive	Y	Y	N/A
3.5 inch 1 TB SATA 7200 RPM Hard Disk Drive	Y	Y	N/A
3.5 inch 2 TB SATA 7200 RPM Hard Disk Drive	Y	Y	N/A
2.5” Drives:			
2.5 inch 500 GB SATA 5400 RPM Hard Disk Drive	Y	Y	Y
2.5 inch 500 GB SATA 7200 RPM Hard Disk Drive	Y	Y	Y
2.5 inch 500GB 7200 RPM FIPS Self Encrypting Opal 2.0 Hard Disk Drive	Y	Y	Y
2.5 inch 1 TB SATA 7200 RPM Hard Disk Drive	Y	Y	Y
2.5 inch 2 TB 5400 RPM SATA Hard Disk Drive	Y	Y	Y
2.5 inch 256 GB SATA Class 20 Solid State Drive[1]	Y	Y	Y
2.5 inch 512 GB SATA Class 20 Solid State Drive[1]	Y	Y	Y
2.5 inch 1 TB SATA Class 20 Solid State Drive[1]	Y	Y	Y
M.2 SSD:			
M.2 1 TB PCIe Class 40 Solid State Drive	Y	Y	Y
M.2 256 GB PCIe NVMe Class 40 Solid State Drive	Y	Y	Y
M.2 512 GB PCIe NVMe Class 40 Self Encrypting Opal 2.0 Solid State Drive	Y	Y	Y

Table 7. Storage (continued)

	Tower	Small Form Factor	Micro
M.2 512 GB PCIe NVMe Class 40 Solid State Drive	Y	Y	Y
M.2 128 GB PCIe NVMe Class 35 Solid State Drive	Y	Y	Y
M.2 256 GB PCIe NVMe Class 35 Solid State Drive	Y	Y	Y
M.2 512 GB PCIe NVMe Class 35 Solid State Drive	Y	Y	Y

[1]2.5 Inch Solid State Drives are only available as a secondary storage option and can only be paired with a M.2 Solid State Drive as the Primary Storage Device.

System board connectors

NOTE: See Detailed Engineering Specifications for maximum card dimensions.

Table 8. System board connectors

	Tower	Small Form Factor	Micro
PCIe x16 Slot(s) [1]	1	1	0
PCIe x16 (wired x4) Slot(s)[2]	1	1 x4 open ended	0
PCIe x1 Slot(s) [2]	2	0	0
Serial ATA (SATA) [3]	4	3	1
M.2 Socket 3 [4] (for SSD)	1 - 2280/2230	1 - 2280/2230	1 - 2280/2230
M.2 Socket 1 [5] (for WiFi/BT card)	1 - 2230	1 - 2230	1 – 2230

[1] PCIe x16 Slots (Support Standard Rev 3.0)

[2] PCIe x16 (wired x 4), PCIe x1 Slots, M.2 Slot (Support Standard Rev 3.0)

[3] Serial ATA (Tower/Small Form Factor support one Gen2 port for ODD and the rest of the ports support Gen3)

[4] M.2 Socket3: Support SATA & PCIe interface

[5] M.2 Socket1: Support Intel CNVi or USB2.0/PCIe

External ports and connectors

NOTE: Tower supports Full Height (FH) cards and Small Form Factor supports Low Profile (LP) cards. See chassis diagrams section for port/connector locations.

Table 9. External ports and connectors

	Tower	Small Form Factor	Micro
USB 2.0 (SmartPower On)	2 Rear	2 Rear	0
USB 3.1 Gen 1 (Front/Rear/Internal)	1/4/0	1/4/0	0/3/0
USB 3.1 Gen 1 (SmartPower On)	0	0	1 Rear
USB 3.1 Gen 1 PowerShare	0	0	1 Front
USB 2.0 port	1 Front	1 Front	0
USB 2.0 PowerShare (2A max)	1 Front	1 Front	0
USB 3.1 Gen 2 Type C with PowerShare	1 Front	1 Front	1 Front

Table 9. External ports and connectors (continued)

	Tower	Small Form Factor	Micro
Serial port	Optional	Optional	2 Options: #1 - Serial port in option port, #2 Serial & PS/2 via fan out cable
Network Connector (10/100/1000 RJ-45)	1 Rear	1 Rear	1 Rear
PS/2	Optional	Optional	Optional
Video:			
DisplayPort 1.2	2 Rear (3rd optional video out: HDMI 2.0, DP, VGA, USB Type C (with DP Alt Mode))	2 Rear (3rd optional video out: HDMI 2.0, DP, VGA, USB Type C (with DP Alt Mode))	2 Rear (3rd optional video out: HDMI 2.0, DP, VGA, USB Type C (with DP Alt Mode))
Support for Dual 50 W Graphics	Yes	N/A	N/A
Support for Dual 25 W Graphics	N/A	Yes	N/A
Audio:			
Rear panel Mic-in/Line-in, Line-out	1 x Line-out	1 x Line-out	N/A
Universal Audio Jack	1 x UAJ	1 x UAJ	1 x UAJ and 1 x Line-out

Graphics and Video Controller

NOTE: Tower supports Full Height (FH) cards and Small Form Factor supports low profile (LP) cards.

Table 10. Graphics and Video Controller

	Tower	Small Form Factor	Micro
Intel UHD 630 Graphics [with 9th Generation Core i3/i5/i7 CPU-GPU combo]	Integrated on CPU	Integrated on CPU	Integrated on CPU
Intel UHD 610 Graphics [with 9th Generation Pentium CPU-GPU combo]	Integrated on CPU	Integrated on CPU	Integrated on CPU
Enhanced Graphic/ Video Options			
2 GB AMD Radeon R5 430	Optional	Optional	Not available
2 GB NVIDIA GeForce GT 730	Optional	Optional	Not available
4 GB AMD Radeon RX 550	Optional	Optional	Not available
2 GB Dual AMD Radeon R5 430	Optional	Optional	Not available
4 GB Dual AMD Radeon RX 550	Optional	Not available	Not available

Communications—Wireless

Table 11. Communications—Wireless

	Tower/Small Form Factor/Micro
Qualcomm QCA9377 Dual-band 1x1 802.11ac Wireless with MU-MIMO + Bluetooth 4.1	Yes
Qualcomm QCA61x4A Dual-band 2x2 802.11ac Wireless with MU-MIMO + Bluetooth 4.2	Yes

Table 11. Communications—Wireless (continued)

	Tower/Small Form Factor/Micro
Intel Wireless-AC 9560, Dual-band 2x2 802.11ac Wi-Fi with MU-MIMO + Bluetooth 5	Yes
Internal Wireless Antennas	Yes
External Wireless Connectors and Antenna	Yes
Support for 802.11n and 802.11ac wireless NIC	Yes via M.2
Energy-Efficient Ethernet capability" as specified in IEEE 802.3az-2010.	Yes

Input devices

Table 12. Input devices

	Tower/ Small Form Factor/ Micro
Dell Business Multimedia Keyboard KB522	Optional
Dell Multimedia Keyboard KB216	Optional
Dell Smartcard Keyboard KB813	Optional
Dell Wireless Mouse WM326	Optional
Dell Wireless Keyboard and Mouse KM636	Optional
Dell Premier Wireless Keyboard WK717	Optional
Dell Premier Wireless Keyboard and Mouse KM717	Optional
Dell Premier Wireless Mouse WM527	Optional
Dell Laser Scroll USB 6-Buttons Silver and Black Mouse	Optional
Dell Optical Mouse MS116	Optional
Dell Palm Rest for KB216 and KM636	Optional

Accessories

Table 13. Accessories

Accessories	Tower	Small Form Factor	Micro Form Factor
Cable Covers - chassis designed with hooks for removable and securable cover	Yes	Yes	Yes
Dust Filters includes a cleaning maintenance reminder in BIOS	Yes	Yes	Yes
Basic Stand	No	No	Vertical Stand
Dual Monitor Stand	No	Yes	Yes
Dual Monitor Arm	Yes	Yes	Yes
Single Monitor Arm	Yes	Yes	Yes
Slim Single Monitor Arm	Yes	Yes	Yes
Desktop AIO Stands includes custom cable cover, handle, VESA adapter bracket	No	Yes	Yes

Table 13. Accessories (continued)

Accessories	Tower	Small Form Factor	Micro Form Factor
Desktop Micro Mounts	No	No	Yes
Expansion Module	No	No	DVD RW
VESA Mounting	No	No	Yes

Environmental

Table 14. Environmental

	Tower/ Small Form Factor/ Micro
Recyclable packaging	X
MultiPack packaging	Optional, US only
Energy Efficient Power Supply	Optional Bronze and Platinum[1] available/Standard

NOTE: [1]Power Supplies not available in all countries.

Regulatory and environmental compliance

Product related conformity assessment and regulatory authorizations including Product Safety, Electromagnetic Compatibility (EMC), Ergonomics, and Communication Devices relevant to this product may be viewed at www.dell.com/regulatory_compliance. The Regulatory Datasheet for this product is located at http://www.dell.com/regulatory_compliance.

Details of Dell's environmental stewardship program to conserve product energy consumption, reduce or eliminate materials for disposal, prolong product life span and provide effective and convenient equipment recovery solutions may be viewed at www.dell.com/environment. Product related conformity assessment, regulatory authorizations, and information encompassing Environmental, Energy Consumption, Noise Emissions, Product Materials Information, Packaging, Batteries, and Recycling relevant to this product may be viewed by clicking the Design for Environment link on the webpage.

Table 15. Regulatory/Environmental Certifications

	Tower	SFF	Micro
Energy Star 7.0/7.1 Compliant (Windows & Ubuntu)	Yes	Yes	Yes
EPEAT 2018 Bronze Rated Configurations	Yes	Yes	Yes
NFPA 99 Leakage Current Spec (Dell ENG0011750)	Yes	Yes	Yes
TCO 8.0	Yes	Yes	Yes
BFR / PVC Free: (aka Halogen Free) : The system shall comply with the limits defined in Dell specification ENV0199 - BFR/CFR/PVC-Free Specification	No	No	Yes
California Energy Commission (CEC) MEPs - Internal PSU Requirements	Yes	Yes	No
Br/CL Reduction: Plastic parts above 25 grams shall not contain greater than 1000 ppm chlorine or greater than 1000 ppm bromine at the homogenous level. Following can be excluded: - Printed circuit boards, cable and wiring, fans, and electronic components Anticipated Required Criteria for EPEAT Revision Effective 1H 2018	Yes	Yes	Yes
Minimum 2% Post-Consumer Recycled (PCR) plastics as standard in product.	Yes	No	No

Table 15. Regulatory/Environmental Certifications (continued)

	Tower	SFF	Micro
Anticipated Required Criteria for EPEAT Revision Effective 1H 2018			
Higher level % Post-Consumer Recycled (PCR) plastics in product: * DT, Workstations, Thin Clients - 10% * Integrated Desktop Computers (AIO) 15% (Anticipated 1 Optional point in the EPEAT Revision for higher level PCR)	Yes	No	No

4

System setup

System setup enables you to manage your desktop hardware and specify BIOS level options. From the System setup, you can:

- Change the NVRAM settings after you add or remove hardware
- View the system hardware configuration
- Enable or disable integrated devices
- Set performance and power management thresholds
- Manage your computer security

Topics:

- BIOS overview
- Entering BIOS setup program
- Navigation keys
- One time boot menu
- System setup options
- Updating the BIOS
- System and setup password
- Clearing BIOS (System Setup) and System passwords

BIOS overview

The BIOS manages data flow between the computer's operating system and attached devices such as hard disk, video adapter, keyboard, mouse, and printer.

Entering BIOS setup program

1. Turn on your computer.
2. Press F2 immediately to enter the BIOS setup program.

   NOTE: If you wait too long and the operating system logo appears, continue to wait until you see the desktop. Then, turn off your computer and try again.

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.

Table 16. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.

Table 16. Navigation keys (continued)

Keys	Navigation
	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.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

NOTE: It is recommended to shutdown the computer if it is on.

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 (if available)

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

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

System setup options

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

General options

Table 17. General

Option	Description
System Information	Displays the following information: • System Information: Displays **BIOS Version, Service Tag, Asset Tag, Ownership Tag, Ownership Date, Manufacture Date,** and the **Express Service Code**. • Memory Information: Displays **Memory Installed, Memory Available, Memory Speed, Memory Channel Mode, Memory Technology, DIMM 1 Size,**, and **DIMM 2 Size**. • PCI Information: Displays Slot1_M.2, Slot2_M.2 • Processor Information: Displays **Processor Type, Core Count, Processor ID, Current Clock Speed, Minimum Clock Speed, Maximum Clock Speed, Processor L2 Cache, Processor L3 Cache, HT Capable,** and **64-Bit Technology.** • Device Information: Displays **SATA-0, , , SATA 4, M.2 PCIe SSD-0, LOM MAC Address, Video Controller, Audio Controller, Wi-Fi Device, and Bluetooth Device.**
Boot Sequence	Allows you to specify the order in which the computer attempts to find an operating system from the devices specified in this list.
Advanced Boot Options	Allows you to select the Enable Legacy Option ROMs option, when in UEFI boot mode. By default, this option is selected. • Enable Legacy Option ROMs—Default • Enable Attempt Legacy Boot

Table 17. General (continued)

Option	Description
UEFI Boot Path Security	This option controls whether or not the system will prompt the user to enter the Admin password when booting a UEFI boot path from the F12 Boot Menu.
Date/Time	Allows you to set the date and time settings. Changes to the system date and time take effect immediately.

.

System information

Table 18. System Configuration

Option	Description
Integrated NIC	Allows you to control the on-board LAN controller. The option 'Enable UEFI Network Stack' is not selected by default. The options are: ● Disabled ● Enabled ● Enabled w/PXE (default) **NOTE:** Depending on the computer and its installed devices, the items listed in this section may or may not appear.
SATA Operation	Allows you to configure the operating mode of the integrated hard drive controller. ● Disabled = The SATA controllers are hidden ● AHCI = SATA is configured for AHCI mode ● RAID ON = SATA is configured to support RAID mode (selected by default)
Drives	Allows you to enable or disable the various drives on-board: ● SATA-0 (enabled by default) ● SATA-4 ● M.2 PCIe SSD-0
Smart Reporting	This field controls whether hard drive errors for integrated drives are reported during system startup. The **Enable Smart Reporting option** is disabled by default.
USB Configuration	Allows you to enable or disable the integrated USB controller for: ● Enable USB Boot Support ● Enable Front USB Ports ● Enable Rear USB Ports All the options are enabled by default.
Front USB Configuration	Allows you to enable or disable the front USB ports. All the ports are enabled by default.
Rear USB Configuration	Allows you to enable or disable the back USB ports. All the ports are enabled by default.
USB PowerShare	This option allows you to charge the external devices, such as mobile phones, music player. This option is disabled by default.
Audio	Allows you to enable or disable the integrated audio controller. The option **Enable Audio** is selected by default. ● Enable Microphone ● Enable Internal Speaker Both the options are selected by default.
Dust Filter Maintenance	Allows you to enable or disable BIOS messages for maintaining the optional dust filter installed in your computer. BIOS will generate a pre-boot reminder to clean or replace the dust filter based on the interval set. The option **Disabled** is selected by default. ● Disabled ● 15 days

Table 18. System Configuration (continued)

Option	Description
	• 30 days • 60 days • 90 days • 120 days • 150 days • 180 days

Video screen options

Table 19. Video

Option	Description
Primary Display	Allows you to select the primary display when multiple controllers are available in the system. • Auto (default) • Intel HD Graphics **NOTE:** If you do not select Auto, the on-board graphics device will be present and enabled.

Security

Table 20. Security

Option	Description
Admin Password	Allows you to set, change, and delete the admin password.
System Password	Allows you to set, change, and delete the system password.
Internal HDD-0 Password	Allows you to set, change, and delete the computer's internal HDD.
Strong Password	This option lets you enable or disable strong passwords for the system.
Password Configuration	Allows you to control the minimum and maximum number of characters allowed for a administrative password and the system password. The range of characters is between 4 and 32.
Password Bypass	This option lets you bypass the System (Boot) Password and the internal HDD password prompts during a system restart. • Disabled — Always prompt for the system and internal HDD password when they are set. This option is disabled by default. • Reboot Bypass — Bypass the password prompts on Restarts (warm boots). **NOTE:** The system will always prompt for the system and internal HDD passwords when powered on from the off state (a cold boot). Also, the system will always prompt for passwords on any module bay HDDs that may be present.
Password Change	This option lets you determine whether changes to the System and Hard Disk passwords are permitted when an administrator password is set. **Allow Non-Admin Password Changes** - This option is enabled by default.
UEFI Capsule Firmware Updates	This option controls whether this system allows BIOS updates via UEFI capsule update packages. This option is selected by default. Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS)
TPM 2.0 Security	Allows you to control whether the Trusted Platform Module (TPM) is visible to the operating system. • TPM On (default)

Table 20. Security (continued)

Option	Description
	• Clear • PPI Bypass for Enable Commands • PPI Bypass for Disable Commands • PPI Bypass for Clear Commands • Attestation Enable (default) • Key Storage Enable (default) • SHA-256 (default) Choose any one option: • Disabled • Enabled (default)
Absolute	This field lets you to Enable, Disable or Permanently Disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute Software.
Chassis Intrusion	This field controls the chassis intrusion feature. Choose any one of the option: • Disabled (default) • Enabled • On-Silent
Admin Setup Lockout	Allows you to prevent users from entering Setup when Admin password is set. This option is not set by default.
Master Password Lockout	Allows you to disable master password support Hard Disk passwords need to be cleared before the settings can be changed. This option is not set by default.
SMM Security Mitigation	Allows you to enable or disable additional UEFI SMM Security Mitigation protections. This option is not set by default.

Secure boot options

Table 21. Secure Boot

Option	Description
Secure Boot Enable	Allows you to enable or disable Secure Boot feature • Secure Boot Enable This option is not selected by default.
Secure Boot Mode	Allows you to modify the behavior of Secure Boot to allow evaluation or enforcement of UEFI driver signatures. • Deployed Mode (default) • Audit Mode
Expert key Management	Allows you to manipulate the security key databases only if the system is in Custom Mode. The **Enable Custom Mode** option is disabled by default. The options are: • PK (default) • KEK • db • dbx If you enable the **Custom Mode**, the relevant options for **PK, KEK, db, and dbx** appear. The options are: • **Save to File**- Saves the key to a user-selected file • **Replace from File**- Replaces the current key with a key from a user-selected file • **Append from File**- Adds a key to the current database from a user-selected file • **Delete**- Deletes the selected key

Table 21. Secure Boot (continued)

Option	Description
	• **Reset All Keys**- Resets to default setting • **Delete All Key**s- Deletes all the keys **NOTE:** If you disable the Custom Mode, all the changes made will be erased and the keys will restore to default settings.

Intel Software Guard Extensions options

Table 22. 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** • **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 23. 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.

Table 23. Performance (continued)

Option	Description
	• **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 24. Power Management

Option	Description
AC Recovery	Determines how the system responds when AC power is re-applied after a power loss. You can set the AC Recovery to: • Power Off • Power On • Last Power State This option is Power Off by default.
Enable Intel Speed Shift Technology	Allows you to enable or disable Intel Speed Shift Technology support. The option **Enable Intel Speed Shift Technology** is set by default.
Auto On Time	Sets time to automatically turn on the computer. Time is kept in standard 12-hour format (hour:minutes:seconds). Change the startup time by typing the values in the time and AM/PM fields. **NOTE:** This feature does not work if you turn off your computer using the switch on a power strip or surge protector or if **Auto Power is set to disabled**.
Deep Sleep Control	Allows you to define the controls when Deep Sleep is enabled. • Disabled • Enabled in S5 only • Enabled in S4 and S5 This option is Enabled in S4 and S5 by default.
USB Wake Support	Allows you to enable the USB devices to wake the computer from standby mode. The option "Enable USB Wake Support" is selected by default
Wake on LAN/WWAN	This option allows the computer to power up from the off state when triggered by a special LAN signal. This feature only works when the computer is connected to AC power supply. • **Disabled** - Does not allows the system to power on by special LAN signals when it receives a wake-up signal from the LAN or wireless LAN. • **LAN** or **WLAN** - Allows the system to be powered on by special LAN or wireless LAN signals. • **LAN Only** - Allows the system to be powered on by special LAN signals. • **LAN with PXE Boot** - A wakeup packet sent to the system in either the S4 or S5 state, that will cause the system to wake-up and immediately boot to PXE. • **WLAN Only** - Allows the system to be powered on by special WLAN signals. This option is Disabled by default.
Block Sleep	Allows you to block entering to sleep (S3 state) in OS environment. This option is disabled by default.

Post behavior

Table 25. POST Behavior

Option	Description
Numlock LED	Allows you to enable or disable the Numlock feature when your computer starts. This option is enabled by default.
Keyboard Errors	Allows you to enable or disable the keyboard error reporting when the computer starts. The option **Enable Keyboard Error Detection** is enabled by default.
Fast Boot	This option can speed up the boot process by bypassing some compatibility steps: ● Minimal — The system boots quickly, unless the BIOS has been updated, memory changed, or the previous POST did not complete. ● Thorough — The system does not skip any steps in the boot process. ● Auto — This allows the operating system to control this setting (this works only when the operating system supports Simple Boot Flag). This option is set to **Thorough** by default.
Extend BIOS POST Time	This option creates an additional pre-boot delay. ● 0 seconds (default) ● 5 seconds ● 10 seconds
Full Screen Logo	This option will display full screen logo if your image match screen resolution. The option **Enable Full Screen Logo** is not set by default.
Warnings and Errors	This option causes the boot process to only pause when warning or errors are detected. Choose any one of the option: ● Prompt on Warnings and Errors ● Continue on Warnings ● Continue on Warnings and Errors

Manageability

Table 26. Manageability

Option	Description
USB provision	This option is not selected by default.
MEBx Hotkey	This option is selected by default.

Virtualization support

Table 27. 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.

Table 27. Virtualization Support (continued)

Option	Description
Trusted Execution	This option specifies whether a Measured Virtual Machine Monitor (MVMM) can utilize the additional hardware capabilities provided by Intel Trusted Execution Technology. • Trusted Execution This option is not set by default.

Wireless options

Table 28. Wireless

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

Maintenance

Table 29. 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.
SERR Messages	Controls the SERR message mechanism. This option is set by default. Some graphics cards require that the SERR message mechanism be disabled.
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.
First Power On Date	Allows you the set Ownership date. The option **Set Ownership Date** is not set by default.

System logs

Table 30. System Logs

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

Advanced configuration

Table 31. Advanced configuration

Option	Description
ASPM	Allows you to set the ASPM level. • Auto (default) - There is handshaking between the device and PCI Express hub to determine the best ASPM mode supported by the device • Disabled - ASPM power management is turned off at all time • L1 Only - ASPM power management is set to use L1

Updating the BIOS

Updating the BIOS in Windows

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

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.

3. Click **Drivers & Downloads**. Expand **Find drivers**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.

   For more information, see knowledge base article 000124211 at www.dell.com/support.

Updating the BIOS in Linux and Ubuntu

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

Updating the BIOS using the USB drive in Windows

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the

system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, see Knowledge Article: https://www.dell.com/support/article/sln153694

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, see the knowledge base article 000145519 at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.
   The **BIOS Update Utility** appears.
8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

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

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

BIOS Update

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

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

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

Updating from the One-Time boot menu

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

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

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

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

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

System and setup password

Table 32. System and setup password

Password type	Description
System password	Password that you must enter to log in 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 that is 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 F12 immediately after a power-on or reboot.

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

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 F12 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**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   NOTE: If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.
5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
   The computer restarts.

Clearing BIOS (System Setup) and System passwords

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

NOTE: For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

5

Software

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

- Downloading drivers

Downloading drivers

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

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

4. Click **Drivers and Downloads**.
5. Select the operating system installed on your desktop.
6. Scroll down the page and select the driver to install.
7. Click **Download File** to download the driver for your desktop.
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.

System device drivers

Verify if the system device drivers are already installed in the system.

Serial IO driver

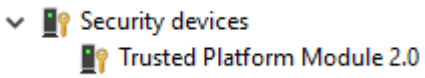
Verify if the drivers for Touchpad, IR camera, and keyboard and are installed.



Figure 1. Serial IO driver

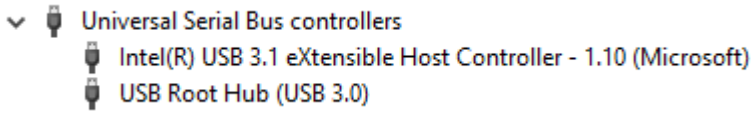
Security drivers

Verify if the security drivers are already installed in the system.



USB drivers

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

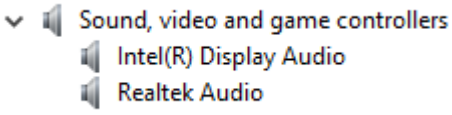


Network adapter drivers

Verify if the Network adapter drivers are already installed in the system.

Realtek Audio

Verify if audio drivers are already installed in the computer.



Storage controller

Verify if the storage control drivers are already installed in the system.

6

Getting help

Topics:

- Contacting Dell

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.