HP ZGX Fury G1n AI Station User Guide

SUMMARY

This guide provides basic information for using and upgrading this product, including topics such as components, features, and HP resources.

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Product notice

This guide describes features that are common to most products. Some features may not be available on your computer.

To access the latest user guides, go to http://www.hp.com/support, and follow the instructions to find your product. Then select **Setup & User Guides**.

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By installing, copying, downloading, or otherwise using any software product preinstalled on this computer, you agree to be bound by the terms of the HP End User License Agreement (EULA). If you do not accept these license terms, your sole remedy is to return the entire unused product (hardware and software) within 14 days for a full refund subject to the refund policy of your seller.

For any further information or to request a full refund of the price of the computer, please contact your seller.

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1 About this guide

This guide provides basic information for using this product.

Your computer supports Ubuntu 24.04 LTS with NVIDIA® AI Developer Tools.

⚠ **WARNING!** Indicates a hazardous situation that, if not avoided, **could** result in serious injury or death.

⚠ **CAUTION:** Indicates a hazardous situation that, if not avoided, **could** result in minor or moderate injury.

IMPORTANT: Indicates information considered important but not hazard-related (for example, messages related to property damage). Warns the user that failure to follow a procedure exactly as described could result in loss of data or in damage to hardware or software. Also contains essential information to explain a concept or to complete a task.

NOTE: Contains additional information to emphasize or supplement important points of the main text.

TIP: Provides helpful hints for completing a task.

2 Locating HP resources

Read this chapter to learn about where to find additional HP resources.

Product information

Use this table to locate resources that provide product details, how-to information, and more.

Table 2-1 Where to find product information

Topic	Location
HP Z Toolkit (ZTK)	To find HP Z Toolkit (ZTK) specifications and a quick start guide to install the HP Z Toolkit (ZTK), go to http://www.hp.com/develop-ai.
HP Z Runtime (ZRT)	To find specifications and a quick start guide on the preinstalled HP Z Runtime CLI solution to serve AI models locally, go to http://www.hp.com/deploy-ai.
Technical specifications	To find the QuickSpecs for your product, go to http://www.hp.com/go/quickspecs, and then select the link. Select **Search all QuickSpecs**, type your model name in the search box, and then select **Go**.
Regulatory, Safety, and Environmental Notices	See the *Regulatory, Safety, and Environmental Notices* for product regulatory information. You can also see the Agency/Environmental label. To access this guide, go to http://www.hp.com/support. Follow the instructions to find your product, and then select **Setup & User Guides**. **NOTE:** The product description/product type/product category for Certifications may be described as any of the following: AI Station/Small Scale Server/Workstation.
Serial number, Agency/Environmental, and operating system labels	The serial number, Agency/Environmental, and operating system labels might be on the bottom of the computer, on the rear panel of the computer, or under the service door.
Maintenance and service information	To access this guide, go to http://www.hp.com/support. Follow the instructions to find your product, and then select **Setup & User Guides**.

Support

Use this table to locate resources that provide support and warranty information.

Table 2-2 Where to find support information

Topic	Location
Product support	For HP support, go to http://www.hp.com/support. Here you can access the following types of support: • Online chat with an HP technician • Support telephone numbers • HP service center locations

Table 2-2 Where to find support information (continued)

Topic	Location
Warranty information	To access this document, go to http://www.hp.com/go/orderdocuments. **IMPORTANT:** You must be connected to the internet to access the latest version of the warranty. You can find your HP Limited Warranty located with the user guide on your product. In some countries or regions, HP might provide a printed warranty in the box. For countries or regions where the warranty is not provided in printed format, you can request a copy from http://www.hp.com/go/orderdocuments. For products purchased in Asia Pacific, you can write to HP at POD, PO Box 161, Kitchener Road Post Office, Singapore 912006. Include your name, phone number, address, and product name.

Product documentation

Use this table to locate resources that provide product documentation.

Table 2-3 Where to find product documentation

Topic	Location
HP Z Toolkit (ZTK) documentation	To find HP Z Toolkit (ZTK) specifications and a quick start guide to install and use, go to http://www.hp.com/develop-ai.
Full Local Develop to Deploy Lifecycle	To find comprehensive information about HP Dev-to-Deploy software tools for fine-tuning and secure local hosting, go to http://www.hp.com/dev-to-deploy.
HP Z Runtime (ZRT)	To find specifications and a quick start guide on the preinstalled HP Z Runtime CLI solution to serve AI models locally, go to http://www.hp.com/deploy-ai.
NVIDIA Playbooks	To find step-by-step guides and code examples that show you how to build, fine-tune, and run artificial intelligence models using NVIDIA hardware and software tools, go to https://build.nvidia.com/station.
DGX Station Development Guide	The ZGX Fury uses the NVIDIA GB300 superchip and NVIDIA refers to this as the DGX Station. To find the DGX Station Development Guide, go to https://docs.nvidia.com/dgx/dgx-station-development-guide/index.html.
HP user documentation, white papers, and third-party documentation	For the latest online documentation, go to http://www.hp.com/support and follow the instructions to find your product. Then select **Setup & User Guides**.
Product notifications	Subscriber's Choice is an HP program that allows you to sign up to receive driver and software alerts, proactive change notifications (PCNs), the HP newsletter, customer advisories, and more. Sign up at https://h41369.www4.hp.com/.
Technical specifications	The Product Bulletin application contains QuickSpecs for HP computers. QuickSpecs include information about the operating system, power supply, memory, processor, and many other system components. To access QuickSpecs, go to http://www.hp.com/go/quickspecs/.
Bulletins and Notices	To find advisories, bulletins, and notices: 1. Go to http://www.hp.com/support. 2. Follow the instructions to find your product. 3. Select **Advisories** or **Bulletins and Notices**.

Product updates

Use this table to locate resources that provide product updates.

Table 2-4 Where to find product updates

Topic	Location
HP Z Toolkit (ZTK) Software Updates	The HP Z Toolkit (ZTK) Visual Studio Code extension is available through the Visual Studio Code Marketplace, HP Developer Portal, and Github. For information about the latest HP AI software, go to http://www.hp.com/develop-ai.
HP Z Runtime (ZRT)	ZRT is preinstalled or can be installed through the HP Z Toolkit or Canonical Snapcraft store, go to https://snapcraft.io/zrt. To find specifications and a quick start guide on the preinstalled HP Z Runtime CLI solution to serve AI models locally, go to http://www.hp.com/deploy-ai.
BIOS and BMC firmware updates	Use the fwupd service on the host operating system to obtain and install available BIOS and BMC firmware updates delivered through the Linux Vendor Firmware Service (LVFS).

3 Computer features

This chapter provides you with an overview of your computer's features.

⚠ **CAUTION:** The computer exceeds 30 kg (66 lb). A minimum of two persons and appropriate lifting equipment are required to unpack and install the system. Failure to observe safe lifting practices might result in personal injury or equipment damage.



Front panel components

Use this illustration and table to identify the front panel components.

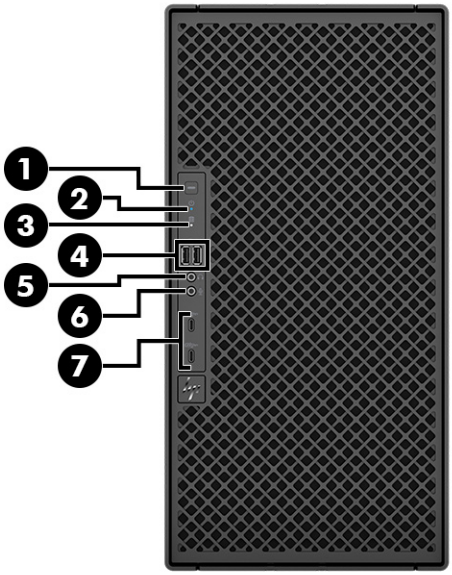


Table 3-1 Identifying the front panel components

		Front panel components			
(1)		Power button	(5)		Headphone jack
(2)		Power light	(6)		Microphone jack
(3)		Storage device activity light	(7)	10Gbps	USB Type-C® 10 Gbps ports (2) **NOTE:** Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device such as a smartphone.
(4)	5Gbps	USB 5 Gbps ports (2)			

Rear panel components

Use this illustration and table to identify the rear panel components.

NOTE: In countries that use 100-127 V, you will need to use a dedicated 20 A circuit/plug to run the system. Refer to Site power requirements on page 10 for more information.

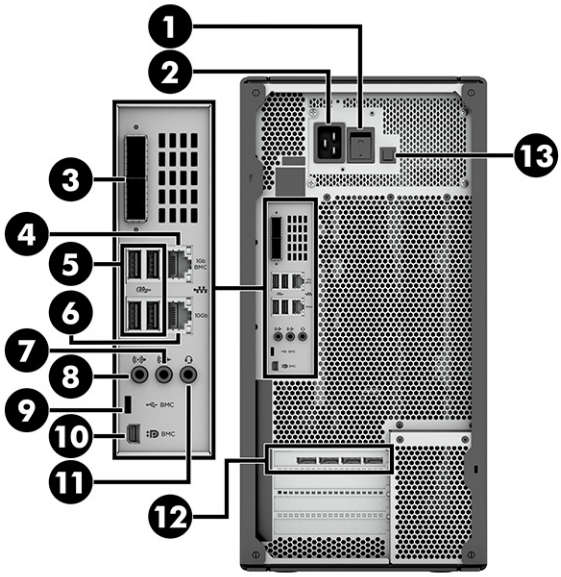


Table 3-2 Identifying the rear panel components

		Rear panel components			
(1)		Power switch **NOTE:** Initialization might take up to 5 minutes. The BMC output will be blank and the front light will be off while the BMC initializes. Once completed, the front light will flash while the BIOS initializes.	(8)		Audio-out jack
(2)		Power connector	(9)	BMC	Micro USB port (BMC system management)
(3)		QSFP ports (2) **NOTE:** ConnectX-8 bandwidth is 400 Gb/s per port (800 Gb/s combined).	(10)	BMC	Mini DisplayPort™ (BMC system management) **NOTE:** The BMC maximum resolution is 1024×768 at 60 Hz.
(4)		RJ-45 (network) 1 Gb jack (BMC system management)	(11)		Audio-out (headphone)/ Audio-in (microphone) combo jack
(5)	10Gbps	USB 10 Gbps ports (4)	(12)		DisplayPorts (4) (select products only)
(6)		RJ-45 (network) 10 Gb jack	(13)		Power supply hybrid mode switch For more information, see Using the power supply hybrid mode switch on page 10.
(7)		Audio-in jack			

Labels

The labels affixed to the computer provide information you might need when you troubleshoot system problems or travel internationally with the computer. Labels might be in paper form or imprinted on the product.

NOTE: Check the following locations for the labels described in this section: the bottom and top of the computer, the rear and side panels of the computer, or under the service door.

- Service label—Provides important information to identify your computer. When contacting support, you might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

  The service label also includes the BMC, user name, and password information needed for first-time log in.

  Your service label will resemble the example shown below.



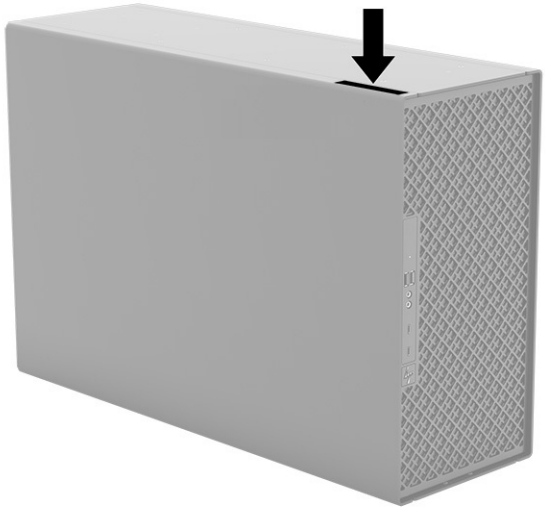
- Regulatory labels—Provide regulatory information about the computer. The Regulatory Agency label includes this symbol which indicates the operator must read the user manual completely before operating the equipment.

Serial number location

Each computer has a unique serial number and a product ID number that are located on the exterior of the computer. Keep these numbers available when contacting customer service for assistance.

Check the following locations for the serial number location: the bottom and top of the computer, the rear and side panels of the computer, or under the service door.

NOTE: Your serial number location will resemble the example shown below.



4 Setting up the computer

This chapter describes how to set up your computer.

Site power requirements

The HP ZGX Fury G1n AI Station is a powerful computer that requires additional planning when it comes to power source, power quality, and cooling.

Customers using the system at voltages between 100-127 V need to use a dedicated 20 A circuit to run the system. To make sure that you get the best possible performance from your computer:

- Use the correct power cords and outlets. See Power cords on page 11 for more information.
- Use an uninterruptible power supply (UPS). See Uninterruptible power supply (UPS) on page 12 for more information.
- Understand the power consumption and cooling considerations. See Power consumption and cooling considerations on page 12 for more information.
- Understand the power consumption limitations. See Power consumption limitations on page 12 for more information.

Using the power supply hybrid mode switch

The power supply hybrid mode switch is a fan control feature that keeps the power supply (PSU) fan completely turned off at low loads to ensure silent operation. The fan only spins up when the computer reaches specific temperature or load thresholds.

The computer operates in either hybrid mode or normal mode. The power supply hybrid mode switch is turned on by default.

- Hybrid mode: The fan turns on and off automatically depending on system demand. It is ideal for users who prioritize a quiet environment when the computer is idle.
- Normal mode: The fan spins continuously, dynamically increasing or decreasing speed based on the PSU's temperature and load. It is recommended if you frequently push your PC hard, have a high-ambient-temperature room, or want constant airflow exhausting out of the chassis.

When the power supply hybrid mode is on, the PSU operates in three distinct stages based on internal heat and electrical draw:

- Fanless Mode: At low loads such as browsing the web or at idle, the fan remains completely stopped, producing zero noise.
- Silent Mode: As the load increases and the PSU warms up, the fan turns on and rotates at a very low, quiet RPM.
- Cooling Mode: During heavy tasks, the fan speeds up to ensure maximum cooling and component safety.

Power cords

Consult with a qualified electrician to make sure that your site has appropriate power. This includes circuits and outlets.

For the best possible performance from your system, HP recommends the following:

- For customers using the system at voltages between 100-127 V (except Taiwan), use the table and illustrations below to determine the correct power cord and wall outlet needed for computer operation.

Table 4-1 Site power requirements

Power plug and wall outlet	Description
	This outlet is required for the computer. Customers need to confirm that they have the required infrastructure in place.
	This is the plug style on the power cord for the computer. Customers need to confirm that they have the required infrastructure in place.

⚠ **WARNING!** For customers using the system at voltages between 100-127 V (except Taiwan): A standard 10 A or 15 A power cord with a 10 A or 15 A plug style is **not** compatible with the system.

- For most customers in 200–240 V countries, the wall connector does not change. However, due to country regulations, the power cord for Australia and New Zealand requires a 15 A/250 V wall outlet. Refer to the table below to determine the correct outlet.

Table 4-2 Australia and New Zealand site power requirements

Wall outlet	Description
	For a Type-I 15 A/250 V outlet, the GND pin is larger on the 15 A plug. This means that the 15 A plug will not fit into the standard 10 A Australia/New Zealand outlet.

- For Taiwan customers using the system at 110 V, use the table and illustrations below to determine the correct power cord and wall outlet needed for computer operation.

Table 4-3 Taiwan site power requirements

Power plug and wall outlet	Description
	This type of outlet is required for the computer. Customers need to confirm that they have the required infrastructure in place.
	This is the plug style on the power cord for the computer. Customers need to confirm that they have the required infrastructure in place.

Uninterruptible power supply (UPS)

Use a UPS for fully loaded configurations that operate in a poor power grid area. The UPS must be rated at least 2kVA. A UPS is necessary because without line conditioning to guarantee the minimum input voltage, the maximum output power is limited.

HP recommends an online continuous UPS that provides a layer of insulation from quality problems. This type of supply also allows control of output voltage and frequency regardless of input voltage and frequency. To reach the maximum 1600 W of output power, you must maintain 115 V, ideally.

⚠ **CAUTION:** Check with your power provider to see if your facility can reliably maintain greater than 90 V power. If 90 V cannot be guaranteed to your system, the input voltage source might blow the fuse in the power supply or trip the breaker. For reliable system operation under heavy loading, use a UPS because it provides reliable voltage levels.

Power consumption and cooling considerations

The system might require more power than the typical office environment can supply.

- A fully loaded configuration might draw up to the system's maximum current rating of 15 A at the 100-127 V operating voltage range, leaving no power for other accessories.
- An office air conditioning system must accommodate the extra heat generated by a fully loaded system configuration.
- Some environments might have power quality problems that prevent the reliable use of a fully loaded system configuration. Possible problems include power failure, voltage sag, voltage surge, voltage spike, brownout, line noise, frequency variation, and switching transient and harmonic distortion.
- If your computer is powered from a >200 V source and you meet the HP configuration guidelines, you do not need an uninterruptible power supply (UPS) to achieve maximum power output if the power is stable.

To ensure proper ventilation and cooling for your computer, observe the following guidelines:

- Keep your computer in an area where the airflow is not obstructed.
- Keep the computer off surfaces where dust can gather.
- Remove dust on the bottom of the front panel (vent area) and the rear fans with a small vacuum, compressed air, or dust rag.
- In all supported configurations except rack mounted, provide at least 15.24 cm (6 in) of clearance on every side of the computer except the surface placed on the floor.
- When the computer is rack mounted, keep the front and back of the computer, and the space between the computer and the upper tray free of obstructions.

Power consumption limitations

The system's power supply is capable of multiple output power wattages depending on the input voltage.

It is not recommended to operate in an environment that drops below 90 V for any reason (for example, brownout or line sag). The AC brownout voltage detection circuit for the power supply might be triggered and shut down the PSU unexpectedly.

Table 4-4 Input voltage and maximum output power summary for HP ZGX Fury G1n AI Station

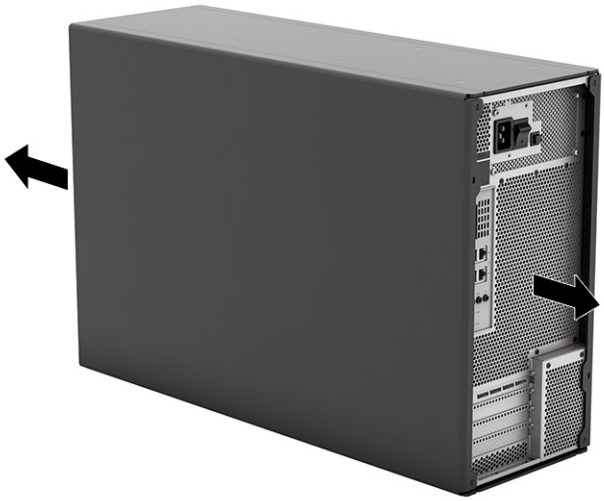
	Maximum power output			
Input voltage	< 90 V	> 90 V	> 104 V	> 180 V
1600 W PSU	Not recommended	1300 W	1600 W	1600 W

Ensuring proper ventilation

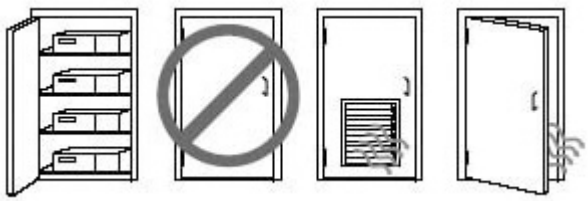
Proper ventilation for the system is important for computer operation. Follow these guidelines.

- Operate the computer on a sturdy and level surface.
- In all supported configurations, provide at least 15.24 cm (6 in) of clearance in the front and rear of the computer.
- When the system is rack mounted, keep the front of the unit, the back of the unit, and the space between the unit and the upper tray free of obstructions.

NOTE: Your computer might look slightly different from the illustration in this section.



- Be sure that the ambient air temperature is within specified limits. To locate specifications for your computer, see Product information on page 2.
- For cabinet installation, ensure adequate cabinet ventilation and be sure that the ambient temperature within the cabinet does not exceed specified limits.



- Do not restrict the incoming or outgoing airflow of the computer by blocking any vents or air intakes.

Adding monitors

This section describes how to add monitors to your computer.

Planning for additional monitors

Read this section to learn what you need to know before adding monitors to your computer.

Your computer might support up to four simultaneous-display monitors. See Connecting and configuring monitors on page 14 for more information.

Use this process to plan for adding more monitors:

- Assess your monitor needs:
  - Determine how many monitors you require.
  - Determine the kind of graphics performance that you want.

TIP: Some adapters for older hardware might cost more than others. You might want to compare the cost of acquiring adapters with the cost of getting a newer monitor that does not need adapters.

NOTE: If the computer has an add-in graphics card, the OS output is displayed through the add-in card and not through the BMC Mini DisplayPort.

NOTE: Your system will include an extender bracket required when using the HP AMO NVIDIA RTX PRO 6000 Blackwell Max-Q 300W Graphics Card. For installation instructions, refer to the *ZGX Fury G1n Maintenance and Service Guide*.

NOTE: You might need to acquire adapters to match the graphics output to the monitor connector.

Identifying monitor connection requirements

Be sure that you meet this requirement before connecting monitors to your computer.

MultiStream Transport (MST) is a method used to connect multiple monitors to a single USB Type-C connector.

NOTE: You must use MST-capable displays or an MST-capable hub to connect displays in an MST configuration. See the monitor documentation for additional details.

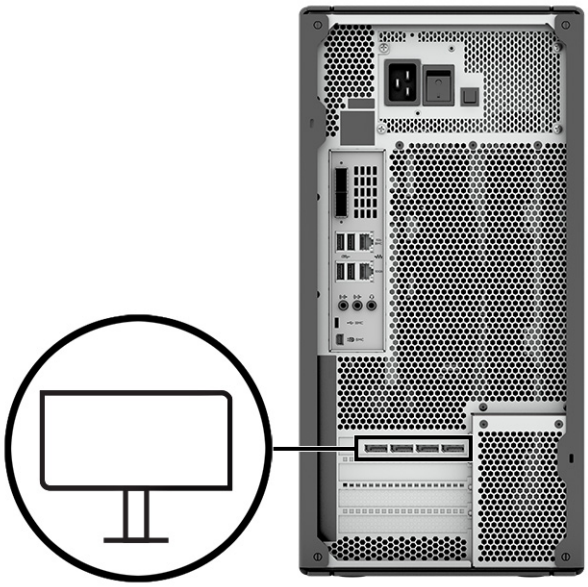
Connecting and configuring monitors

Read this section to learn how to connect and configure monitors.

1. Connect the monitor cable adapters (if required) to the computer, and then connect the appropriate monitor cables to the adapters.

NOTE: When connecting a monitor to the system, make sure that you use the correct display output. Your computer might have both a BMC mDP (mini DisplayPort) connector and optional dGPU

(discrete graphics card). These outputs have different graphics hardware and might provide different display capabilities.



2. Connect the other end of the monitor cable to the monitor.
3. Connect one end of the monitor power cord to the monitor and the other end to an AC outlet.

Mounting the computer in a rack

Your computer can be mounted in a standard 19-inch EIA-310 rack using the HP Rack Rail Kit.

The kit includes the following:

- Inner slide rails that attach to the computer side panels (2)
- Outer rail assemblies that mount to the rack (2)
- 20 Phillips rail bracket screws
- 2 Phillips rail locking screws
- 4 Phillips M6 rack upright screws with washers
- 2 M6 screws
- Optional HP Cable Management arm for rear cable routing

⚠ **WARNING!** Make sure that the rack is anchored and stabilized before installing or removing the computer. An unanchored, top-heavy rack presents a stability hazard, and the rack might tip over causing serious personal injury. Before extending the rack to the installation position, read the installation instructions. Do not put any load on the slide-rail mounted equipment in the installation position. Do not leave the slide-rail mounted equipment in the installation position. Always plan the rack installation so

that the heaviest item is on the bottom of the rack. Install the heaviest item first, then continue to populate the rack from the bottom to the top, from the heaviest to the lightest item.

⚠ **CAUTION:** The computer exceeds 30 kg (66 lb). A minimum of two persons and appropriate lifting equipment are required to install the system in a rack. Failure to observe safe lifting practices might result in personal injury or equipment damage.

IMPORTANT: Both side panels must be fully installed before mounting the computer in the rack. The side panels provide the structural attachment points for the inner rail brackets. Do not rack-mount the computer with the side panels removed.

Follow these steps to mount your computer in a rack:

- Prepare for disassembly. For more information, see Preparation for disassembly on page 16.
- Install the rack rails. For more information, see {Xref Error! Target does not exist.}.
- Attach the inner rail brackets to the computer. For more information, see {Xref Error! Target does not exist.}.
- Mount the computer in the rack. For more information, see {Xref Error! Target does not exist.}.

Preparation for disassembly

Use this information to properly prepare to disassemble your computer to mount in a rack.

1. Turn off the computer. If you are unsure whether the computer is off or in hibernation, turn the computer on, and then shut it down through the operating system.

IMPORTANT: Turn off the computer before disconnecting the cables.

Regardless of the power state, voltage is always present on the system board as long as the system is plugged into an active AC outlet. In some systems, the cooling fan is on even when the computer is in Standby or Suspend modes. Always disconnect the power cord before servicing a unit.

2. Disconnect the power from the computer by unplugging the power cord from the computer.
3. Disconnect all external devices from the computer.

⚠ **CAUTION:** Beware of sharp edges inside the chassis.

NOTE: During disassembly, label each cable as you remove it, and note its position and routing. Keep all screws with the removed components.

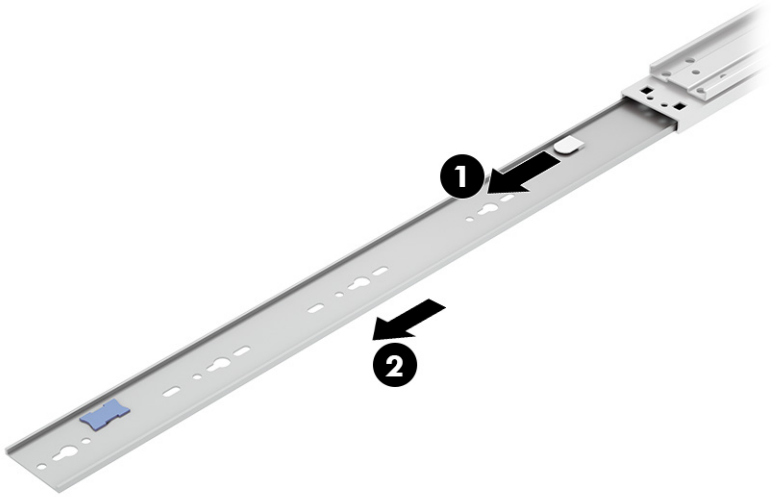
Installing the rack rails

Use these procedures to install the rack rails.

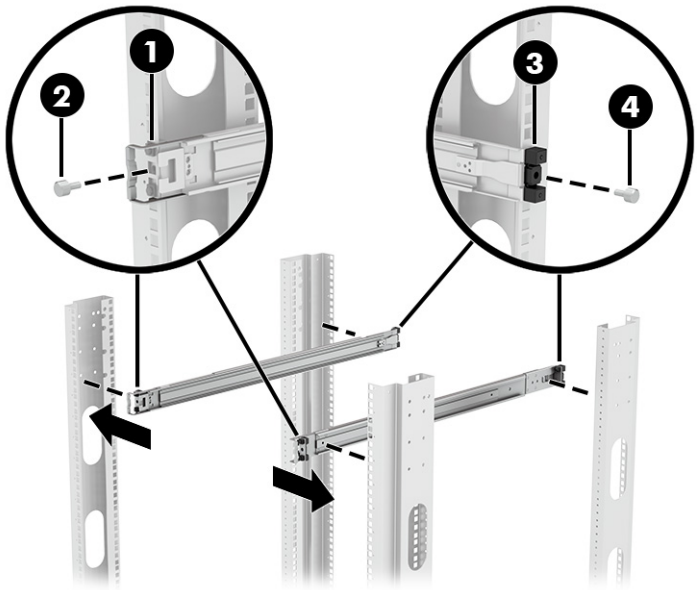
NOTE: The rail kit supports rack depths of 600 mm to 900 mm. Verify the rack depth before beginning. Refer to the rail kit installation sheet included with the kit for rail-depth adjustment details specific to your rack model.

1. Determine the rack unit (U) position for the system. Your computer occupies 5U. Mark the target U positions on both front and rear uprights.

2. Remove the inner rails by pulling and holding the latch open **(1)**, and then pulling out the inner rails **(2)**. Set the inner rails aside for later.



3. Extend the outer rail assemblies to match the rack depth.
4. Attach the front end of the left outer rail to the left front upright **(1)**. Insert the rail mounting tabs into the cage nut positions and secure with the supplied M6 screws **(2)**. Torque to 2.0 N·m. Do not fully tighten until both ends are attached.
5. Attach the rear end of the left outer rail to the left rear upright **(3)**. Insert the rail tabs and secure with the supplied M6 screws **(4)**. Make sure that the rail is level, and then torque both front and rear screws to 2.0 N·m.



6. Repeat steps 4 and 5 for the right outer rail.

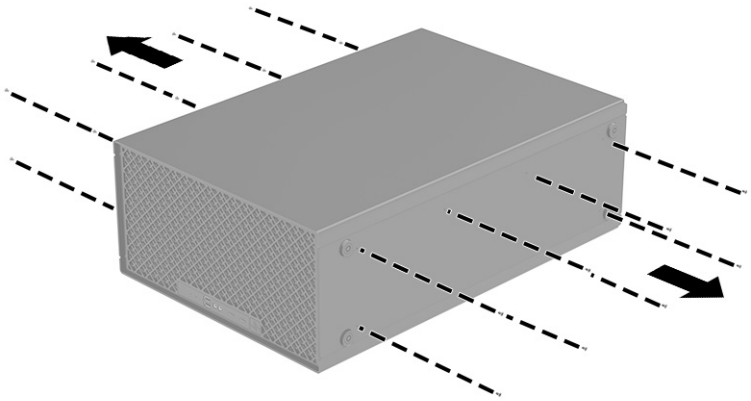
7. Make sure that both rails are level with each other across the rack opening. Use a spirit level if available. If the rails are not level, the computer will not insert correctly.
8. Extend out the rails until they lock.
9. Make sure that the gray panels within the rails are all the way to the outer edge.

Attaching the inner rail brackets to the computer

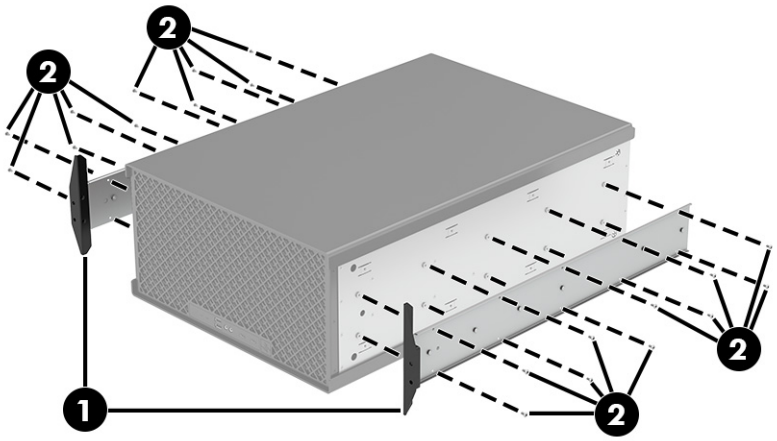
Use these procedures to attach the inner rail brackets.

NOTE: Perform these procedures with the computer on a work surface, before lifting into the rack. Make sure that both side panels are installed.

1. Place the computer on a stable work surface with the side panels installed.
2. Remove the eight black Phillips head screws from both the top and bottom panels, and then remove the panels from the computer.

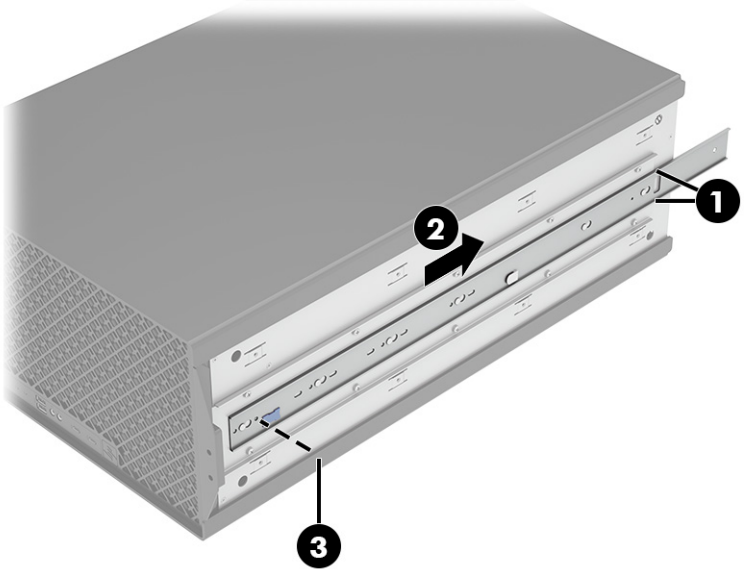


3. Attach the rail mounting brackets **(1)** to the top and bottom of the computer with the 10 Phillips head screws **(2)**.



4. Align the left inner rail bracket with the mounting points on the left side panel **(1)**. The bracket slides onto the panel rail channel from the front of the computer.

5. Push the inner rail bracket toward the rear until it is fully seated **(2)**. Secure the rails with the supplied Phillips screw **(3)**. Torque to 1.5 N·m.



6. Repeat steps 1 through 5 for the right inner rail bracket on the right-side panel.

7. Make sure that both inner rail brackets are fully seated and secured. The brackets should not shift or flex when moderate hand pressure is applied.

Mounting the computer in the rack

Use these procedures to mount the computer in the rack.

⚠ **CAUTION:** Two people are required to mount the computer in the rack. One person guides the computer into the rails while the other person supports the weight. Do not allow the computer to drop onto the rails.

1. With two people, lift the computer to the rack opening. Align the inner rail brackets with the open end of the outer rail assemblies.

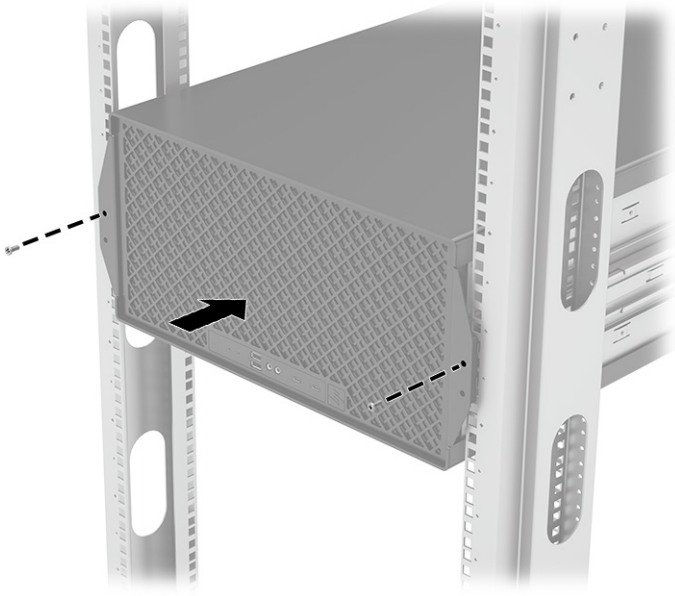
2. Push the computer into the rack, guiding the inner rail brackets into the outer rail channels. Apply smooth, even pressure and do not force if you feel resistance.

3. Continue pushing until the computer front panel is flush with the rack front uprights and the rail locking tabs click into place.

4. When the computer is fully extended, pull the blue latch **(1)** to release it from the locked position, and then move the computer back into the rack **(2)**.



5. Secure the computer to the rack using the two M6 screws at the front panel ears. Make sure that the computer is fully seated and does not move forward when the locking tabs are engaged.



6. If you have the optional Cable Management Arm, attach it per the CMA installation sheet included with the accessory kit. Route all rear cables through the CMA before turning on the computer.

7. Connect all power cords and data cables. Turn on the computer and make sure that it is operating normally.

NOTE: To remove the computer from the rack, reverse these procedures. Press the inner rail release tabs on both sides simultaneously and pull the computer forward out of the outer rails before lifting free.

Product recycling

HP encourages customers to recycle used electronic hardware, HP original print cartridges, and rechargeable batteries.

For information about recycling HP components or products, go to http://www.hp.com/go/recycle.

5 Getting started

Your computer is designed for users to build and run AI applications. You can set up your computer as a standalone device or set it up on a network to access remotely or to access remotely on a network.

⚠ **WARNING!** To reduce the risk of electric shock:

- Plug the power cord into an AC outlet that is easily accessible at all times.
- The power cord has a 3-pin attachment plug; plug the cord into a grounded (earthed) 3-pin outlet.

First-time setup and power-on

The computer includes a Board Management Controller (BMC) for out-of-band system management. Each computer has unique BMC credentials printed on the service label.

Follow these steps to set up your computer for the first time.

1. Locate the service label on the outside of the computer and identify the BMC MAC ID, BMC User, and BMC PW fields. Only use the credentials printed on the computer that you are configuring. Do not use credentials from another computer. See Labels on page 8 for service label information.
2. Connect an Ethernet cable from a network that provides DHCP service to the dedicated BMC management RJ-45 port on the rear of the computer. Do not connect the BMC management cable to the host 10 Gb Ethernet port.
3. If you plan to determine the BMC IP address through BIOS Setup, connect a keyboard and a monitor before turning on the computer. Connect the monitor to the BMC Mini DisplayPort.
4. Connect power to the computer, and then turn on the rear power supply switch. The BMC begins initializing and uses DHCP to obtain an IP address. The power light blinks when the BIOS is initializing and turns solid when the system enters the OS.

   IMPORTANT: Initialization might take up to **5 minutes**. The BMC Video output will be blank and the front power light will be off while the BMC initializes. Once completed, the front power light will flash while the BIOS initializes. The power light will remain solid during reboots initiated from the operating system.

5. Determine the BMC IP address. During startup, press esc or delete to enter BIOS Setup, open **Server Management**, and then view the BMC network configuration. Alternatively, after the host operating system has started, use `ipmitool lan print` from the host operating system to display the current BMC network configuration.
6. From a computer on the same management network, open a web browser and go to https://<BMC-IP-address>.
7. Sign in using the BMC User and BMC PW information printed on the service label. See Labels on page 8 for service label information.
8. HP recommends changing the BMC password after the first successful login. Use the BMC user-management controls to select a password that meets your organization's security requirements.

Configuring the Board Management Controller

The BMC provides out-of-band management independently of the host operating system.

Supported management functions include host power control, system health and sensor monitoring, event-log access, firmware management, remote KVM, and serial-over-LAN access. BIOS Setup can be displayed and controlled during host POST through the local BMC Mini DisplayPort or remote KVM.

The BMC includes a Mini DisplayPort interface to connect to a monitor to view the BMC console.

NOTE: If the computer has an add-in graphics card, the OS output is displayed through the add-in card and not through the BMC Mini DisplayPort.

Configuring the BMC with a keyboard and monitor

If you don't know the IP address of your BMC interface or don't have a network connection, you can use a keyboard and monitor.

Attach a monitor and keyboard to the BMC Mini DisplayPort server. You can determine the BMC settings and information through the system BIOS.

1. During startup, press the esc key to enter the BIOS Setup.

IMPORTANT: Initialization might take up to **5 minutes**. The BMC Video output will be blank and the front power light will be off while the BMC initializes. Once completed, the front power light will flash while the BIOS initializes. The power light will remain solid during reboots initiated from the operating system.

2. Use the arrow keys to open **Server Management** and view the **BMC network configuration**.

Configuring a static IP

To configure a static BMC IP address, follow these steps in the BMC Network Configuration menu.

NOTE: The BMC uses DHCP by default. These steps are not required when using a DHCP.

1. Select **Configuration Address source**.
2. Select **[Static on next reset]**.

You can now change the network and router information to configure your BMC into your infrastructure.

Configuring the BMC with ipmitool

From the host, you can view the current IP address configuration with ipmitool and configure a static IP address.

To configure a static IP address with ipmitool, follow these steps:

1. Type `ipmitool lan set 1 ipsrc static` to set the IP address configuration source to static.
2. Type `ipmitool lan set 1 ipaddr <address>` to configure the static IP address.
3. Type `ipmitool lan set 1 netmask <subnet mask>` to configure the subnet mask.
4. Type `ipmitool lan set 1 defgw ipaddr <default gateway IP address>` to set the default gateway.

Accessing the BMC through HTTPS

If you know the IP address assigned to the BMC, open a web browser and navigate to the IP address. If you don't know the IP address, you can view the IP address in the BIOS Setup under Server Management or use ipmitool from the host operating system.

For example, if the BMC IP address is 192.168.1.100, go to https://192.168.1.100.

NOTE: The BMC requires `https` and doesn't redirect from `http`.

The login screen prompts a user name and password. The first time you log in, use the default BMC user name and password located on the service label on the outside of the computer. The user name and password are unique for each computer.

NOTE: To avoid unauthorized access, make sure that you change all default passwords and credentials associated with your account after the first successful log in. Make sure that you use a secured management network.

Configuring the HP Z Toolkit (ZTK)

You can get, configure, and set up the HP Z Toolkit (ZTK) on a network device through the Dashboard UI or directly from Visual Studio Code.

The HP Z Toolkit (ZTK) provides the following benefits:

- VS Code extension works with your Z workstation devices
- Auto discover Z workstation devices
- Pair QSFP connected ZGX devices with ConnectX
- Works on any network device with VS Code regardless of the operating system (OS)
- Node discovery makes it easy to find, create, and manage a list of devices
- Remembers device connections to autossh into GPU and reduce duplicate work

For additional information about configuring the ZGX software, go to http://www.hp.com/develop-ai.

Installing the HP Z Toolkit (ZTK) through the dashboard

Follow these steps to install the HP Z Toolkit (ZTK) through the dashboard.

1. From the Linux home screen, open the **Dashboard UI**.
2. On the dashboard, select the **HP** link on the top-right corner.

   The **HP Z Toolkit** page opens.
3. Follow the on-screen instructions to install the **HP Z Toolkit Visual Studio Code Extension** on your network device.

Configuring the HP Z Toolkit (ZTK) through the Visual Studio Code

Follow these steps to set up your HP Z Toolkit (ZTK) through the Visual Studio Code.

1. Open Visual Studio Code on the network device.

2. Select the **Extensions** icon on the Activity Bar and search for `zgx`.
3. Install the **HP Z Toolkit** extension and open it through the Activity Bar.
4. Follow the on-screen instructions from the extension to add and connect to your computer.

Using the HP Z Runtime software

HP Z Runtime software is preinstalled on your computer. With a few simple commands, Z Runtime (ZRT) helps developers pull, serve, and use secure local AI models in minutes on HP ZGX Fury.

Go to http://www.hp.com/deploy-ai for more information.

1. Open a terminal through KVM or SSH to access HP Z Runtime.
2. Verify HP Z Runtime is available. Type `zrt version`.
3. View the list of commands. Type `zrt --help`.
4. Initialize the vLLM environment. Type `zrt setup`.
5. Serve the model. Type `zrt serve <model>`.



NOTE: This command will also pull the model if it is not local.

6. Test the model directly from the terminal. Type `zrt chat <model>`.
7. Check model status, metrics, and logs. Type the following:
   - `zrt status`
   - `zrt metrics display`
   - `zrt logs`

6 Maintenance, diagnostics, and minor troubleshooting

This section provides information about maintenance, diagnostics, and minor troubleshooting.

If you encounter issues

To diagnose and resolve issues, HP recommends a sequential troubleshooting approach.

1. Visual inspection
2. Basic troubleshooting
3. HP support. For HP support, go to http://www.hp.com/support.

These troubleshooting strategies are explained in the following sections.

Visual inspection

If you encounter a problem with the computer, monitor, or software, the following general suggestions might help you isolate and focus on the problem before taking further action.

At startup

This section outlines what to check if your computer does not start.

- Verify that the computer is plugged into a functional AC outlet.
- Remove all USB flash drives before starting the computer.
- Verify that the computer is on.
- If you have installed an operating system other than the factory-installed operating system, confirm that it is supported on your system by going to http://www.hp.com/go/quickspecs.
- Verify that the monitor is plugged into a functional AC outlet and that the monitor power light is on.
- If the monitor is dim, turn up the brightness and contrast controls.
- Verify that the BMC initialization is correct.
- Verify that you are using a dedicated BMC RJ-45 port.
- Verify that the DHCP address discovery process was successful.
- Verify that you are using the correct service label credentials.
- Verify the current host power state.

During operation

This section outlines various items to check if your computer has problems while you are using it.

- Press and hold any key. If the system beeps, your keyboard is operating correctly.
- Check all cables for loose or incorrect connections.
- Wake the computer by pressing the power button or any key on the keyboard. If the system remains in standby, shut down the system by pressing and holding the power button for at least 4 seconds. Then press the power button again to restart the system.

  If the system does not shut down, unplug the power cord, wait a few seconds, and then plug it in again. If the system does not restart, press the power button.
- Be sure that all required device drivers are installed. For example, if you connect a printer, you must install a printer driver.
- If you are working on a network, use another cable to plug your computer into the network connection. If you still cannot connect, there might be a problem with the network plug.
- If you recently added new hardware, remove the hardware to see whether the computer functions properly.
- If you recently installed new software, uninstall the software to see whether the computer functions properly.
- Upgrade the BIOS. A new release of the BIOS might support new features or fix your problem. Use the fwupd service on the host operating system to obtain and install available BIOS and BMC firmware updates delivered through the Linux Vendor Firmware Service (LVFS). Verify the installed firmware version through the fwupd workflow.

Basic troubleshooting

Read this section for basic troubleshooting tips.

⚠ **WARNING!** When the computer is plugged into an AC power source, voltage is always applied to the system board. To reduce the risk of personal injury from electric shock, hot surfaces, or both, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before you touch them. Disconnect the power source prior to defeating or bypassing the equipment safeguard; and restore the equipment safeguard before restoring power.

If you have problems with the computer, try the appropriate solutions as described in the previous sections and summarized here to try to isolate the exact problem before you call for technical support:

- If the screen is blank, plug the monitor into a different video port on the computer if one is available, or replace the monitor with a monitor that you know is functioning properly.
- If your monitor is connected with a cable adapter, replace the adapter with one that you know is functioning properly.
- If you are working on a network:
  - Use a different network cable to connect your computer to the network.
  - Connect a different computer with a different cable to the network.

  If your problem is not resolved, the network jack on your computer or the network wall jack might be faulty.
- If you recently added new hardware, remove the hardware.

- If you recently installed new software, uninstall the software.
- If a USB storage device is connected to the computer, disconnect the device.

7 Statement of memory volatility

For general information regarding nonvolatile memory in HP business computers, and to restore nonvolatile memory that can contain personal data after the system has been turned off and the hard drive has been removed, use these instructions.

HP business computer products that use NVIDIA ARM-based system boards contain volatile DDR memory. The amount of nonvolatile memory present in the system depends upon the system configuration. NVIDIA ARM-based system boards contain nonvolatile memory subcomponents as originally shipped from HP, with the following assumptions:

- No subsequent modifications were made to the system.
- No applications, features, or functionality were added to or installed on the system.

Following system shutdown and removal of all power sources from an HP business computer system, personal data can remain on volatile system memory (DIMMs) for a finite period of time and also remains in nonvolatile memory. Use the following steps to remove personal data from the computer, including the nonvolatile memory found in NVIDIA ARM-based system boards.

Nonvolatile memory usage

Use this table to troubleshoot nonvolatile memory usage.

Table 7-1 Troubleshooting information for nonvolatile memory usage

Description	Volatility description	Storage user data	How to erase
Primary storage device holds the OS, applications, and application settings	Nonvolatile, 1 TB, 2 TB, and 4 TB PCIe NVMe drives, removable.	Yes[1]	Perform vendor-approved Secure Erase or media sanitization.
System memory (RAM) holds transient data during system operation	Volatile, 252 GB HBM3e GPU memory combined with 496GB LPDDR5X CPU Memory	Yes	Unplug the computer from power.
Permanent system BIOS settings	Nonvolatile variable/ configuration storage	No[2]	Restore BIOS defaults.
System boot ROM (BIOS)	Nonvolatile SPI flash	No	Reflash using the approved firmware package from HP.
Host BMC persistent storage	Nonvolatile eMMC/flash containing configuration, logs, credentials, and service data	Yes	Perform BMC **ResetToDefaults** with **ResetAll**, followed by the vendor-supported BMC eMMC Secure Erase.
LOM EEPROM	Nonvolatile EEPROM or flash storage associated with the integrated base LAN controller; capacity is platform-dependent	No	Restore network settings to defaults.
TPM	Nonvolatile protected firmware and platform storage containing TPM keys, measurements, and security data	Yes[3]	Clear the TPM using BIOS **TPM Clear** operation.

[1] Under typical operation, the only user data stored on the primary storage device are preferences for device configuration and settings for connections. However, the administrator can configure the system to allow users to store data locally.

[2] The only user data potentially stored in BIOS Settings are the ownership and asset tags, administrator password, and startup password.

[3] The TPM might contain encrypted passwords or certificates generated from user or administrator input.

Questions and answers

Use this section to answer your questions about nonvolatile memory.

1. **What is a UEFI BIOS?**

   The Unified Extensible Firmware Interface (UEFI) BIOS is an industry-standard software interface between the platform firmware and an operating system (OS). It replaces the older legacy BIOS architecture.

   The computer uses AMI Aptio TSE, a text-based UEFI Setup utility. Press esc or del during startup to enter BIOS Setup. Use the arrow keys to navigate the available menus. BIOS Setup can be used to view system information, review BMC network information under Server Management, and access the boot and security options enabled for the computer. Available settings can change with the installed firmware version.

   In addition, the UEFI BIOS works to initialize the computer's hardware before loading and executing the OS; the runtime environment allows the loading and execution of software programs from storage devices to provide more functionality, such as advanced hardware diagnostics (with the ability to display more detailed system information) and advanced firmware management and recovery software.

2. **Where is the UEFI BIOS located?**

   The UEFI BIOS is located on a flash memory chip. You must use a utility to write to the chip.

8 Computer operating guidelines, routine care, and shipping preparation

Follow these guidelines to ensure the best performance and useful life of your computer.

Operating guidelines and routine care

HP has developed guidelines to help you properly set up and care for the computer and monitor.

- The computer exceeds 30 kg (66 lb). A minimum of two persons and appropriate lifting equipment are required to unpack and install the system. Failure to observe safe lifting practices might result in personal injury or equipment damage.
- Keep the computer away from excessive moisture, direct sunlight, and extreme heat and cold.
- Operate the computer on a sturdy, level surface. In all supported configurations, provide at least 15.24 cm (6 in) of clearance in the front and rear of the computer and above the monitor to permit the required airflow.
- Never restrict the airflow into the computer by blocking any vents or air intakes. Do not place the keyboard, with the keyboard feet down, directly against the front of the desktop unit because this also restricts airflow.
- Never operate the computer with the access panel or any of the expansion card slot covers removed.
- If computers are stacked, maintain the required clearance at the front, rear, and both sides of each system.
- To operate a computer within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the previous operating guidelines still apply.
- Keep liquids away from the computer and keyboard.
- Never cover the ventilation slots on the monitor with any type of material.
- Install or enable power management functions of the operating system or other software, including sleep states.
- Turn off the computer before you do either of the following tasks:
  - Wipe the exterior of the computer with a soft, damp cloth as needed. Cleaning products might discolor or damage the finish. See Removing dirt and debris from your computer on page 32 for the recommended steps to clean the high-touch, external surfaces on your computer. After you remove the dirt and debris, you can also clean the surfaces with a disinfectant. See Cleaning your computer with a disinfectant on page 32 for guidelines to help prevent the spread of harmful bacteria and viruses.
  - Occasionally clean the air vents on all vented sides of the computer. Lint, dust, and other foreign matter can block the vents and limit the airflow.

Cleaning your computer

Cleaning your computer regularly removes dirt and debris so that your device continues to operate at its best. Use the following information to safely clean the external surfaces of your computer.

Removing dirt and debris from your computer

Here are the recommended steps to clean dirt and debris from your computer.

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.
2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.

CAUTION: To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.

3. Moisten a microfiber cloth with water. The cloth should be moist, but not dripping wet.

IMPORTANT: To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

4. Wipe the exterior of the product gently with the moistened cloth.

IMPORTANT: Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.
6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.
7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

See Cleaning your computer with a disinfectant on page 32 for recommended steps to clean the high-touch, external surfaces on your computer to help prevent the spread of harmful bacteria and viruses.

Cleaning your computer with a disinfectant

The World Health Organization (WHO) recommends cleaning surfaces, followed by disinfection, as a best practice for preventing the spread of viral respiratory illnesses and harmful bacteria.

After cleaning the external surfaces of your computer using the steps in Removing dirt and debris from your computer on page 32, you might also choose to clean the surfaces with a disinfectant. A disinfectant that is within HP's cleaning guidelines is an alcohol solution consisting of 70% isopropyl alcohol and 30% water. This solution is also known as rubbing alcohol and is sold in most stores.

Follow these steps when disinfecting high-touch, external surfaces on your computer:

1. Wear disposable gloves made of latex (or nitrile gloves, if you are latex-sensitive) when cleaning the surfaces.

2. Turn off your device and unplug the power cord and other connected external devices. Remove any installed batteries from items such as wireless keyboards.

⚠ **CAUTION:** To prevent electric shock or damage to components, never clean a product while it is turned on or plugged in.

3. Moisten a microfiber cloth with a mixture of 70% isopropyl alcohol and 30% water. The cloth should be moist, but not dripping wet.

⚠ **CAUTION:** Do not use any of the following chemicals or any solutions that contain them, including spray-based surface cleaners: bleach, peroxides (including hydrogen peroxide), acetone, ammonia, ethyl alcohol, methylene chloride, or any petroleum-based materials, such as gasoline, paint thinner, benzene, or toluene.

IMPORTANT: To avoid damaging the surface, avoid abrasive cloths, towels, and paper towels.

4. Wipe the exterior of the product gently with the moistened cloth.

IMPORTANT: Keep liquids away from the product. Avoid getting moisture in any openings. If liquid makes its way inside your HP product, it can cause damage to the product. Do not spray liquids directly on the product. Do not use aerosol sprays, solvents, abrasives, or cleaners containing hydrogen peroxide or bleach that might damage the finish.

5. Start with the display (if applicable). Wipe carefully in one direction, and move from the top of the display to the bottom. Finish with any flexible cables, like power cord, keyboard cable, and USB cables.

6. Be sure that surfaces have completely air-dried before turning the device on after cleaning.

7. Discard the gloves after each cleaning. Clean your hands immediately after you remove the gloves.

Shipping preparation

If you have to ship your computer, follow these tips to keep your equipment safe.

1. Back up the storage drive files to an external storage device. Be sure that the backup media is not exposed to electrical or magnetic impulses while stored or in transit.

2. Remove and store all removable media.

3. Turn off the computer and external devices.

4. Disconnect the power cord from the AC outlet, and then from the computer.

5. Disconnect the system components and external devices from their power sources and then from the computer.

NOTE: Be sure that all boards are seated properly and secured in the board slots before shipping the computer.

6. Pack the system components and external devices in their original packing boxes or similar packaging with sufficient packing material to protect them.

9 Electrostatic discharge

Electrostatic discharge is the release of static electricity when two objects come into contact—for example, the shock you receive when you walk across the carpet and touch a metal door knob.

A discharge of static electricity from fingers or other electrostatic conductors can damage electronic components.

IMPORTANT: To prevent damage to the computer, damage to a drive, or loss of information, observe these precautions:

- If removal or installation instructions direct you to unplug the computer, first be sure that it is properly grounded.
- Keep components in their electrostatic-safe containers until you are ready to install them.
- Avoid touching pins, leads, and circuitry. Handle electronic components as little as possible.
- Use nonmagnetic tools.
- Before handling components, discharge static electricity by touching an unpainted metal surface.
- If you remove a component, place it in an electrostatic-safe container.

10 Accessibility

HP's goal is to design, produce, and market products, services, and information that everyone everywhere can use, either on a standalone basis or with appropriate third-party assistive technology (AT) devices or applications.

HP and accessibility

Because HP works to weave diversity, inclusion, and work/life into the fabric of the company, it is reflected in everything HP does. HP strives to create an inclusive environment focused on connecting people to the power of technology throughout the world.

Finding the technology tools you need

Technology can unleash your human potential. AT removes barriers and helps you create independence at home, at work, and in the community. AT helps increase, maintain, and improve the functional capabilities of electronic and information technology.

For more information, see Finding the best assistive technology on page 36.

The HP commitment

HP is committed to providing products and services that are accessible for people with disabilities. This commitment supports the company's diversity objectives and helps ensure that the benefits of technology are available to all.

The HP accessibility goal is to design, produce, and market products and services that can be effectively used by everyone, including people with disabilities, either on a standalone basis or with appropriate assistive devices.

To achieve that goal, this Accessibility Policy establishes seven key objectives to guide HP actions. All HP managers and employees are expected to support these objectives and their implementation in accordance with their roles and responsibilities:

- Raise the level of awareness of accessibility issues within HP, and provide employees with the training they need to design, produce, market, and deliver accessible products and services.
- Develop accessibility guidelines for products and services, and hold product development groups accountable for implementing these guidelines where competitively, technically, and economically feasible.
- Involve people with disabilities in the development of accessibility guidelines and in the design and testing of products and services.
- Document accessibility features, and make information about HP products and services publicly available in an accessible form.
- Establish relationships with leading AT and solution providers.
- Support internal and external research and development that improves AT relevant to HP products and services.
- Support and contribute to industry standards and guidelines for accessibility.

International Association of Accessibility Professionals (IAAP)

IAAP is a not-for-profit association focused on advancing the accessibility profession through networking, education, and certification. The objective is to help accessibility professionals develop and advance their careers and to better enable organizations to integrate accessibility into their products and infrastructure.

As a founding member, HP joined to participate with other organizations to advance the field of accessibility. This commitment supports HP's accessibility goal of designing, producing, and marketing products and services that people with disabilities can effectively use.

IAAP will make the profession strong by globally connecting individuals, students, and organizations to learn from one another. If you are interested in learning more, go to http://www.accessibilityassociation.org to join the online community, sign up for newsletters, and learn about membership options.

Finding the best assistive technology

Everyone, including people with disabilities or age-related limitations, should be able to communicate, express themselves, and connect with the world using technology. HP is committed to increasing accessibility awareness within HP and with our customers and partners.

Whether it's large fonts that are easy on the eyes, voice recognition that lets you give your hands a rest, or any other AT to help with your specific situation—a variety of ATs make HP products easier to use. How do you choose?

Assessing your needs

Technology can unleash your potential. AT removes barriers and helps you create independence at home, at work, and in the community. AT helps increase, maintain, and improve the functional capabilities of electronic and information technology.

You can choose from many AT products. Your AT assessment should allow you to evaluate several products, answer your questions, and facilitate your selection of the best solution for your situation. You will find that professionals qualified to do AT assessments come from many fields, including those licensed or certified in physical therapy, occupational therapy, speech/language pathology, and other areas of expertise. Others, while not certified or licensed, can also provide evaluation information. You will want to ask about the individual's experience, expertise, and fees to determine if they are appropriate for your needs.

Accessibility for HP products

These links provide information about accessibility features and AT, if applicable and available in your country or region, that are included in various HP products. These resources will help you select the specific AT features and products most appropriate for your situation.

- HP Aging & Accessibility: Go to http://www.hp.com, type `Accessibility` in the search box. Select **Office of Aging and Accessibility**.
- HP computers: For Windows products, go to http://www.hp.com/support, type `Windows Accessibility Options` in the **Search our knowledge library** search box. Select the appropriate operating system in the results.
- HP Shopping, peripherals for HP products: Go to http://store.hp.com, select **Shop**, and then select **Monitors** or **Accessories**.

If you need additional support with the accessibility features on your HP product, see Contacting support on page 39.

Additional links to external partners and suppliers that may provide additional assistance:

- Microsoft Accessibility information (Windows and Microsoft Office)
- Google Products accessibility information (Android, Chrome, Google Apps)

Standards and legislation

Countries worldwide are enacting regulations to improve access to products and services for persons with disabilities. These regulations are historically applicable to telecommunications products and services, PCs and printers with certain communications and video playback features, their associated user documentation, and their customer support.

Standards

The US Access Board created Section 508 of the Federal Acquisition Regulation (FAR) standards to address access to information and communication technology (ICT) for people with physical, sensory, or cognitive disabilities.

The standards contain technical criteria specific to various types of technologies, as well as performance-based requirements which focus on functional capabilities of covered products. Specific criteria cover software applications and operating systems, web-based information and applications, computers, telecommunications products, video and multimedia, and self-contained closed products.

Mandate 376 – EN 301 549

The European Union created the EN 301 549 standard within Mandate 376 as an online toolkit for public procurement of ICT products. The standard specifies the accessibility requirements applicable to ICT products and services, with a description of the test procedures and evaluation methodology for each requirement.

Web Content Accessibility Guidelines (WCAG)

Web Content Accessibility Guidelines (WCAG) from the W3C's Web Accessibility Initiative (WAI) helps web designers and developers create sites that better meet the needs of people with disabilities or age-related limitations.

WCAG advances accessibility across the full range of web content (text, images, audio, and video) and web applications. WCAG can be precisely tested, is easy to understand and use, and allows web developers flexibility for innovation. WCAG 2.0 has also been approved as ISO/IEC 40500:2012.

WCAG specifically addresses barriers to accessing the web experienced by people with visual, auditory, physical, cognitive, and neurological disabilities, and by older web users with accessibility needs. WCAG 2.0 provides characteristics of accessible content:

- **Perceivable** (for instance, by addressing text alternatives for images, captions for audio, adaptability of presentation, and color contrast)
- **Operable** (by addressing keyboard access, color contrast, timing of input, seizure avoidance, and navigability)
- **Understandable** (by addressing readability, predictability, and input assistance)
- **Robust** (for instance, by addressing compatibility with ATs)

Legislation and regulations

Accessibility of IT and information has become an area of increasing legislative importance.

The HP policy landscape website provides information about key legislation, regulations, and standards in the following locations:

- United States
- Canada
- Europe
- Australia

Useful accessibility resources and links

These organizations, institutions, and resources might be good sources of information about disabilities and age-related limitations.

NOTE: This is not an exhaustive list. These organizations are provided for informational purposes only. HP assumes no responsibility for information or contacts you encounter on the internet. Listing on this page does not imply endorsement by HP.

Organizations

These organizations are a few of the many that provide information about disabilities and age-related limitations.

- American Association of People with Disabilities (AAPD)
- The Association of Assistive Technology Act Programs (ATAP)
- Hearing Loss Association of America (HLAA)
- Information Technology Technical Assistance and Training Center (ITTATC)
- Lighthouse International
- National Association of the Deaf
- National Federation of the Blind
- Rehabilitation Engineering & Assistive Technology Society of North America (RESNA)
- Telecommunications for the Deaf and Hard of Hearing, Inc. (TDI)
- W3C Web Accessibility Initiative (WAI)

Educational institutions

Many educational institutions, including these examples, provide information about disabilities and age-related limitations.

- California State University, Northridge, Center on Disabilities (CSUN)
- University of Wisconsin - Madison, Trace Center
- University of Minnesota computer accommodations program

Other disability resources

Many resources, including these examples, provide information about disabilities and age-related limitations.

- ADA (Americans with Disabilities Act) Technical Assistance Program
- ILO Global Business and Disability network
- EnableMart
- European Disability Forum
- Job Accommodation Network
- Microsoft Enable

HP links

This HP-specific link provides information that relates to disabilities and age-related limitations.

Accessibility at HP

Contacting support

HP offers technical support and assistance with accessibility options for customers with disabilities.

NOTE: Support is in English only.

- Customers who are deaf or hard of hearing who have questions about technical support or accessibility of HP products:
  - Use TRS/VRS/WebCapTel to call (877) 656-7058 Monday through Friday, 6 a.m. to 9 p.m. Mountain Time.
- Customers with other disabilities or age-related limitations who have questions about technical support or accessibility of HP products:
  - Call (888) 259-5707 Monday through Friday, 6 a.m. to 9 p.m. Mountain Time.

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