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**.

To help us improve this document, please send any suggestions, comments, or errors to mailto:hp.doc.feedback@hp.com. Include the document part number when submitting your feedback.

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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 NVIDIA® DGX OS and is configured as HP ZGX OS.

⚠ **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 ZGX Toolkit	To find HP ZGX Toolkit specifications and a quick start guide to install the HP ZGX Toolkit, go to http://www.hp.com/zgx-onboard.
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**.
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.

Support

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

Table 2-2 Where to find support information

Topic	Location
AI Creator Community	For community support, go to community.datascience.hp.com/. Here you can ask questions to get answers from peers and experts, learn best practices, and keep a pulse on HP AI innovations.
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. The warranty might be on a CD or DVD provided in the box. 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 ZGX Toolkit documentation	For the latest online documentation, HP ZGX Toolkit, and access to downloads, readme files, and use cases, go to http://www.hp.com/zgx-onboard.
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 ZGX Toolkit Software Updates	The HP ZGX Toolkit Visual Studio Code extension is available through the Visual Studio Code Marketplace, HP Developer Portal, and Github. For information on the latest HP AI software, go to http://www.hp.com/zgx-onboard.
Driver and BIOS updates	Go to http://www.hp.com/support and select **Software and Drivers** to verify that you have the latest drivers for the computer.

3 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.
- If the power cord has a 3-pin attachment plug, plug the cord into a grounded (earthed) 3-pin outlet.

Setting up as a standalone device

Read this section to learn how to configure your computer as a standalone device.

1. Connect a monitor and keyboard to the computer.
2. Plug the computer power cord and monitor power cord into an AC outlet.
3. Turn on the computer, select **Get Started**, and then follow the on-screen instructions.
4. Select the language, agree to the terms, and then enter a user name and password for your Linux user.
5. Connect a network cable to the network jack or connect to a Wi-Fi network to download essential software.

   The device installs updates and automatically restarts. A link to the Dashboard UI will be available on your desktop.
6. To connect to your ZGX as a network device, open the Dashboard UI for a link to the HP ZGX Toolkit quick start guide, and then follow steps to install and start the tools for your ZGX.

   To configure ZGX software, see Configuring the HP ZGX Toolkit on page 5.

Setting up as a network device

Read this section to learn how to configure your computer to a network.

1. Plug the computer power cord into the AC outlet, and then connect the power cord to the power connector on the computer.
2. Turn on the computer.
3. From a network device, connect to the ZGX hotspot. The hotspot information is located on the system information label attached to your computer (for example, **zgx-00abcd**).
4. Type the URL link (in the format `zgx-00abcd.local`) in a browser on your network device.
5. Select **Get Started** and follow the on-screen instructions.
6. Select the language, agree to the terms, and then enter a user name and password for your Linux user.

7. Connect a network cable to the network jack or connect to a Wi-Fi network to download essential software. The device installs updates and automatically restarts.

NOTE: To configure ZGX software, see Configuring the HP ZGX Toolkit on page 5.

For instructions on how to install the **HP ZGX Toolkit Visual Studio Code extension** to make it easy to connect to and manage your ZGX, go to http://hp.com/zgx-onboard.

Setting up HP ZGX OS

Your computer supports HP ZGX OS.

For more information on how to set up your Linux® operating system, go to https://docs.nvidia.com/base-os/ and search for your product.

Configuring the HP ZGX Toolkit

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

The ZGX Toolkit provides the following benefits:

- VS Code extension works with your ZGX companion device
- Works on any network device with VS Code regardless of OS
- Node discovery makes it easy to find, create, and manage a list of devices
- Remembers device connections to auto ssh into GPU and reduce duplicate work

For additional information on configuring the ZGX software, go to http://hp.com/zgx-onboard.

Configuring the HP ZGX Toolkit through the Dashboard UI

Follow these steps to set up your HP ZGX Toolkit through the Dashboard UI.

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

Configuring the HP ZGX Toolkit through the Visual Studio Code

Follow these steps to set up your HP ZGX Toolkit 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 ZGX 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.

4 Computer features

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

Standard configuration features

Features vary depending on the model.

Rear panel components

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

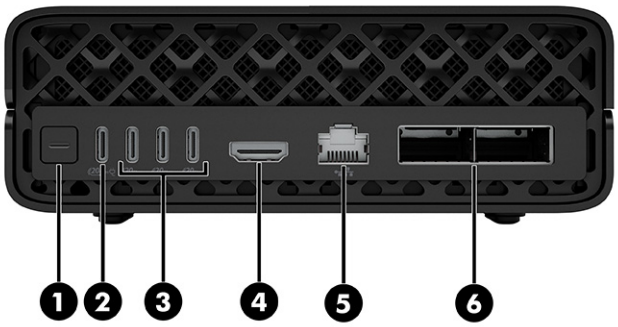


Table 4-1 Identifying the rear panel components

	Rear panel components		
(1)	Power button	(4)	HDMI port
(2)	USB Type-C® power connector and 20 Gbps port	(5)	RJ-45 (network) jack: 10 Gbps
(3)	USB Type-C 20 Gbps ports (3) NOTE: Use a standard USB Type-C charging cable or cable adapter (purchased separately) when charging a small external device such as a smartphone.	(6)	QSFP ports: 200 Gbps (2)

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.

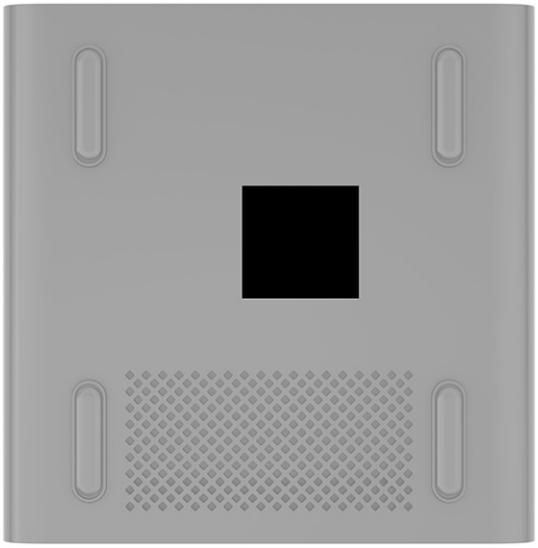
- Service label—Provides important information to identify your computer. When contacting support, you might be asked for the serial number, the product number, or the model number. Locate this information before you contact support.

  Your service label will resemble one of the examples shown below. Refer to the illustration that most closely matches the service label on your computer.

- Regulatory labels—Provide regulatory information about the computer.
- Wireless certification labels—Provide information about optional wireless devices and the approval markings for the countries or regions in which the devices have been approved for use.

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.



5 Setting up the computer

This chapter describes how to set up your computer.

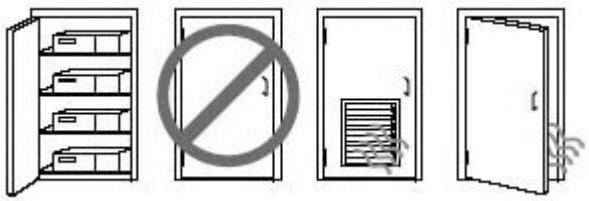
Ensuring proper ventilation

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

- Operate the computer on a sturdy, level surface.
- In all supported configurations, provide at least 15.24 cm (6 inches) of clearance to every side of the computer except the surface placed on the floor.

NOTE: A rack-mounted configuration is not supported with your computer.

- 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.

Setup procedures

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.
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4. Type the URL link (in the format `zgx-00abcd.local`) in a browser on your network device.
5. Select **Get Started** and follow the on-screen instructions.
6. Select the language, agree to the terms, and then enter a user name and password for your Linux user.
7. Connect a network cable to the network jack or connect to a Wi-Fi network to download essential software. The device installs updates and automatically restarts.

NOTE: To configure ZGX software, see Configuring the HP ZGX Toolkit on page 5.

For instructions on how to install the **HP ZGX Toolkit Visual Studio Code extension** to make it easy to connect to and manage your ZGX, go to http://hp.com/zgx-onboard.

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.

The integrated graphics support four simultaneous-display monitors (see Connecting and configuring monitors on page 13). The process for adding monitors depends on your integrated graphics and the type and number of monitors that you add.

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: You might need to acquire adapters to match the integrated graphics output to the monitor connector. See Matching monitor connectors on page 12.

Matching monitor connectors

The following table describes monitor configuration scenarios. See the illustration that most closely matches your computer.

Table 5-1 Monitor connectors

	Monitor connector				
	Dual Link DVI	**DisplayPort (DP)**	**HDMI**	**Mini DisplayPort (mDP)**	**USB Type-C**
HDMI 	N/A	N/A	HDMI cable	N/A	N/A
USB Type-C* 	N/A	USB Type-C to DP adapter	USB Type-C to HDMI adapter	N/A	USB Type-C cable

*For the USB Type-C port that your computer supports, see Computer features on page 6.

NOTE: HP typically does not include monitor cable adapters.

HDMI connections have the highest performance; USB Type-C connections have the lowest.

Identifying monitor connection requirements

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

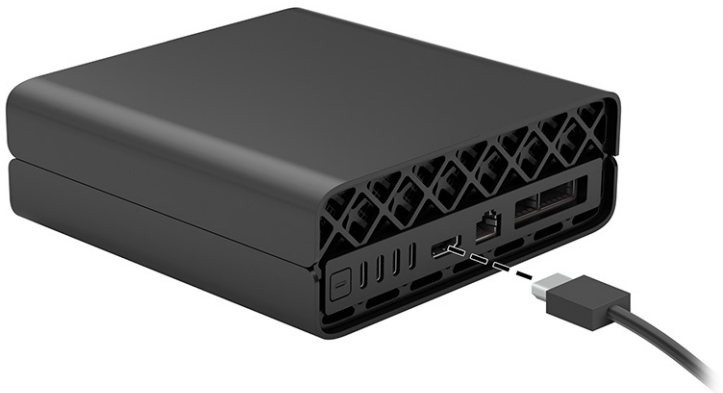
MultiStream Transport (MST) is a method used to connect multiple monitors to a single USB Type-C connector.

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.



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.

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.

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.

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.

Basic troubleshooting

For basic troubleshooting tips, read this section.

⚠ **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.

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 Battery

The battery that comes with the computer provides power to the real-time clock. The computer comes with a 3 V lithium coin cell battery.

⚠ **WARNING!** The computer contains an internal lithium manganese dioxide battery. To reduce the risk of personal injury:

- Do *not* attempt to recharge the battery.
- Do *not* expose to temperatures higher than 60°C (149°F).
- Do *not* disassemble, crush, puncture, short external contacts, or dispose of in fire or water.

NOTE: You can extend the lifetime of the lithium battery by plugging the computer into an AC outlet. The lithium battery is used only when the computer is not connected to AC power.

8 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 8-1 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, 1-4 TB of NVMe SSD storage, removable	Yes[1]	Select **Media Sanitization** under the **Security** page. This removes the storage device data.
System memory (RAM), holds transient data during system operation	Volatile, SODIMM socket. Removable (4 GB/8 GB/16 GB)	Yes	Unplug unit from power.
Permanent system BIOS settings	Nonvolatile; 16 KB; stored	No[2]	Select **F3 : Optimized Defaults**.
System boot ROM (BIOS)	Nonvolatile memory, 64 MB	No	Download the latest BIOS for your model from the HP website and follow the instructions to flash the BIOS that are on the website.
Keyboard/mouse (ROM)	Nonvolatile, 2 KB embedded in the super I/O controller (SIO2)	Yes	N/A
Keyboard/mouse (RAM)	Volatile, 256 bytes embedded in the super I/O controller (SIO2)	No	Unplug unit from main power.
LOM EEPROM	Nonvolatile, 2 MB embedded in LAN controller	No	N/A
TPM	Nonvolatile; 51 KB ROM for firmware and 38 KB system parametric data	No[3]	Select **TPM Clear**.

[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 UEFI BIOS provides an interface to display the system information and configuration settings and to change the configuration of your computer before an OS is loaded. BIOS provides a secure runtime environment that supports a GUI. In this environment, you can use either a pointing device (touch screen, touchpad, pointing stick, or USB mouse) or the keyboard to navigate and make menu and configuration selections. The UEFI BIOS also contains basic system diagnostics.

   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.

3. **What kind of configuration data is stored on the DIMM Serial Presence Detect (SPD) memory module? How would this data be written?**

   The DIMM SPD memory contains information about the memory module, such as size, serial number, data width, speed and timing, voltage, and thermal information. This information is written by the module manufacturer and stored on an EEPROM. You cannot write to this EEPROM when the memory module is installed in a computer. Third-party tools do exist that can write to the EEPROM when the memory module is not installed in a computer. Various third-party tools are available to read SPD memory.

9 Power cord set requirements

The power supplies on some computers have external power switches.

The power cord set received with the computer meets the requirements for use in the country where you purchased the equipment.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer.

General requirements

These requirements are applicable to all countries.

1. The power cord must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be installed.
2. The power cord set must have a current capacity of 7A minimum for North America, 7A minimum for Japan, and 2.5A minimum for all other countries and a nominal voltage rating of 125 V AC or 250 V AC, as required by each country's power system.
3. The diameter of the wire must be a minimum of 0.75 mm^2 or 18 AWG, and the length of the cord must be between 1.8 m (6 ft) and less than 3.0 m (9.8 ft).

The power cord should be routed so that it is not likely to be walked on or pinched by items placed upon it or against it. Particular attention should be paid to the plug, electrical outlet, and the point where the cord exits from the product.

⚠ **WARNING!** Do not operate this product with a damaged power cord set. If the power cord set is damaged in any manner, replace it immediately.

Japanese power cord requirements

For use in Japan, use only the power cord received with this product.

IMPORTANT: Do not use the power cord received with this product on any other products.

Country-specific requirements

This information provides additional requirements specific to various countries.

Table 9-1 Power cord country-specific requirements

Country	Accrediting Agency	Country	Accrediting Agency
Australia (1)	EANSW	Italy (1)	IMQ
Austria (1)	OVE	Japan (3)	METI
Belgium (1)	CEBC	Norway (1)	NEMKO
Canada (2)	CSA	Sweden (1)	SEMKO

Table 9-1 Power cord country-specific requirements (continued)

Country	Accrediting Agency	Country	Accrediting Agency
Denmark (1)	DEMKO	Switzerland (1)	SEV
Finland (1)	SETI	United Kingdom (1)	BSI
France (1)	UTE	United States (2)	UL
Germany (1)	VDE		

1. The flexible cord must be Type HO5VV-F, 3-conductor, 0.75 mm^2 conductor size. Power cord set fittings (appliance coupler and plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. The flexible cord must be Type SVT or equivalent, No. 18 AWG, 3 conductor. The plug must be a 2-pole grounding type with a NEMA 5-15P (7 A, 125 V) or NEMA 6-15P (7 A, 250 V) configuration.
3. Appliance coupler, flexible cord, and plug must bear a T mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 0.75 mm^2 conductor size. Plug must be a 2-pole grounding type with a Japanese Industrial Standard C8303 (7 A, 125 V) configuration.

10 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.

- Keep the computer away from excessive moisture, direct sunlight, and extreme heat and cold.
- Operate the computer on a sturdy, level surface. Leave a 10.2 cm (4 inch) clearance on all vented sides 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 the computers are stacked, make sure that the proper alloted room is provide in the front, rear, right, and left of the computers.
- 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 22 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 22 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 22 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 22, 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 hard 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.

NOTE: The hard drive locks automatically when the system power is turned off.

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.

11 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.

12 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. Assistive technology removes barriers and helps you create independence at home, at work, and in the community. Assistive technology helps increase, maintain, and improve the functional capabilities of electronic and information technology.

For more information, see Finding the best assistive technology on page 26.

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 assistive technology and solution providers.
- Support internal and external research and development that improves assistive technology 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 assistive technology (AT) to help with your specific situation—a variety of assistive technologies 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 assistive technology 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 29.

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 assistive technologies)

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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