



HP Z1 Workstation

User Guide

Copyright Information

© Copyright 2012–2013 Hewlett-Packard Development Company, L.P.

Third Edition: October 2013

First Edition: March 2012

Part number: 685886-003

Warranty

Hewlett-Packard Company shall not be liable for technical or editorial errors or omissions contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material. The information in this document is provided “as is” without warranty of any kind, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, and is subject to change without notice. The warranties for HP products are set forth in the express limited warranty statements accompanying such products.

Nothing herein should be construed as constituting an additional warranty.

The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

To set up a WLAN and connect to the Internet, you need a broadband modem (either DSL or cable) (purchased separately), high-speed Internet service purchased from an Internet service provider, and a wireless router (purchased separately).

Windows 8: Not all features are available in all editions of Windows 8. This computer may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See <http://www.microsoft.com> for details.

Windows 7: This computer may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See <http://windows.microsoft.com/en-us/windows7/get-know-windows-7> for details.

Trademark Credits

Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation.

Intel is a trademark of Intel Corporation in the U.S. and other countries.

FireWire is a trademark of Apple Computer, Inc., registered in the U.S. and other countries.

Bluetooth is a trademark owned by its proprietor and used by Hewlett-Packard Company under license.

About this guide

This guide provides setup and basic troubleshooting information for the HP Z1 Workstation. It includes these topics:

Guide topics

[Locating HP resources on page 1](#)

[HP Z1 Workstation features on page 7](#)

[Setting up and using the workstation on page 11](#)

[Setting up and restoring Windows 7 on page 26](#)

[Setting up and restoring Windows 8 on page 33](#)

[Setting up and restoring Linux on page 38](#)

[Updating the workstation on page 43](#)

[Diagnostics and Minor Troubleshooting on page 45](#)

[Routine Care on page 51](#)



TIP: If you do not find what you are looking for in this guide:

- Find technical details in the *HP Z1 Workstation Maintenance and Service Guide* at http://www.hp.com/support/workstation_manuals.
 - View removal and replacement videos at <http://www.hp.com/go/sml>.
 - See additional information on your workstation at <http://www.hp.com/go/workstations>.
-

Table of contents

1	Locating HP resources	1
	Product information	2
	Support	3
	Product documentation	4
	Product diagnostics	5
	Product updates	6
2	HP Z1 Workstation features	7
	Components	7
	Front and bottom components	7
	Side components	8
	Rear components	9
	Product specifications	10
	Physical characteristics	10
	Environmental specifications	10
3	Setting up and using the workstation	11
	Setting up the workstation	11
	Location and ventilation	11
	Setup procedure	12
	Installing the USB wireless dongle into the internal USB port	17
	Enabling Bluetooth Devices	19
	Display options	20
	Adjusting display brightness	20
	Controlling display panel brightness	20
	Internal display panel backlight brightness	20
	Pixel color brightness	21
	Adding an external monitor	22
	Customizing the display panel or the external monitor	22
	Using the HP Z1 Workstation as a monitor	23
	Adjusting the audio signal	24
	Using the webcam	24
	Installing optional components	24
	Security	24
	Product recycling	24

4	Setting up and restoring Windows 7	26
	Setting up the Windows 7 operating system	26
	Installing or upgrading device drivers	26
	Transferring files and settings	27
	Restoring and recovering in Windows 7	27
	System Restore	28
	System Recovery	29
	System Recovery when Windows is responding	29
	System Recovery when Windows is not responding	30
	System recovery using recovery media	30
	Creating recovery media	31
	Using recovery media	32
5	Setting up and restoring Windows 8	33
	Additional information	33
	Setting up the Windows 8 Operating System	33
	Downloading Windows 8 updates	34
	Backup and recovery in Windows 8	34
	Backing up your information	34
	Performing a system recovery	35
	Using the Windows recovery tools	35
	Using F11 recovery tools	36
	Using HP Windows 8 restore media (purchased separately)	37
6	Setting up and restoring Linux	38
	HP Linux Support Matrix	38
	HP Installer Kit for Linux (HPIKL)	39
	Setting up Red Hat Enterprise Linux	39
	HPIKL driver disc	40
	Installing with the HP Red Hat Linux driver disc	40
	Warranty	40
	Setting up SUSE Linux Enterprise Desktop (SLED)	41
	Setting up preloaded SLED	41
	Installing SLED with the DVD Installer Kit	41
	Warranty	41
	Restoring SLED (preloaded systems only)	42
	Proprietary graphics drivers	42
7	Updating the workstation	43
	Updating the workstation after first boot	43

Upgrading the BIOS	43
Determining the current BIOS version	43
Upgrading BIOS	44
Upgrading device drivers	44
8 Diagnostics and Minor Troubleshooting	45
Calling support	45
Locating ID labels	46
Locating warranty information	47
HP troubleshooting resources and tools	47
HP Support Assistant (HPSA)	47
Online support	47
Troubleshooting a problem	48
Instant Support and Active Chat	48
Customer Advisories, Customer and Security Bulletins, and Customer Notices ..	48
Product Change Notifications	48
Helpful hints	49
At startup	49
During operation	49
Customer Self-Repair program	50
Other troubleshooting options	50
9 Routine Care	51
General cleaning safety precautions	51
Cleaning the chassis	51
Cleaning the keyboard	52
Cleaning the monitor	52
Cleaning the mouse	53

1 Locating HP resources

This section provides information on the following resources for your HP workstation:

Topics

[Product information on page 2](#)

- Technical specifications
- HP Cool Tools
- Regulatory information
- Accessories
- System board
- Serial number, Certificate of Authenticity, and Genuine Microsoft Label

[Support on page 3](#)

- Product support
- HP Support Assistant
- Warranty information

[Product documentation on page 4](#)

- HP and third-party documentation, white papers
- Product notifications
- Technical specifications (QuickSpecs)
- Customer Advisories, Security Bulletins, Notices

[Product diagnostics on page 5](#)

- HP Vision Diagnostics
- Audible beeps and LED code definitions
- POST error codes

[Product updates on page 6](#)

- Driver and BIOS updates
 - Operating systems
-

Product information

Table 1-1 Product information

Topic	Location
Technical specifications	Go to www.hp.com/go/quickspecs . In the left pane, select your region and then select Workstations .
HP Cool Tools (Windows® 7 only)	<p>Most HP workstations with the Windows 7 operating system are preloaded with tools that may enhance system performance and with additional software that is not automatically installed during first boot. To access these applications:</p> <ul style="list-style-type: none">• Click the HP Cool Tools icon on the desktop, or• Open the HP Cool Tools folder by selecting Start > All Programs > HP > HP Cool Tools. <p>To learn more about these applications, click HP Cool Tools—Learn More.</p> <p>To install or launch the applications, click the appropriate application icon.</p>
Regulatory information	Refer to the <i>Safety & Regulatory Information</i> guide for product regulatory information. You can also refer to the regulatory label on the workstation chassis.
Accessories	For complete and current information on supported accessories and components, see http://www.hp.com/go/workstations .
System board	A diagram of the system board is located on the inside of the chassis (all-in-one configuration). Additional information is located in the workstation <i>Maintenance and Service Guide</i> on the Web at http://www.hp.com/support/workstation_manuals/ .
Serial number, Certificate of Authenticity (COA), and Genuine Microsoft Label (GML) (if applicable)	The serial number label is on a pull-out card on the side of the display (all-in-one configuration). The COA (Windows 7) and GML (Windows 8) are typically located near the serial number label. Some workstations have this label on the bottom panel.
Linux	For information on running Linux on HP workstations, go to http://www.hp.com/linux/ , then select Linux on Workstations from the list on the left.

Support

Table 1-2 Support

Topic	Location
Product support	<p>For U.S. support, go to http://www.hp.com/go/contactHP.</p> <p>For worldwide support, go to http://welcome.hp.com/country/us/en/wwcontact_us.html.</p> <p>Here you can:</p> <ul style="list-style-type: none">• Chat online with an HP technician• Obtain email support• Find support telephone numbers• Locate an HP service center
HP Support Assistant (Windows 7 only)	<p>HP Support Assistant is an HP application that helps you maintain the performance of your workstation and resolve problems through automated updates and tune-ups, built-in diagnostics, and guided assistance.</p> <p>To access HP Support Assistant, double-click the HP Support Assistant icon on your desktop.</p> <p>NOTE: HP Support Assistant is preinstalled on select HP workstations running Windows 7. HP Support Assistant is not available on workstations running Windows 8 or Linux.</p>
Warranty information	<p>To locate base warranty information, see http://www.hp.com/support/warranty-lookuptool.</p> <p>To locate an existing Care Pack, see http://www.hp.com/go/lookuptool.</p> <p>To extend a standard product warranty, see http://h20219.www2.hp.com/services/us/en/warranty/carepack-overview.html. HP Care Pack Services offer upgraded service levels to extend and expand a standard product warranty.</p> <p>You can find the expressly provided HP Limited Warranty applicable to your product in the start menu on your PC and/or in the CD/DVD provided in the box. For some countries/regions, a printed HP Limited Warranty is provided in the box. In countries/regions where the warranty is not provided in printed format, you may request a printed copy from www.hp.com/go/orderdocuments or write to:</p> <ul style="list-style-type: none">• North America: Hewlett Packard, MS POD, 11311 Chinden Blvd, Boise, ID 83714, USA• Europe, Middle East, Africa: Hewlett-Packard, POD, Via G. Di Vittorio, 9, 20063, Cernusco /Naviglio (MI), Italy• Asia Pacific: Hewlett-Packard, POD, P.O. Box 200, Alexandra Post Office, Singapore 911507 <p>Please include your product number, warranty period (found on your serial number label), name, and postal address.</p>

Product documentation

Table 1-3 Product documentation

Topic	Location
HP user documentation, white papers, and third-party documentation	For the latest online documentation, go to http://www.hp.com/support/workstation_manuals . These include this User Guide and the <i>Maintenance and Service Guide</i> .
Removal and replacement videos	To learn how to remove and replace workstation components, go to http://www.hp.com/go/sml .
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 www.hp.com/united-states/subscribe/gateway/?jumpid=go/subscribe-gate1 .
Technical specifications	The Product Bulletin contains QuickSpecs for HP Workstations. QuickSpecs include information about the operating system, power supply, memory, CPU, and many other system components. To access the QuickSpecs, see http://www.hp.com/go/quickspecs/ .
Customer Advisories, Security Bulletins, and Notices	To find advisories, bulletins, and notices: <ol style="list-style-type: none">1. See http://www.hp.com/go/workstationsupport.2. Select the desired product.3. From the Resources section, select See more...4. Use the scroll bar to select Customer Advisories, Customer Bulletins, or Customer Notices.

Product diagnostics

Table 1-4 Product diagnostics

Topic	Location
Windows 7 Diagnostics tools	The HP Vision Diagnostics utility is preinstalled on select Windows 7 workstations.
Windows 8 Diagnostics tools	The HP Vision Diagnostics utility is preinstalled on select Windows 8 workstations. For additional information, see the workstation <i>Maintenance and Service Guide</i> at http://www.hp.com/support/workstation_manuals .
Audible beep and LED code definitions	Refer to the workstation <i>Maintenance and Service Guide</i> at http://www.hp.com/support/workstation_manuals .
POST error codes	Refer to the workstation <i>Maintenance and Service Guide</i> at http://www.hp.com/support/workstation_manuals .

Product updates

Table 1-5 Product updates

Topic	Location
Driver and BIOS updates	<p>See http://www.hp.com/go/workstationsupport to verify that you have the latest drivers for the workstation.</p> <p>To determine the current workstation BIOS on your workstation, follow these steps during system power up:</p> <ol style="list-style-type: none">1. Power on the workstation, and press Esc during start up (boot).2. Press F10 to enter the F10 Setup utility.3. Go to File > System Information. Note the BIOS version and date and compare it with the BIOS versions that appear on the HP website. <p>You can also find the BIOS version number in Windows 7:</p> <ol style="list-style-type: none">1. Go to Start > All Programs > Accessories > System Tools > System Information.2. In the right pane, find the line with BIOS Version/Date.3. Note the BIOS version and date and compare it with the versions that appear on the HP website. <p>You can also find the BIOS version number in Windows 8:</p> <ol style="list-style-type: none">1. Point to the upper-right or lower-right corner of the Start screen to display the charms.2. Click Settings > Change PC Settings.
Operating systems	<p>For additional information, on:</p> <ul style="list-style-type: none">• Operating systems supported on HP workstations, go to http://www.hp.com/go/wsos.• Windows operating systems, go to http://www.microsoft.com/support.• Linux operating systems, go to http://www.hp.com/linux.

2 HP Z1 Workstation features

For complete and current information on supported accessories and components for the workstation, see <http://partsurfer.hp.com>.

Components

Front and bottom components

Figure 2-1 Front and bottom components

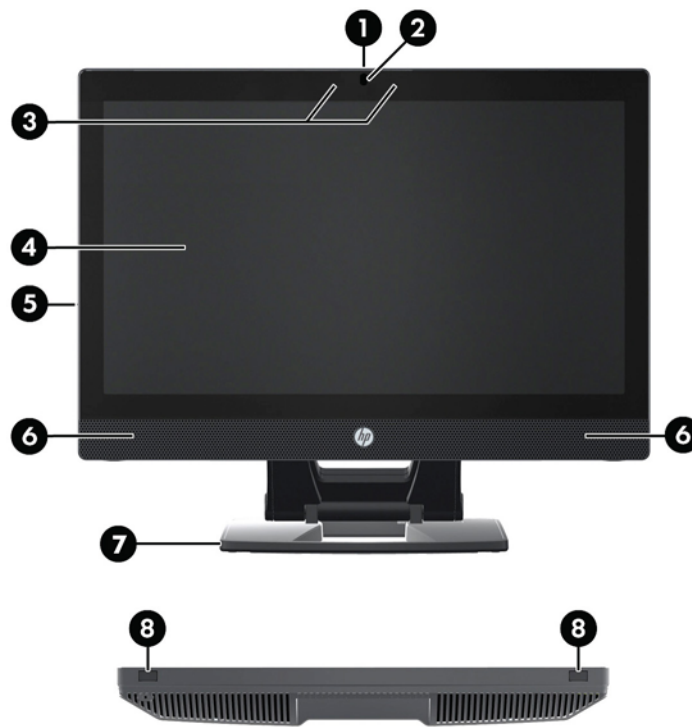


Table 2-1 Component descriptions

1	Camera angle adjustment dial	5	Serial number pull-out card
2	Camera	6	Speakers
3	Left and right digital microphones	7	Stand
4	Display panel	8	Chassis latches (bottom view)

Side components

Figure 2-2 Side components

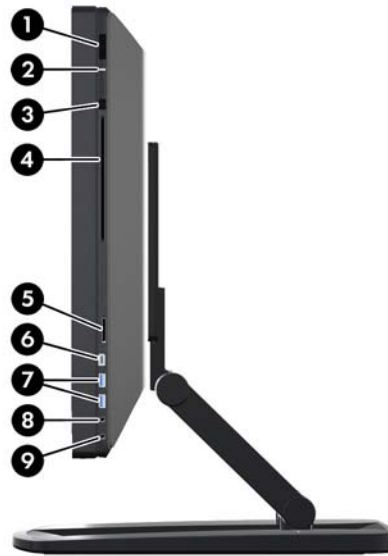









Table 2-2 Component descriptions







1		Power button	6		IEEE-1394a FireWire® connector
2		Hard drive activity light	7		USB 3.0 connectors (2)
3		Slot-load optical drive eject button	8		Headphone connector
4		Slot-load optical drive	9		Microphone connector
5		Digital memory card reader			

Rear components

Figure 2-3 Rear components (excluding stand)



Table 2-3 Component descriptions

1		Handle	6		Power cord connector
2		Subwoofer connector (orange)	7		USB 2.0 connectors (4)
3		Audio line-out connector (green)	8		Optical S/PDIF audio output
4		Audio line-in connector (blue)	9		RJ-45 network connector
5	DisplayPort	DisplayPort connector	10		Cable lock slot

Product specifications

Physical characteristics

Table 2-4 Physical characteristics

Weight	With stand	21.3 kg (47.0 lbs)
	Without stand	15.4 kg (34.0 lbs)
	Stand only	5.9 kg (13.0 lbs)
Dimensions	Upright, excluding stand	Height: 584.2 mm (23.0 in)
		Width: 660.4 cm (26.0 in)
		Depth: 419.1 cm (16.5 in)
	Stand only	Height: 457.2 cm (18.0 in)
		Width: 660.4 cm (26.0 in)
		Depth: 81.3 cm (3.2 in)

Environmental specifications

Table 2-5 HP Workstation environmental specifications

Temperature	Operating: 5°C to 35°C (40°F to 95°F)
	Non-operating: -40°C to 60°C (-40°F to 140°F)
	NOTE: The ambient upper limit of 35°C is good up to 1524 m (5000 ft) elevation. Derate by 1°C for every 305 m (1000 ft) above 1524 m (5000 ft). For example, at 3,048 m (10,000 ft), the upper ambient air temperature limit is 30°C.
Humidity	Operating: 8% to 85% relative humidity, non-condensing
	Non-operating: 8% to 90% relative humidity, non-condensing
Altitude	Operating: 0 to 3,048 m (10,000 ft)
	Non-operating: 0 to 9,144 m (30,000 ft)
Shock	Operating: ½-sine: 40g, 2-3ms (~62 cm/sec)
	Non-operating:
	<ul style="list-style-type: none">• ½-sine: 160 cm/s, 2-3ms (~105g)• 20g, square: 422 cm/s
	NOTE: Values represent individual shock events and do not indicate repetitive shock events.
Vibration	Operating random: 0.5g (rms), 5-300 Hz, up to 0.0025 g ² /Hz
	Non-operating random: 2.0g (rms), 5-500 Hz, up to 0.0150 g ² /Hz
	NOTE: Values do not indicate continuous vibration.

3 Setting up and using the workstation

Topics

[Setting up the workstation on page 11](#)

[Display options on page 20](#)

[Using the webcam on page 24](#)

[Installing optional components on page 24](#)

[Security on page 24](#)

[Product recycling on page 24](#)

Setting up the workstation


Location and ventilation

Proper ventilation for the system is important for workstation operation. To ensure adequate ventilation:

- Operate the workstation on a sturdy, level surface.
- Provide at least:
 - 12 cm (4.7 in) clearance at the front, back, top, and bottom of the workstation
 - 16 cm (6.3 in) clearance on the right side for the optical drive
- Ensure that the ambient air temperature surrounding the workstation falls within the specified limits (see [Environmental specifications on page 10](#)).
- Never restrict the incoming or outgoing airflow of the workstation by blocking any vents or air intakes.

Setup procedure

1. The HP Z1 Workstation weighs 21.3 kg (47.0 lbs.) and must be removed from the box by two people.

⚠ WARNING! If a product is shipped in packaging marked with this icon , the product must always be lifted by two people to avoid personal injury due to product weight.

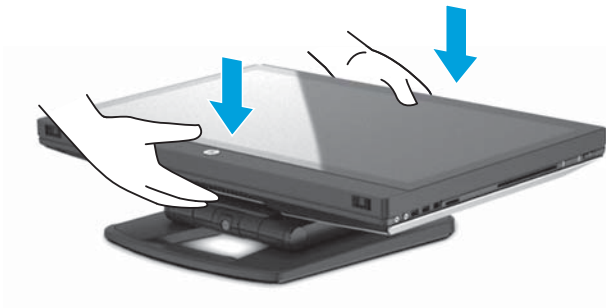
⚠ WARNING! To reduce the risk of electric shock or damage to your equipment:

- Plug the power cord into a grounded (earthed) AC power outlet.
- Do not disable the power cord grounding pin (for example, by attaching a two-pin adapter). The grounding pin is an important safety feature.
- To disconnect power from the workstation, unplug the power cord from the grounded AC outlet.

2. Push the unit down firmly to the lowest horizontal position to release the green button in the stand.

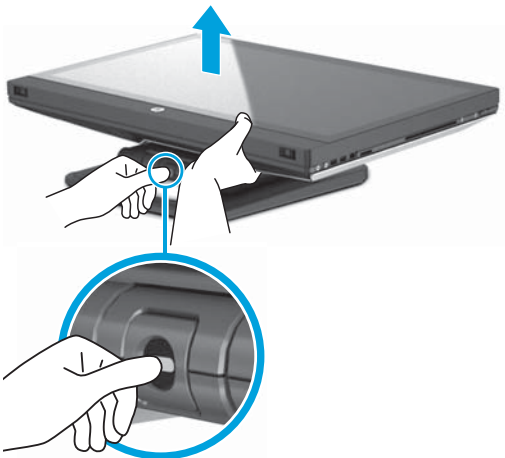
⚠ CAUTION: Never open the unit unless it is in the lowest horizontal position. Otherwise, system components may be damaged.

Figure 3-1 Push down to release green button



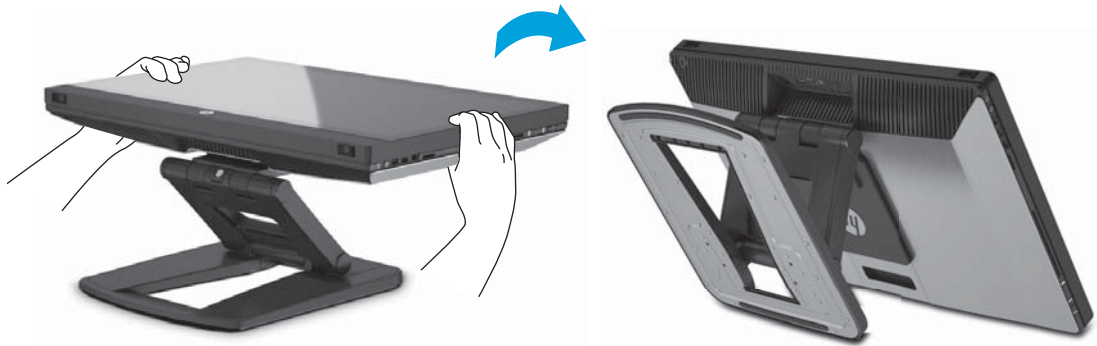
3. Push the green button while lifting.

Figure 3-2 Push the green button



4. To access the lower I/O ports, carefully tilt the unit backwards, away from you.

Figure 3-3 Tilt the unit away from you to access the lower I/O ports



5. After tilting the unit, connect the power cord, Ethernet cable, and other peripherals, including the wired keyboard and mouse, to the lower I/O panel.

Route the cables through or around the unit stand.


Figure 3-4 Connect cables to lower I/O panel



6. When cable connections are complete, carefully tilt the unit forwards, toward you.

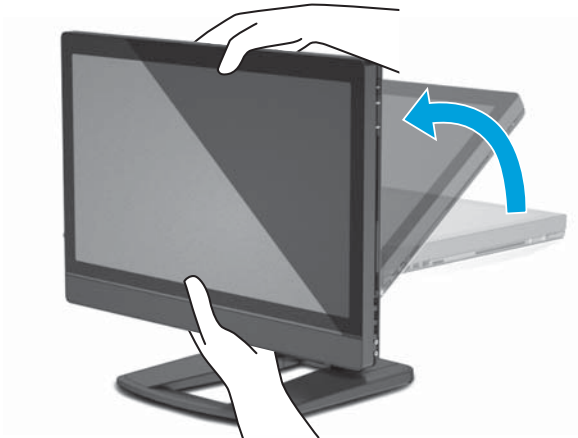
Figure 3-5 Tilt the unit towards you after connecting cables



 **NOTE:** Because the workstation is heavy and the stand joints are tight, you might need to exert some force to maneuver the workstation.

7. Rotate the workstation to the upright position. Some force is required.

Figure 3-6 Rotate the workstation



8. Connect the workstation to a grounded AC power outlet (1) and power on the unit (2).

Figure 3-7 Power on the workstation



9. If you order a wireless mouse/keyboard as an after-market option, you can connect the wireless mouse and wireless keyboard using the following steps.

- a. Insert the wireless dongle into a side USB port.


 **NOTE:** You also have the option of installing the wireless dongle in a internal USB port. For instructions, refer to [Installing the USB wireless dongle into the internal USB port on page 17](#).

Figure 3-8 Insert dongle in unit side USB port



- b. Turn the wireless mouse switch on.

Figure 3-9 Turn switch on



- 10. Connect the unit to the Internet through the wireless feature or with an RJ-45 network cable.

Figure 3-10 Connect to the Internet



Installing the USB wireless dongle into the internal USB port

If you order a wireless keyboard and mouse, you can install the wireless dongle in the internal USB port. See the following instructions:

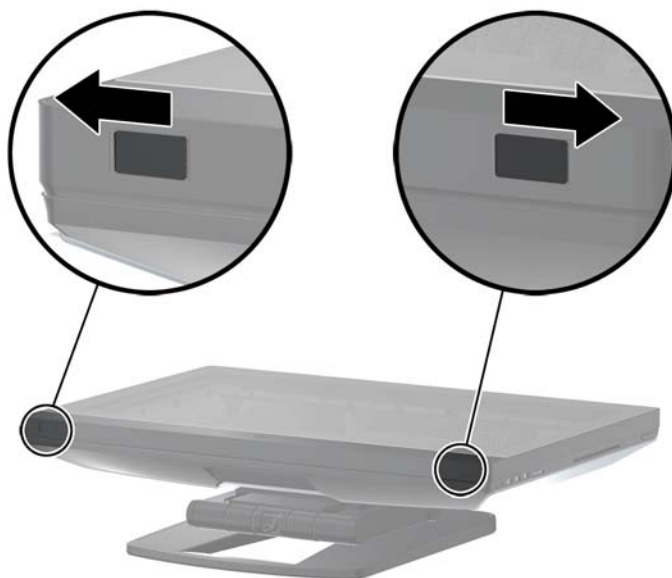
1. Turn off the workstation, and then unplug the power cord from the grounded AC power outlet.
2. Holding the workstation firmly at the center of the top and bottom, maneuver the workstation into a horizontal position.

Figure 3-11 Maneuver workstation to horizontal position



3. Slide the latches on the bottom of the workstation outward and open the chassis.


Figure 3-12 Open chassis



4. Install the dongle in the internal USB port on the lower I/O assembly. Carefully close the workstation and maneuver it to an upright position.

Figure 3-13 Internal USB port



 **IMPORTANT:** An outline around the internal USB port identifies the maximum area allowed for an internal USB device. The dongle must fit within this area.

5. Ensure the mouse and keyboard are within 30 cm (12 in) of the workstation and away from interference from other devices. Turn on the power on the bottom of the wireless mouse (1) Place them in front of the workstation.

Figure 3-14 Wireless keyboard and mouse



Enabling Bluetooth Devices

The workstation is Bluetooth®-enabled. To connect a Bluetooth wireless device:

1. Make your Bluetooth device send out a radio signal so that it is discoverable by the workstation (refer to the device documentation for instructions).
2. In the Windows **Control Panel**, go to **Hardware and Sound**.
 - If your Bluetooth device is a printer, click **Printers**, click **Add a printer**, and follow the on-screen instructions.
 - For all other devices, click **Bluetooth Devices**, click **Add**, and then follow the on-screen instructions.

Display options

Adjusting display brightness

The HP Z1 Workstation uses two methods to control the display brightness.

- The backlight brightness settings control the overall brightness of the internal display panel only.
- The pixel color brightness settings control the individual pixel color intensity for the internal display panel and an external monitor. Changing the pixel color brightness will affect the color of the pixels and will affect the colors of your display.

Controlling display panel brightness

Internal display panel backlight brightness

Windows 7 and Windows 8 each offer two methods for controlling the backlight brightness of the internal display panel. These two options adjust the backlight brightness from 100% down to 30% of the full backlight brightness.

Windows 7

1. Select **Control Panel > Power Options**.
2. Move the screen brightness slider at the bottom of the window to make adjustments.

– or –

1. Click **Start > Programs > Productivity and Tools > HP My Display**.
2. Select **Adjust**.
3. Move the slider to make adjustments.
4. At the bottom of the window, click **Apply** or **OK** to save the changes.

Windows 8

1. Point to the upper-right of the Start screen to display the Charms menu.
2. Click **Settings**.
3. In the lower corner of the right panel, click **Brightness**.
4. Move the slider to make adjustments.

– or –

1. From the desktop window, point to the task bar at the lower edge of the screen.
2. Click the **Show hidden icons** arrow then click the **HP My Display** icon.
3. Select **Adjust**.
4. Move the slider to make adjustments.
5. At the bottom of the window, click **Apply** or **OK** to save the changes.

Pixel color brightness

Pixel color brightness is controlled with either the Intel® iGFX or the NVIDIA MXM graphics controller interface. Both controllers can adjust the internal display panel and an external monitor. This adjustment affects the brightness level of the individual RGB pixels and affects the colors of the pixels.

Intel iGFX adjustments for an internal display panel

1. Right-click a blank area on the display desktop to open the system display control window. Click **Graphics Properties**.
2. Select the **Advanced** radio button, and click **OK**. The Intel Graphics and Media control panel opens.
3. From the left side of the Intel Graphics and Media control panel, select **Display > Color Enhancement**.
4. Click the **Display** drop-down window and select **Built-In Display**.
5. The brightness slider is set to 0%. Move the slider to adjust the brightness up to 100% or down to -60%.
6. At the bottom of the window, click **Apply** or **OK** to save the changes.

Intel iGFX pixel color adjustments for an external monitor

1. Right-click a blank area on the display desktop to open the system display control window. Click **Graphics Properties**.
2. Select the **Advanced** radio button and click **OK**. The Intel Graphics and Media control panel window displays.
3. From the left side of the Intel Graphics and Media control panel, select **Display > Color Enhancement**.
4. Click the **Display** drop-down window and select the **External Monitor**. For example, if a ZR2740w monitor is connected, select **Digital Display ZR2740w**.
5. The brightness slider is set to 50%. Move the slider up or down to adjust the brightness.
6. At the bottom of the window, click **Apply** or **OK** to save the changes.

NVIDIA MXM controller pixel color adjustments for an internal display panel

1. Right-click a blank area on the display desktop to open the system display control window. Click the **NVIDIA** control panel.
2. Click the **HP Z1** display panel icon. A green box outlines the icon.
3. On the left side of the NVIDIA Control Panel, click **Adjust desktop color settings**, and select the internal display panel to adjust.
4. Click the **Use NVIDIA Settings** radio button.
5. The brightness slider is set to 50%. Move the slider up or down to adjust the brightness.
6. At the bottom of the window, click **Apply** or **OK** to save the changes.

NVIDIA MXM controller pixel color adjustments for an external monitor

1. Right-click a blank area on the display desktop to open the system control window. Click the **NVIDIA** control panel.
2. Click the icon for your external monitor. A green box outlines the icon.
3. On the left side of the NVIDIA Control Panel, click **Adjust desktop color settings**, and select the external monitor to adjust.
4. Click the **Use NVIDIA Settings** radio button.
5. The brightness slider is set to 50%. Move the slider up or down to adjust the brightness.
6. At the bottom of the window, click **Apply** or **OK** to save the changes.

Adding an external monitor

To connect a monitor to the workstation:

1. Determine the correct cable and/or adapter requirements for the monitor:

Monitor Interface	Required connection
DisplayPort	DisplayPort cable
VGA	DisplayPort to VGA adapter with VGA cable
DVI	DisplayPort to DVI adapter with DVI-D cable
Dual-Link DVI	DisplayPort to DLDVI adapter with Dual-Link cable
HDMI	DisplayPort to HDMI adapter with HDMI cable

2. Connect the DisplayPort end of the cable/adapter to the DisplayPort connector on the back of the workstation.
3. Connect the other end of the cable to the external monitor.
4. Turn on the monitor. If the workstation is running Microsoft® Windows and a graphics driver is installed, the workstation automatically detects the external monitor and uses it as a display.

Customizing the display panel or the external monitor

You can manually select or change the monitor refresh rates, screen resolution, color settings, font sizes, and power management settings of the workstation's display panel or external monitor. Use either the control panel of the graphics processing unit (MXM card or integrated graphics) or select the Windows **Control Panel > Display** options.

For more information about customizing your external monitor, refer to the documentation included with the monitor.

Using the HP Z1 Workstation as a monitor

The DisplayPort connector on the HP Z1 Workstation is bi-directional and lets you use the workstation as a display for another computer, such as a laptop. The other computer (referred to as the *external graphics source*) must have a graphics DisplayPort output connector.

A set of keystrokes on the workstation keyboard switches the port from output to input and back. While in output mode, the port drives an external monitor. While in input mode, an external graphics source drives the workstation display panel.

 **NOTE:** This feature is only supported on the Windows operating system.


To use the workstation as a monitor:

1. Connect one end of a DisplayPort cable to the external graphics source's DisplayPort connector. Connect the other end to the DisplayPort connector on the back of the HP Z1 Workstation.

Figure 3-15 Connecting the display ports



2. On the HP Z1 Workstation keyboard, simultaneously press **Ctrl+Shift+S+D** (*switch display*) to enable the workstation to display output from the external graphics source.
3. To switch back, simultaneously press **Ctrl+Shift+S+D** on the HP Z1 Workstation keyboard to reinstate the internal graphics source and place the workstation display panel in standby mode. On the HP Z1 Workstation, move the mouse or press the space bar to wake up the display panel.

 **NOTE:** This feature relies on the **My Display** utility, which is subject to change with new software and driver releases. To download the latest software and driver, go to http://www.portrait.com/dtune/hpw/enu/upgrade_instructions.html.

Adjusting the audio signal

- There is no hardware volume control on the HP Z1 Workstation. (However, some keyboards do have volume buttons, usually in the upper-right corner.)
- Volume can be adjusted with the operating system (OS) master control or the software (SW) audio player control.
- The OS master control and SW audio player control are independent. However, they are both simultaneously active and affect the overall volume of the audio signal.
- If the audio signal is not audible, check the OS master control and SW audio player control to be sure that neither is set too low.

Using the webcam

The webcam works automatically with any webcam software.

A white activity LED is on when the webcam is active. Optimal performance of the fixed-focus lens is at 0.5 meters.

A dial at the top of the workstation lets you:

- Adjust the camera angle.
- Disable the camera by turning the dial all the way toward the front of the workstation. A red stripe in the camera viewport indicates the lens is pointing straight down into the chassis. The user is not visible.

Installing optional components

You can install additional components such as memory, hard drives, and PCIe Mini Cards in your workstation.

- To view component installation videos, go to <http://www.hp.com/go/sml>.
- For installation guidelines and technical information, refer to the *HP Z1 Workstation Maintenance and Service Guide* at http://www.hp.com/support/workstation_manuals.

Security

You can secure your workstation by attaching a lock to the cable lock slot. The workstation includes several security features to reduce the risk of theft and to warn of chassis intrusion. Refer to the *Maintenance and Service Guide* for information about additional hardware and software security features available for your system.

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, see <http://www.hp.com/go/recycle>.


4 Setting up and restoring Windows 7


This chapter provides setup and update information for the Windows 7 operating system. It includes these topics:

Topics


[Setting up the Windows 7 operating system on page 26](#)

[Restoring and recovering in Windows 7 on page 27](#)

 **NOTE:** After you set up the operating system, you should make sure the latest BIOS, drivers, and software updates are installed on the workstation. Refer to the chapter on updating the workstation.

 **CAUTION:** Do not add optional hardware or third-party devices to the HP workstation until the operating system is successfully installed. Adding hardware might cause errors and prevent the operating system from installing correctly.

Setting up the Windows 7 operating system

 **CAUTION:** After installation has started, do *not* turn off the workstation until the process is complete. Turning off the workstation during installation can damage the installation and operation of the software.

For complete installation and configuration instructions, go to <http://windows.microsoft.com/en-US/windows7/help>. Additional information is available in the online help tool after you successfully install the operating system.

Installing or upgrading device drivers

You must install the appropriate device drivers before you install hardware devices. Follow the installation instructions that came with the device. For optimum performance, your operating system must have the most recent updates, patches, and software fixes. For additional driver and software update information, refer to the chapter on updating the workstation.

Transferring files and settings

The Windows operating system offers data migration tools that help you select and transfer files and data from one Windows-based computer to another.

For information on these tools, go to <http://www.microsoft.com>.

Restoring and recovering in Windows 7


To protect your information from loss or damage, back up your personal data files. Refer to the operating system or backup utility documentation for instructions on making backup copies of your data files.


To protect the software from loss or damage, keep a backup copy of all system software, applications, and related files stored on the hard drive.

If you cannot create system recovery CDs or DVDs, you can order a recovery disk set from support. To obtain the support telephone number for your region, see <http://www.hp.com/support/contactHP>.

System Restore

If you have a problem that might be due to software that you installed on your computer, use System Restore to return the computer to a previous restore point. You can also set restore points manually.

 **NOTE:** Always use this System Restore procedure before you use the System Recovery feature.

 **NOTE:** Some features might not be available on systems that are shipped without a Windows operating system.


To start System Restore:

1. Close all open programs.
2. Click the **Start** button, right-click **Computer**, and then click **Properties**.
3. Click **System protection, System Restore**, click **Next**, and then follow the on-screen instructions.


To add restore points manually:

1. Close all open programs.
2. Click the **Start** button, right-click **Computer**, click **Properties**, and then click **System protection**.
3. Under **Protection Settings**, select the disk for which you want to create a restore point.
4. Click **Create**, and then follow the on-screen instructions.

System Recovery

 **WARNING!** This procedure will delete all user information. To prevent loss of information, be sure to back up all user information so you can restore it after recovery. Always use the System Restore procedure before you use the System Recovery program. See [System Restore on page 28](#).


System Recovery completely erases and reformats the hard disk drive, deleting all data files that you have created, and then reinstalls the operating system, programs, and drivers. However, you must reinstall any software that was not installed on the computer at the factory. This includes software that came on media included in the computer accessory box, and any software programs you installed after purchase.

 **NOTE:** Some features might not be available on systems that are shipped without a Windows operating system.

You must choose one of the following methods to perform a System Recovery:

- Recovery image — Run System Recovery from a recovery image stored on your hard disk drive. The recovery image is a file that contains a copy of the original factory-shipped software. To perform a System Recovery from a recovery image, see [System Recovery when Windows is responding on page 29](#) or [System Recovery when Windows is not responding on page 30](#).
- Recovery media — Run System Recovery from recovery media that you have created from files stored on your hard disk drive or purchased separately. To create recovery media, see [System recovery using recovery media on page 30](#).


System Recovery when Windows is responding

 **CAUTION:** System Recovery deletes all data and programs you have created or installed. Before you begin, back up any important data to a CD or DVD or to a USB flash drive.

 **NOTE:** In some cases, you must use recovery media for this procedure. To create this media, follow the instructions in [Creating recovery media on page 31](#).

If the computer is working and Windows 7 is responding, use these steps to perform a System Recovery.

1. Turn off the computer.
2. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.
3. Turn on the computer.
4. When Windows has loaded, click the **Start** button, click **All Programs**, click **Security and Protection**, and then click **Recovery Manager**. If prompted, click **Yes** to allow the program to continue.
5. Under **I need help immediately**, click **System Recovery**.
6. Select **Yes**, and then click **Next**. Your computer restarts.

 **NOTE:** If your system does not detect a recovery partition, it prompts you to insert recovery media that you have created. Insert the first disc or the USB flash drive, select **Yes**, and then click **Next** to restart the computer. If you are using discs, insert the next disc when prompted.

7. When the computer restarts, you will see the Recovery Manager welcome screen again. Under **I need help immediately**, click **System Recovery**. If you are prompted to back up your files,

and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.

8. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.
9. When Windows has loaded, shut down the computer, reconnect all peripheral devices, and then turn the computer back on.

System Recovery when Windows is not responding


 **CAUTION:** System Recovery deletes all data and programs you have created or installed.

If Windows is not responding, but the computer is working, follow these steps to perform a System Recovery.


1. Turn off the computer. If necessary, press and hold the power button until the computer turns off.
2. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.
3. Press the power button to turn on the computer.
4. As soon as you see the HP logo screen, repeatedly press the **F11** key on your keyboard until the *Windows is Loading Files...* message appears on the screen.
5. Under **I need help immediately**, click **System Recovery**.
6. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.
7. System Recovery begins. After System Recovery is complete, click **Finish** to restart the computer.
8. When Windows has loaded, shut down the computer, reconnect all peripheral devices, and then turn the computer back on.

System recovery using recovery media

You should create a set of recovery media, either a set of DVDs or a USB flash drive, from the recovery image stored on your hard disk drive. This image contains the operating system and software program files that were originally installed on your computer at the factory. You can create only one set of recovery media for your computer, and the media can be used *only* with this computer. Store the recovery media in a safe place.


 **NOTE:** Some features might not be available on systems that are shipped without a Windows operating system.

- To create recovery discs, your computer must have a DVD writer, and you must use only high-quality blank DVD+R or DVD-R discs.

 **NOTE:** You *cannot* use DVD+RW, DVD-RW, DVD+RW DL, DVD-RW DL, DVD+R DL, or DVD-R DL discs to create recovery discs.

- You have the option of creating a recovery USB flash drive instead, using a high-quality USB drive.

- If you are creating recovery discs, be sure to use high-quality discs. It is normal for the system to reject defective discs. You will be prompted to insert a new blank disc to try again.
- The number of discs in the recovery-disc set depends on your computer model (typically 3 to 6 DVDs). The Recovery Media Creation program tells you the specific number of blank discs needed to make the set. If you are using a USB flash drive, the program will tell you the size of the drive required to store all the data (minimum of 8 GB).


 **NOTE:** The process of creating recovery media is lengthy. You can quit the process at any time. The next time you initiate the process, it resumes where it left off.

Creating recovery media


To create recovery discs:

1. Close all open programs.
2. Click the **Start** button, click **All Programs**, click **Security and Protection**, click **Recovery Manager**, and then click **HP Recovery Media Creation**. If prompted, click **Yes** to allow the program to continue.
3. Click **Create recovery media using blank DVD(s)**, and then click **Next**.
4. Follow the on-screen instructions. Label each disc as you make it (for example, Recovery 1, Recovery 2), and then store the discs in a secure place.


To create a recovery USB flash drive:

 **NOTE:** You must use a flash drive with a capacity of at least 8 GB.


1. Close all open programs.
2. Insert the USB flash drive into a USB port on the computer.
3. Click the **Start** button, click **All Programs**, click **Security and Protection**, click **Recovery Manager**, and then click **Recovery Media Creation**.
4. Click **Create recovery media with a USB flash drive**, and then click **Next**.
5. Select the USB flash drive from the list of media. The program will let you know how much storage is required to create the recovery drive. If the USB flash drive does not have enough storage capacity, it will appear grayed out, and you must replace it with a larger USB flash drive. Click **Next**.

 **NOTE:** Recovery Media Creation formats the flash drive, deleting any files on it.

6. Follow the on-screen instructions. When the process is complete, label the USB flash drive and store it in a secure place.

 **NOTE:** Do not use media cards for creating recovery media. The system may not be able to boot up from a media card and you may not be able to run system recovery.

Using recovery media

 **CAUTION:** System Recovery deletes all data and programs you have created or installed. Back up any important data to a CD or DVD or to a USB flash drive.

To create recovery media, see [System recovery using recovery media on page 30](#).

To perform a System Recovery using recovery media:

1. If using a set of DVDs, insert the first recovery disc into the DVD drive tray, and close the tray. If you are using a recovery USB flash drive, insert it into a USB port.
2. If the computer is not responding, press and hold the power button for approximately 5 seconds or until the computer turns off.

or

Click the **Start** button, and then click **Shut Down**.

3. Disconnect all peripheral devices from the computer except the monitor, keyboard, and mouse.
4. Press the power button to turn on the computer.
5. Press **Esc** as the computer is powering on to see the startup menu. Use the arrow keys to select the boot menu and press **Enter**. Use the arrow keys to select the location where the recovery media is inserted (USB or DVD). Press **Enter** to boot from that device.
6. If Recovery Manager asks if you want to run System Recovery from Media or Hard Drive, select **Media**. On the Welcome screen, under **I need help immediately**, click **Factory Reset**.
7. If you are prompted to back up your files, and you have not done so, select **Back up your files first (recommended)**, and then click **Next**. Otherwise, select **Recover without backing up your files**, and then click **Next**.
8. If you are prompted to insert the next recovery disc, do so.
9. When Recovery Manager is finished, remove the recovery disc or the recovery USB flash drive from the system.
10. Click **Finish** to restart the computer.


5 Setting up and restoring Windows 8


This chapter provides setup and update information for the Windows 8 operating system. It includes these topics:

Topics

[Additional information on page 33](#)

[Backup and recovery in Windows 8 on page 34](#)

 **NOTE:** After you set up the operating system, you should make sure the latest BIOS, drivers, and software updates are installed on the workstation. Refer to the chapter on updating the workstation.

 **CAUTION:** Do not add optional hardware or third-party devices to the HP workstation until the operating system is successfully installed. Adding hardware might cause errors and prevent the operating system from installing correctly.


Additional information


Additional information is available in the online help after you customize the operating system.

Setting up the Windows 8 Operating System

The first time you turn on the computer you can customize the operating system. If you are connected to the Internet, Microsoft activates your operating system. This process takes about 15 to 30 minutes. Carefully read and follow the instructions on the screen.

We recommend that you register your computer with HP; so you can receive important software updates, facilitate support questions, and sign up for special offers. You can register your computer with HP using the **Register with HP** app on the Start screen.

 **CAUTION:** After the initial setup process has begun, **DO NOT TURN OFF THE COMPUTER UNTIL THE PROCESS IS COMPLETE.** Turning off the computer during this process may damage the software that runs the computer or prevent its proper installation.

 **NOTE:** Windows includes the User Account Control feature to improve the security of your computer. You may be prompted for your permission or password for tasks such as installing software, running utilities, or changing Windows settings. Refer to Help and Support for more information. From the Start screen, type `help`, and then select **Help and Support**.

Downloading Windows 8 updates

Microsoft may release updates to the operating system. To help keep the computer running optimally, HP recommends checking for the latest updates during the initial installation and periodically throughout the life of the computer.

Run Windows Update as soon as possible after you set up your computer.

1. Point to the upper-right or lower-right corner of the Start screen to display the charms.
2. Click **Settings > Change PC Settings > Windows Update**.
3. Run Windows Update monthly thereafter.

Backup and recovery in Windows 8

To protect your information, use Windows Backup and Restore to back up individual files and folders, back up your entire hard drive, create system repair media, or create system restore points. In case of system failure, you can use the backup files to restore the contents of your computer.

From the Start screen, type `restore`, click **Settings**, and then select from the list of displayed options.



NOTE: For detailed instructions on various backup and restore options, perform a search for these topics in Help and Support. From the Start screen, type `help`, and then select **Help and Support**.

In case of system instability, HP recommends that you print the recovery procedures and save them for later use.

Backing up your information

Recovery after a system failure is as good as your most recent backup. You should create system repair media and your initial backup immediately after initial system setup. As you add new software and data files, you should continue to back up your system on a regular basis to maintain a reasonably current backup. The system repair media is used to start up (boot) the computer and repair the operating system in case of system instability or failure. Your initial and subsequent backups allow you to restore your data and settings if a failure occurs.


Type `backup` on the Start screen, click **Settings**, and then select **Save backup copies of your files with File History**.

You can back up your information to an optional external hard drive, or a network drive.

Note the following when backing up:

- Store personal files in the Documents library, and back it up regularly.
- Backup templates that are stored in their associated programs.
- Save customized settings that appear in a window, toolbar, or menu bar by taking a screen shot of your settings. The screen shot can be a time-saver if you have to reset your preferences.

To create a backup using Windows Backup and Restore:


 **NOTE:** The backup process may take over an hour, depending on file size and the speed of the computer.

1. From the Start screen, type `backup`, click **Settings**, and then select from the list of displayed options.
2. Follow the on-screen instructions to set up your backup, create a system image, or create system repair media.

Performing a system recovery

In case of system failure or instability, the computer provides the following tools to recover your files:

- Windows recovery tools: You can use Windows Backup and Restore to recover information you have previously backed up. You can also use Windows Automatic Repair to fix problems that might prevent Windows from starting correctly.
- The **F11** recovery tools: You can use the **F11** recovery tools to recover your original hard drive image. The image includes the Windows operating system and software programs installed at the factory.


 **NOTE:** If you are unable to boot (start up) your computer and you cannot use the system repair media you previously created, you must purchase Windows 8 operating system media to reboot the computer and repair the operating system. For additional information, see [Using HP Windows 8 restore media \(purchased separately\) on page 37](#).

Using the Windows recovery tools

To recover information that you previously backed up:

- ▲ From the Start screen, type `help`, and then select **Help and Support**.

To recover your information using Automatic Repair, follow these steps:


 **CAUTION:** Some Automatic Repair options will completely erase and reformat the hard drive. For additional information go to Help and Support. From the Start screen, type `help`, and then select **Help and Support**.

1. If possible, back up all personal files.
2. If possible, check for the presence of the HP Recovery partition and the Windows partition:


From the Start screen, type `e`, and then click **Windows Explorer**.

– or –


From the Start screen, type `c`, and then select **Computer**.

 **NOTE:** If the Windows partition and the HP Recovery partition are not listed, you must recover your operating system and programs using the Windows 8 operating system media and the *Driver Recovery* media (both purchased separately). For additional information, see [Using HP Windows 8 restore media \(purchased separately\) on page 37](#).


3. If the Windows partition and the HP Recovery partition are listed, restart the computer after Windows has loaded, and then press and hold **Shift** while clicking **Restart**.

 **NOTE:** If the computer fails to boot to Windows after several attempts, the system will boot to the Windows Recovery Environment by default.

4. Select **Troubleshoot**, select **Advanced Options**, and then select **Automatic Repair**.
5. Follow the on-screen instructions.


 **NOTE:** For additional information on recovering information using the Windows tools, perform a search for these topics in Help and Support. From the Start screen, type `help`, and then select **Help and Support**.

Using F11 recovery tools

 **CAUTION:** Using **F11** completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. The **F11** recovery tool reinstalls the operating system and HP programs and drivers that were installed at the factory. Software not installed at the factory must be reinstalled.


To recover the original hard drive image using **F11**:

1. If possible, back up all personal files.
2. Restart the computer, and then press `esc` while the company logo is displayed. The computer Startup Menu displays.
3. Press **F11** to select the System Recovery option.
4. Choose your keyboard localization.
5. On the Choose an option menu, select **Troubleshoot**.
6. On the Troubleshoot menu, choose either **Refresh your PC** to repair the OS or **Reset your PC** to completely reinstall the OS.
7. Follow the on-screen instructions.


 **NOTE:** If the F11 System Recovery does not start, you must recover your operating system and programs using the Windows 8 Restore Media (purchased separately). For additional information, see [Using HP Windows 8 restore media \(purchased separately\) on page 37](#).

Using HP Windows 8 restore media (purchased separately)

To order HP Windows 8 restore media, go to <http://www.hp.com/support>, select your country or region, and follow the on-screen instructions. You can also order the media by calling support.

 **CAUTION:** Using HP Windows 8 restore media completely erases hard drive contents and reformats the hard drive. All files that you have created and any software that you have installed on the computer are permanently removed. When reformatting is complete, the recovery process helps you restore the operating system, as well as drivers, software, and utilities.

To initiate recovery using HP Windows 8 restore media:

 **NOTE:** This process takes several minutes.

1. If possible, back up all personal files.
2. Insert the Windows 8 OS DVD.
3. Restart the computer, and then follow the instructions provided with the Windows 8 operating system media to install the operating system.
4. When prompted, press any keyboard key.
5. Follow the on-screen instructions.

After the operating system install is completed:

1. Remove the Windows 8 operating system media, and then insert the *Driver Recovery* media.
2. Install the Hardware Enabling Drivers first, and then install Recommended Applications.

6 Setting up and restoring Linux

HP offers a variety of Linux solutions for HP workstation customers:

- HP certifies and supports Red Hat Enterprise Linux (RHEL) on HP workstations.
- HP certifies and supports SUSE® Linux Enterprise Desktop (SLED) on HP workstations.
- HP offers a SLED 11 preload on some Z series Workstations.

This chapter describes how to set up and restore the Linux® operating system. It includes these topics:


Topics


[HP Installer Kit for Linux \(HPIKL\) on page 39](#)

[Setting up Red Hat Enterprise Linux on page 39](#)

[Setting up SUSE Linux Enterprise Desktop \(SLED\) on page 41](#)

[Proprietary graphics drivers on page 42](#)

 **NOTE:** After you set up the operating system, make sure the latest BIOS, drivers, and software updates are installed. Refer to the chapter on updating the workstation.

 **CAUTION:** Do not add optional hardware or third-party devices to the workstation until the operating system is successfully installed. Adding hardware might cause errors and prevent the operating system from installing correctly.

HP Linux Support Matrix

Not all release streams are supported on particular platforms. To find out which streams are supported on your workstation, refer to the *Linux certification and support matrix*:

1. Go to <http://www.hp.com/linux>.
2. In the **Platforms** tab, select **HP Workstations**.
3. Select **Certification Matrix**.
4. Go to the **Red Hat** or **SUSE** tab.

HP Installer Kit for Linux (HPIKL)

The HP Installer Kit for Linux helps users install certified versions of RHEL or SLED on HP workstations. It is available as an operating system option on all HP workstations. The kit:

- Contains tested drivers that augment and/or replace those found in RHEL or SLED to enable proper use and behavior on HP workstations.
- Does **not** include Linux operating system, which must be purchased separately from Red Hat or SUSE. To view supported configurations and operating systems, go to http://www.hp.com/support/linux_hardware_matrix.

The HPIKL option includes a FreeDOS preload. This operating system option accommodates those who have a customized Linux distribution, or who have a licensed version of RHEL or SLED and would like to install the HP-recommended driver additions.

The kit also can be downloaded:

1. Go to http://www.hp.com/support/workstation_swdrivers.
2. Select your workstation model.
3. Select the desired operating system.
4. Select your software/driver language, then click the **Software** quick jump link.
5. Click the **Obtain Software** link for the appropriate package (typically the most recent revision).
6. Click **I Agree** to accept the terms of the license agreement.
7. Download the software ISO image and save it on a disc. This disk is your *HP driver disc*.

Setting up Red Hat Enterprise Linux

HP Z series Workstations are certified and supported on RHEL streams appropriate to the hardware technology.


- For details of RHEL support for a particular platform, see the *Hardware Support Matrix for HP Linux Workstations* at http://www.hp.com/support/linux_hardware_matrix.
- For information about Red Hat certifications on HP workstations, go to <https://hardware.redhat.com>.

HPIKL driver disc

Recent versions of Red Hat Linux typically require only driver updates with minor fixes to support HP workstations. These releases can usually be supported with the HPIKL driver disc, which can be used as a post-installation utility for the standard Red Hat Linux install.

After you complete the standard Red Hat install and restart the system, a Red Hat *first-boot* utility runs. After you specify a number of settings (such as the security level, time and date, root password, user accounts), the utility lets you to load additional disc.

The driver disc is used during this phase. All content added by HP is in the **/HP** directory on the disc. You can use it to build your own image or to browse the HP content.

 **NOTE:** Some installations may encounter problems if they are performed with a DisplayPort connection to the monitor. This is because the default drivers that the OS installers use do not support DisplayPort functionality. If you experience problems, try overriding the monitor choice for DisplayPort during the start of the install and using the VESA driver instead. You can then set up the DisplayPort monitor later.

Installing with the HP Red Hat Linux driver disc

1. If you do not have the appropriate HP driver disc for a supported stream, create one (see [HP Installer Kit for Linux \(HPIKL\) on page 39.](#))
2. Install the operating system using the optical media included in the Red Hat Linux box-set.
3. If you have a Red Hat driver disk for the OS version you are installing, enter `linux dd` on the initial install splash screen, and then press **Enter**.
4. When asked if you have a driver disc, select **Yes**. Place the Red Hat driver disc in the drive, and select the appropriate `drive:hd[abcd]`. Continue the normal installation.
5. After successfully installing the operating system, reboot the workstation.
 - RHEL 5: the Red Hat Setup Agent (also known as *first-boot*) automatically starts. At the **Additional DVDs** screen, insert your HP driver disc and select **Install**. When the driver installation task is completed, continue following the prompts until the operating system is successfully installed.
 - RHEL 6: Insert your HP driver disc. The HPIKL installation software automatically starts. Follow the prompts to install the contents.

Warranty

As part of the HP workstation hardware warranty, HP provides software configuration and installation support for certified versions of Red Hat Linux for up to 90 days from date of purchase.

Setting up SUSE Linux Enterprise Desktop (SLED)


HP offers a 64-bit SLED 11 preload on some Z series Workstations and supports 64-bit SLED 11 on other workstations.

Various versions of SLED are certified and supported by SUSE on HP workstations. For more information, refer to the SUSE certification bulletin search page at <http://developer.novell.com/yesssearch>.

Setting up preloaded SLED

To set up SLED on systems preloaded with the operating system:

1. Start the workstation.
2. When prompted, enter the workstation installation settings: password, network, graphics, time, keyboard settings, and SUSE Customer Center Configuration.

 **NOTE:** You can activate your SUSE subscription from the SUSE Customer Center Configuration screen. To view the full SUSE Customer Center documentation, go to <http://www.suse.com/documentation> and select your operating system.

Installing SLED with the DVD Installer Kit

1. If an HP driver disc did not come with your workstation, create one (see [HP Installer Kit for Linux \(HPIKL\) on page 39](#)).
2. Install the operating system using the discs included in the SUSE box-set.
3. After successfully installing the operating system, reboot the workstation.
4. Insert your HP driver disc. The HPIKL installation software automatically starts. Follow the prompts to install the contents.


Warranty

HP provides configuration and installation support for SLED 11 on Z series Workstations for up to 90 days from date of purchase. SUSE also provides support for all versions of SLED that are certified on HP workstations.

Restoring SLED (preloaded systems only)


The SLED restore media is required to restore the Linux operating system. To create restore media:

1. Click the SUSE ISO icon on the desktop to go to the `/iso` folder. This folder contains all iso images used to preload your workstation.
2. Follow the instructions in the readme file in this folder to copy the ISO image file onto optical media.
3. Store the media in a safe place. If your workstation experiences a hard drive failure, use the ISO recovery images to restore your operating system.

 **CAUTION:** Restoring the operating system does **not** restore data. Back up your data using the method and media of your choice.

Proprietary graphics drivers

Most HP workstations can be ordered with graphics cards that have been through extensive verification by HP. See the *Hardware Support Matrix for HP Linux Workstations* at http://www.hp.com/support/linux_hardware_matrix for a list of supported cards.

 **NOTE:** Not all graphics cards are available on every workstation. Limitations generally occur for cards that consume large amounts of power in lower-power workstations.

Proprietary graphics drivers supported by HP and the graphics vendors are available with the HP Installer Kit for Linux, with the SLED 11 preload on Z series Workstations, and from HP Workstation Support at <http://www.hp.com/go/workstationsupport>.

These proprietary drivers are not a standard part of the RHEL or SLED distributions because they are not open source. Driver revisions more recent than those at the HP support website are supported directly by the vendor.

7 Updating the workstation

HP is constantly working on improving your total workstation experience. To ensure that the workstation leverages the latest enhancements, HP recommends that you install the latest BIOS, driver, and software updates on a regular basis.

Updating the workstation after first boot

After successfully booting the workstation for the first time, you should follow these guidelines to ensure that the workstation is up-to-date:

- Ensure that you have the latest system BIOS loaded. See [Upgrading the BIOS on page 43](#).
- Ensure that you have the latest drivers for your system. See [Upgrading device drivers on page 44](#).
- Become familiar with your available HP resources.
- Consider a subscription to Driver Alerts at <http://www.hp.com/go/subscriberschoice>.

Upgrading the BIOS

For optimum performance, determine the BIOS revision on the workstation, and upgrade it if necessary.

Determining the current BIOS version

To determine the current BIOS version:

1. Press **Esc** during power-up.
2. Press **F10** to enter the F10 Setup utility.
3. Select **File > System Information**. Note the workstation BIOS version and compare it with the BIOS versions that appear on the HP website.



NOTE: Procedures for upgrading the BIOS, as well as the F10 Computer Setup utility BIOS Menu settings, are located in the *HP Z1 Workstation Maintenance and Service Guide* at http://www.hp.com/support/workstation_manuals.

Upgrading BIOS

To find and download the latest available BIOS, which includes the latest enhancements:

1. Go to <http://www.hp.com/go/workstationsupport>.
2. Select **Download Drivers and Software** from the left menu column under Tasks.
3. Follow the instructions to locate the latest BIOS available for the workstation.
4. If the BIOS on the website is the same as the version on your system, no further action is required.
5. If the BIOS on the website is a version later than the one on your system, download the appropriate version for the workstation. Follow the instructions in the release notes to complete the installation.

Upgrading device drivers

If you install a peripheral device (such as a printer, display adapter, or network adapter), confirm you have the latest device drivers loaded. If you purchased your device through HP, visit the HP website to download the latest drivers for your device. These drivers have been tested to ensure the best compatibility between your device and your HP workstation.

If you did not purchase your device from HP, HP recommends visiting the HP website first to see if your device and its drivers have been tested for HP workstation compatibility. If no driver is available, visit the device manufacturer's website to download the latest drivers.

To upgrade device drivers:

1. Go to <http://www.hp.com/go/workstationsupport>.
2. Under **Tasks** in the left column, select **Download Drivers and Software**.
3. Follow the instructions to find the latest drivers available for the workstation.


If a needed driver is not found, see the website of the manufacturer of the peripheral device.


8 Diagnostics and Minor Troubleshooting

Calling support

At times you might encounter an issue that requires support. When you call support:

- Have the computer readily accessible.
- Write down the computer serial numbers, product numbers, model names, and model numbers and have them in front of you.
- Note any applicable error messages.
- Note any add-on options.
- Note the operating system.
- Note any third-party hardware or software.
- Note the details of any blinking LEDs on the front of the computer (tower and desktop configurations) or on the side of the computer (all-in-one configurations).
- Note the applications you were using when you encountered the problem.

 **NOTE:** When calling in for service or support, you might be asked for the product number (example: PS988AV) of the computer. If the computer has a product number, it is generally located next to the 10- or 12-digit serial number of the computer.

 **NOTE:** On most models, the serial number and product number labels can be found on the top or side panel and at the rear of the computer (tower and desktop configurations) or on a pull-out card on the side of the display (all-in-one configurations).

For a listing of all worldwide support phone numbers, go to <http://www.hp.com/support>, select your region, and click **Connect with HP** in the upper-right corner.

Locating ID labels

To assist in troubleshooting, product, serial, and authentication numbers are available on each computer.

- All workstations have a serial number (unique for each workstation) and product number. Have these numbers available when you contact support.
- The Certificate of Authentication (COA) is used only for systems with Windows 7 preinstalled.
- The Genuine Microsoft Label (GML) is used only for systems with Windows 8 preinstalled.
- A service label shows the build ID and Feature Byte strings, which are needed for system board replacement.

The all-in-one service label can be found in the location shown in Figure 8-1 (pull-out card).

Figure 8-1 All-in-one service label location



Locating warranty information

To locate base warranty information, see <http://www.hp.com/support/warranty-lookuptool>.

To locate an existing Care Pack, see <http://www.hp.com/go/lookuptool>.

To extend a standard product warranty, visit <http://www.hp.com/hps/carepack>. HP Care Pack Services offer upgraded service levels to extend and expand a standard product warranty.

HP troubleshooting resources and tools

This section provides information on the HP Help and Support Center, online support, and helpful hints for troubleshooting.

HP Support Assistant (HPSA)

HP Support Assistant (Windows 7 systems only) helps you maintain workstation performance and resolve problems. HPSA provides automated updates, onboard diagnostics, product information, and guided assistance to help maintain optimum workstation performance. To access HPSA, click **Start > All Programs > HP Help and Support > HP Support Assistant**.



NOTE: HP Support Assistant is not available on Linux or Windows 8.

Online support

Online access and support resources include web-based troubleshooting tools, technical knowledge databases, driver and patch downloads, online communities, and product change notification services.

The following websites are also available to you:

- <http://www.hp.com>—Provides useful product information.
- http://www.hp.com/support/workstation_manuals—Provides the latest online documentation.
- <http://www.hp.com/go/workstationsupport>—Provides technical support information for workstations.
- <http://www.hp.com/support>—Provides a listing of the worldwide technical support phone numbers. Access the telephone numbers by visiting the website, then select your region, and click **Contact HP** in the upper-left corner.
- http://www.hp.com/support/workstation_swdrivers—Provides access to software and drivers for workstations.

Troubleshooting a problem

To help you troubleshoot problems with your system, HP provides the Business Support Center (BSC). The BSC is a portal to an extensive selection of online tools. To access BSC and troubleshoot a problem with the workstation, complete the following:

1. Visit <http://www.hp.com/go/workstationsupport>.
2. Under the **Business Support Center** menu on the left, select **Troubleshoot a problem**.
3. Under **Select your product** (center window), select **Workstations** (under **personal computing**).
4. Under **Select your product**, continue with selections as appropriate to the workstation series and model, and to the problem you are troubleshooting.

Instant Support and Active Chat

HP Instant Support is a set of web-based support tools that automate and speed up the resolution of problems concerning desktop computing, tape storage, and printing.

Active Chat enables you to electronically submit a support ticket to HP over the web. When you submit a support ticket, Active Chat collects information about the computer and passes it to an online support specialist. The collection of information might take up to 30 seconds, depending on the computer configuration. When you submit a support ticket, you receive a confirmation message containing your case ID, the support hours for your location, and the estimated time of response.

For more information about HP Instant Support and Active Chat and how to use them, go to <http://instantsupport.hp.com/>.



NOTE: This feature is not available on Linux.

Customer Advisories, Customer and Security Bulletins, and Customer Notices

To find advisories, bulletins, and notices:

1. Visit <http://www.hp.com/go/workstationsupport>.
2. Select the desired product.
3. Under **Resources for <your selected product>**, select **See more...**
4. Under **Self-Help resources:** in the center of the window, choose the desired action and appropriate information in the scroll list to view the index.

Product Change Notifications

Product Change Notifications (PCNs) are proactive notifications for product changes occurring within a 30-60 day window of the effective date of the change in the manufacturing process. PCNs give customers advanced notice of changes to their product, such as an updated BIOS version that they may need to qualify prior to the change taking place. The latest PCNs are located at: <http://www.hp.com/go/workstationsupport>.

Helpful hints

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

At startup

- Verify that the workstation is plugged into a functional AC power outlet.
- Remove all optical discs and USB drive keys from the drives before powering on the workstation.
- Verify that the workstation is turned on and the power light is on.
- If you have installed an operating system other than the factory-installed operating system, check to be sure that it is supported on your system by visiting <http://www.hp.com/go/quickspecs>.
- Verify that the internal display panel is lit.
- If the internal display panel is dim, turn up the brightness.
- If you have an external monitor:
 - Verify that the monitor is plugged into a functional AC power outlet.
 - Verify that the monitor is turned on and the green monitor light is on.
 - If the monitor is dim, turn up the brightness and contrast controls.

During operation

- Look for blinking LEDs on the workstation. The blinking lights are error codes that will help you diagnose the problem. Refer to the *Diagnostic lights and audible (beep) codes* section in the *Maintenance and Service Guide* for your workstation for information on interpreting diagnostic lights and audible codes.
- Press and hold any key. If the system beeps, then your keyboard is operating correctly.
- Check all cables for loose or incorrect connections.
- Wake the workstation by pressing any key on the keyboard or the power button. If the system remains in suspend mode, shut down the system by pressing and holding the power button for at least four 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, then plug it in again. If it does not restart, press the power button to start the workstation.
- Reconfigure the workstation after installing a non–plug and play expansion board or other option. Refer to the *Hardware installation problems* section of this document for instructions.
- Be sure that all required device drivers have been installed. For example, if you have connected a printer, you must install a printer driver.
- If you are working on a network, plug another workstation with a different cable into the network connection. There might be a problem with the network plug or cable.
- If you recently added new hardware, remove the hardware and verify if the workstation functions properly.

- If you recently installed new software, uninstall the software and verify if the workstation functions properly.
- If the internal display panel on an all-in-one computer is blank, open the computer and ensure that both ends of the cable between the system board and the internal display panel are connected. If using a graphics card, verify that the graphics card is properly installed.
- Upgrade the BIOS. A new release of the BIOS might have been released that supports new features or fixes your problem.
- For more detailed information, see the troubleshooting chapter in the *Maintenance and Service Guide* at http://www.hp.com/support/workstation_manuals.

Customer Self-Repair program

Under the Customer Self-Repair program, you can order a replacement part and install the part without onsite HP technical assistance. Customer Self-Repair might be required for some components. See <http://www.hp.com/go/selfrepair> for information on the program.



NOTE: Some components are not eligible for Customer Self-Repair and must be returned to HP for service. Call HP Support for further instructions before attempting to remove or repair these components.

Other troubleshooting options

The following additional troubleshooting techniques and tools are located in the *Maintenance and Service Guide* at http://www.hp.com/support/workstation_manuals:

- POST Error Codes
- Diagnostic LEDs and audible beep codes
- Troubleshooting scenarios and solutions
- HP Vision Field Diagnostics

9 Routine Care

General cleaning safety precautions

- Never use solvents or flammable solutions to clean the computer.
- Never immerse any component in water or cleaning solutions; apply any liquids to a clean cloth and then use the cloth on the component.
- Always unplug the computer before cleaning the keyboard, mouse, or air vents.
- Always disconnect the keyboard before cleaning it.
- Wear safety glasses equipped with side shields when cleaning the keyboard.

Cleaning the chassis

- Follow the safety precautions in the *Maintenance and Service Guide* for your workstation before cleaning the computer.
- To remove light stains or dirt, use plain water with a clean, lint-free cloth or swab.
- For stronger stains, use a mild dish washing liquid diluted with water. Rinse well by wiping it with a cloth or swab dampened with clear water.
- For stubborn stains, use isopropyl (rubbing) alcohol. No rinsing is required because the alcohol evaporates quickly and does not leave a residue.
- After cleaning, always wipe the computer with a clean, lint-free cloth.
- Occasionally, clean the air vents on the computer. Lint and other foreign matter can block the vents and limit the airflow.

Cleaning the keyboard

⚠ CAUTION: Use safety glasses equipped with side shields before attempting to clean debris from under the keys.

- If the keyboard has an on/off switch, turn it off.
- Follow the safety precautions in the *Maintenance and Service Guide* for your workstation before cleaning the computer.
- Visible debris underneath or between the keys can be removed by vacuuming or shaking.
- Canned, pressurized air can be used to clean debris from under the keys. Use caution because too much air pressure can dislodge lubricants applied under the wide keys.
- If you remove a key, use a specially designed key remover to prevent damage to the keys. This tool is available from many electronic supply outlets.

⚠ CAUTION: Never remove a wide key (like the space bar key) from the keyboard. If these keys are improperly removed or installed, the keyboard might not function properly.

- Clean under a key with a swab moistened with isopropyl alcohol and squeezed out. Be careful not to wipe away lubricants necessary for proper key functions. Allow the parts to air dry before reassembly.
- Use tweezers to remove any fibers or dirt in confined areas.

Cleaning the monitor

- Follow the safety precautions in the *Maintenance and Service Guide* for your workstation before cleaning the computer.
- To clean the monitor, wipe the monitor screen with a towelette designed for cleaning monitors or a clean cloth moistened with water.

⚠ CAUTION: Do not use sprays or aerosols directly on the screen—the liquid might seep into the housing and damage a component.

Never use solvents or flammable liquids on the monitor because display or housing damage may result.

Cleaning the mouse

1. Follow the safety precautions in the *Maintenance and Service Guide* for your workstation before cleaning the computer.
2. If the mouse has an on/off switch, turn it off.
3. Wipe the body of the mouse with a damp cloth.
4. If the mouse has a:
 - Laser or LED: use a cotton swab dampened with cleaning solution to gently brush out any dust around the laser or LED, then wipe again with a dry swab. Do not wipe the laser or LED directly with the swab.
 - Scroll wheel: spray canned, pressurized air in the gap between the scroll wheel and the click buttons. Do not blow air directly on one spot for very long or condensation can form.
 - Roller ball: remove and clean the roller ball, remove any debris from the ball socket, wipe out the socket with a dry cloth, and reassemble the mouse.