Second Intel® Xeon® processor installation

Introduction

This document describes how to install a second Intel® Xeon® processor in HP Z600 and Z800 Workstations, and HP xw6000 and xw8000 series Workstations with Land Grid Array (LGA) processor sockets.

Kit contents

- Intel® Xeon® processor
- Processor heatsink
- Warranty information
- Installation instructions

Tools required

- Static strap (to prevent possible damage from static electricity)
- Static-free mat (to prevent possible damage from static electricity)
- T-15 Torx screwdriver (Long blade required for some installations)

Before you begin

To view *QuickSpecs* and determine the compatibility of this product with your HP workstation, see http://www.hp.com/go/productbulletin .

△ **CAUTION:** To prevent loss of data, the second processor must be identical to the processor currently installed. The second processor must be the same speed, cache, size, and type as the primary processor.

△ **CAUTION:** Additional memory is required when adding a second processor to HP Z600 and Z800 Workstations

• Adding a second processor without corresponding memory results in an unsupported configuration.

• Mixing Unbuffered and Registered DIMMS is not supported. All DIMMS in the system must be either Unbuffered or Registered.

• See the workstation service guide at http://www.hp.com/support/workstation_manuals for rules and procedures regarding DIMM installation.

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Warnings and cautions

⚠ **WARNING!** ⚡ Any surface or area of the equipment marked with this symbol indicates the presence of an electrical shock hazard. To reduce the risk of injury from electrical shock, do not open any enclosed area marked with this symbol.

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

— Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

— Plug the power cord in a grounded (earthed) outlet that is easily accessible at all times.

— Disconnect power from the equipment by unplugging the power cord from the electrical outlet.

⚠ **WARNING!** ♨ Any surface or area of the equipment marked with this symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce the risk of injury from a hot component, enable the surface to cool before touching.

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

⚠ **WARNING!** To reduce the risk of serious injury, read the *Safety & Comfort Guide*. It describes proper workstation setup, posture, health, and work habits for computer users, and provides important electrical and mechanical safety information. This guide is located at http://www.hp.com/ergo and on the documentation CD (if one is included with the product).

△ **CAUTION:** Observe the following cautions when removing or replacing a processor:

— Installing a processor incorrectly can damage the system board. Contact an HP authorized reseller or service provider to install the processor. If you plan to install the processor yourself, read all of the instructions carefully before you begin.

— Failure to follow the workstation preparation instructions can result in an improperly installed processor, causing extensive workstation damage.

— Processor socket pins are delicate and bend easily. Use extreme care when placing the processor in the socket.

△ **CAUTION:** Static electricity can damage the electronic components of the workstation. Before beginning these procedures, be sure you discharge static electricity by briefly touching a grounded metal object.

△ **CAUTION:** To prevent damage to the workstation, observe the following Electrostatic Discharge (ESD) precautions while performing the system parts removal and replacement procedures:

— Work on a static-free mat.

— Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to the ground.

— Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, and peripheral units to that piece of equipment.

📝 **NOTE:** HP accessories are for use in HP Workstation products. They have been extensively tested for reliability and are manufactured to high quality standards.

Step 1—Verifying the workstation processor

Before installing a second Xeon processor chip, verify the number and type of processor chip or cores (based on your operating system) currently installed on your workstation. Record this information for later reference.

Windows Vista Business reports the number of physical processor chips installed in the workstation.

Microsoft Windows XP Professional and Red Hat Linux report the total number of processor cores contained within the fabric of the processor chip, not just the number of physical processor chips that are installed, and displays the data for either two or four processor cores (depending on your workstation processor model).

Windows Vista Business

To verify the presence of a single processor chip:

1. Click **Start**.

2. Click **Windows Welcome**.

3. Click **Show more details**. The **Processor** line indicates only a single processor.

Microsoft Windows XP Professional

To verify the presence of either two or four processor cores (depending on your workstation processor model):

1. Click **Start**.

2. Right-click **My Computer**.

3. Click **Manage** in the drop-down menu, and then click **Device Manager** to expand the Device Manager menu options.

4. In the Device Manager menu options, click **Processors**. Each processor core currently installed in the workstation is listed on a separate indented line under the Processors option.

Red Hat Linux

To verify the presence of either two or four processor cores and the processor model, type, and speed:

1. Right-click anywhere in the blank workstation display, and select **Open Terminal**.

2. At the terminal prompt, enter `cat/proc/cpuinfo`.

    The screen displays detailed information on each processor core detected on the workstation at this time.

    NOTE: The cpuinfo screen displays detailed data for **Processor 0** through either **Processor 1** or **Processor 3**, depending on the model of the processor chip installed on your workstation.

Step 2—Preparing for component installation

△ **CAUTION:** Failure to install the latest system BIOS might cause the workstation to fail when the new processor is installed.

📝 **NOTE:** Workstation models vary. All illustrations are examples only.

Download and install updates

1. Check for available system BIOS updates specified for your HP workstation model and operating system at http://www.hp.com/go/workstationsupport.

2. Install the system BIOS updates, if available.

Accessing the internal components of the workstation

1. If you need help preparing the workstation for this installation, consult the removal and replacement procedures in the service guide for your workstation at http://www.hp.com/support/workstation_manuals.

   📝 **NOTE:** For the HP ℤ Workstation series, these procedures are also available in the *User Guide* on the *Documentation and Diagnostics CD* that shipped with your workstation.

2. Power down the workstation, and then disconnect the power cord.

3. Power down all external devices, and then disconnect them from the workstation.

4. Remove the side access panel.

Removing components

1. If present, remove the airflow guide to enable access to the system board.

2. If present, remove the memory fan assembly to enable access to the system board.

Step 3—Installing the second processor

⚠ **CAUTION:** Observe the following cautions when removing or replacing a processor:

— Installing a processor incorrectly can damage the system board. Contact an HP authorized reseller or service provider to install the processor. If you plan to install the processor yourself, read all of the instructions carefully before you begin.

— Failure to follow the workstation preparation instructions can result in an improperly installed processor, causing extensive workstation damage.

— Processor socket pins are delicate and bend easily. Use extreme care when placing the processor in the socket.

⚠ **CAUTION:** To prevent damage to the workstation, observe the following Electrostatic Discharge (ESD) precautions while performing the system parts removal and replacement procedures:

— Work on a static-free mat.

— Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to the ground.

— Create a common ground for the equipment you are working on by connecting the static-free mat, static strap, and peripheral units to that piece of equipment.

Installing the second processor in the HP Z Workstation series
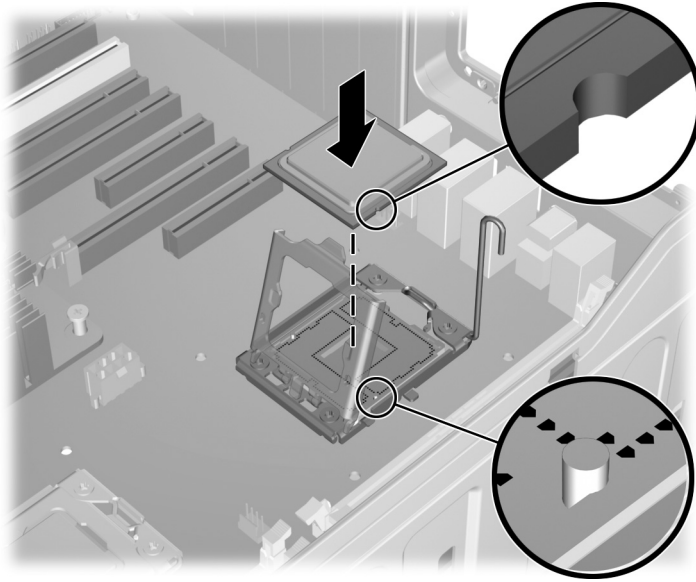
1. To prepare the processor socket:

   a. Raise the processor socket handle fully ❶.

   b. Open the processor socket cover plate ❷.

   c. Remove the processor socket protective cover ❸.

   Figure 1 Opening the processor socket
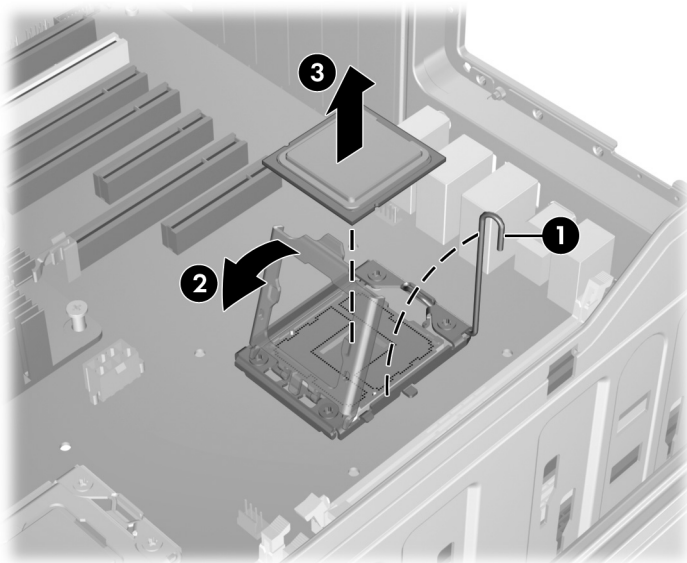
2. To install the processor:

    a. Remove the plastic cover from the processor.

    b. Align the notches in the processor base with the tabs on the socket.

    c. Seat the processor into the socket. Ensure that the processor is level with the socket.

    Figure 2 Installing the processor

3. Close the processor cover plate. Lightly press down on the processor cover plate while closing the socket lever.

    △ **CAUTION:** After installing the processor in the socket, do not power up the workstation without the heatsink attached. Damage to the processor or the processor socket may result.

Installing the second processor in HP xw series Workstations

After preparing the workstation for component installation, perform the following steps to install the processor:

1. Remove the processor socket protective cover.

    Figure 3 Removing the socket protective cover

2. If there is a plastic plug in the second processor heatsink hole, remove it.

3. Raise the processor socket handle fully ❶. Open the processor socket cover plate ❷.

    Figure 4 Opening the processor socket
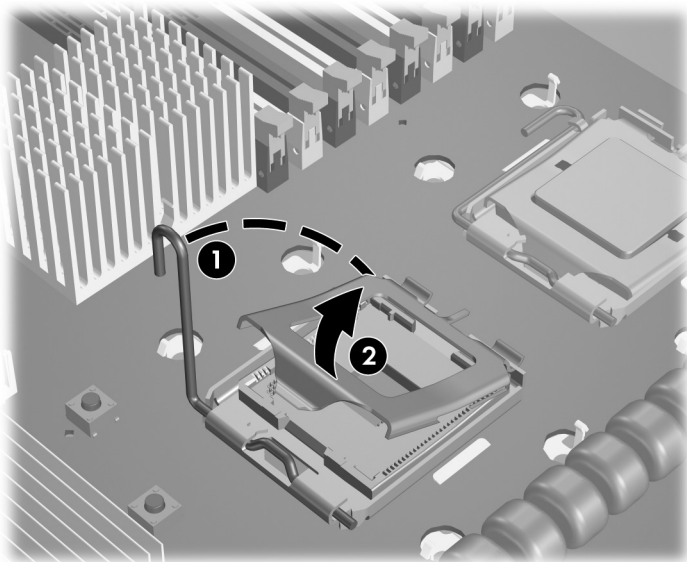
4. To install the processor:

    a. Remove the plastic cover from the processor.

    b. Align the notches in the processor base with the tabs on the socket.

c. Seat the processor into the socket.

d. Ensure that the processor is level with the socket.

Figure 5 Installing the processor

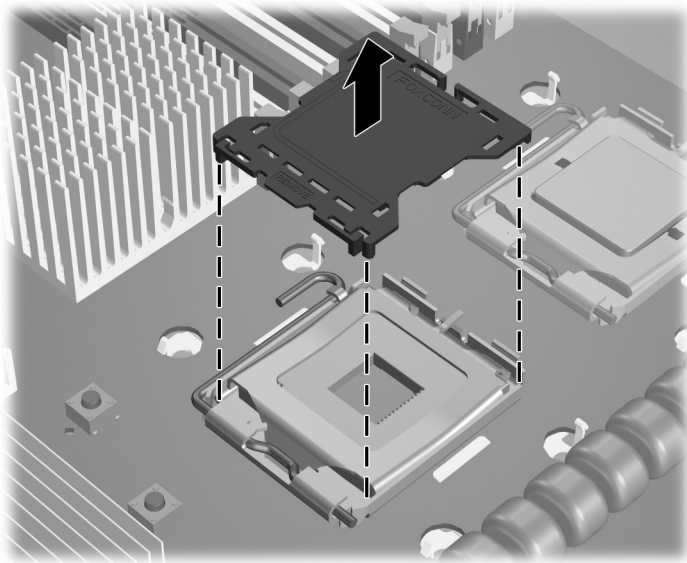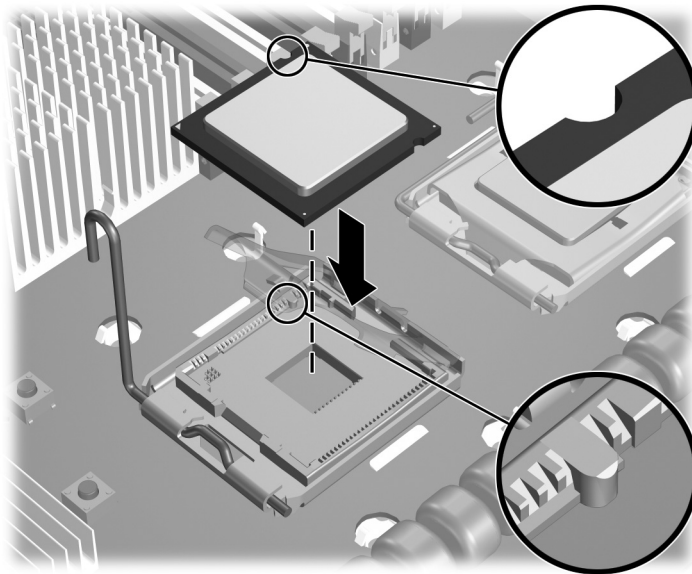**5.** Close the processor cover plate. Lightly press down on the processor cover plate while closing the socket lever.

△ **CAUTION:** After installing the processor in the socket, do not power up the workstation without the heatsink attached. Damage to the processor or the processor socket might result.

Step 4—Installing the processor heatsink

⚠ **CAUTION:** If the heatsink must be removed for any reason after the system has been powered up, the thermal interface must be cleaned off with alcohol and replaced with a new thermal interface. Failure to do so will overheat the processor.

⚠ **CAUTION:** After installing the processor in the socket, do not power up the workstation without the heatsink attached. Damage to the processor or the processor socket might result.
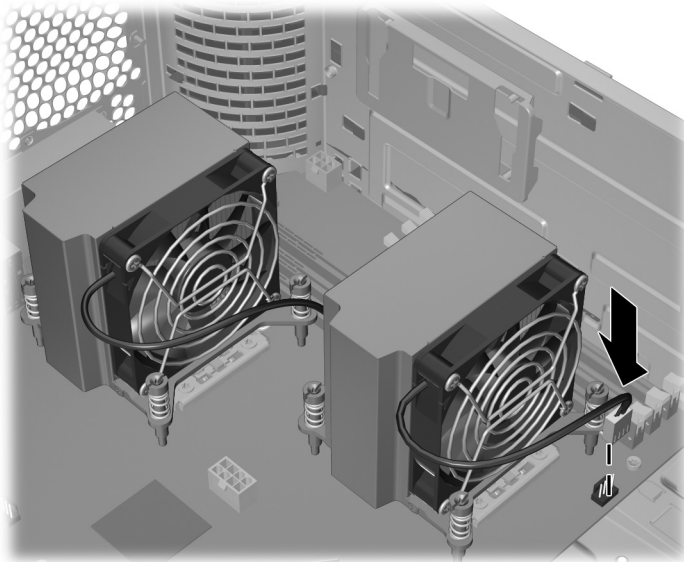
Installing the processor heatsink in the HP Z Workstation series

1. Remove and discard the thermal grease protective liner from the underside of the new heatsink, and then set the heatsink over the processor.

   📝 **NOTE:** Do not touch the exposed thermal grease when handling the processor heatsink.

2. To install the heatsink:

   a. Align the heatsink mounting posts with their respective threaded mounting holes on the system board ❶. The fan must face toward the front of the workstation. The fins on the fan face toward the rear of the chassis.

   b. Connect the heatsink electrical receptacle to the second processor heatsink fan connector on the system board ❷.

   Figure 6 Installing the heatsink in HP Z Workstation series

3. To tighten the screws:

   a. Use a Torx screwdriver to tighten the heatsink mounting screws.

   b. Partially tighten the four heatsink screws so that the heatsink body remains level.

   c. Fully tighten one pair of diagonally opposite screws ❶.

d. Fully tighten the remaining pair ❷.

e. Tighten all screws to 6 inch-lbs of torque.

Figure 7 Tightening the heatsink screws
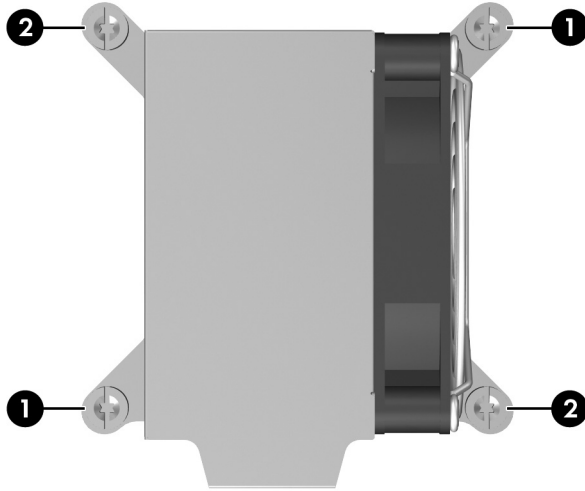
# Installing the processor heatsink in the HP xw Workstation series

△ **CAUTION:** Ensure that the second heatsink does not crush the electrical wires of the first heatsink fan.

1. Remove and discard the thermal grease protective liner from the underside of the new heatsink, and then set the heatsink over the processor.

📝 **NOTE:** Do not touch the exposed thermal grease when handling the processor heatsink.

2. To install the heatsink:

   a. Align the heatsink mounting posts with their respective threaded mounting holes on the system board ❶. The fan must face toward the front of the workstation. The fins on the fan face toward the rear of the chassis.

   b. Connect the heatsink electrical receptacle to the second processor heatsink fan header connector on the system board ❷.

   Figure 8 Installing the heatsink in the HP xw Workstation series
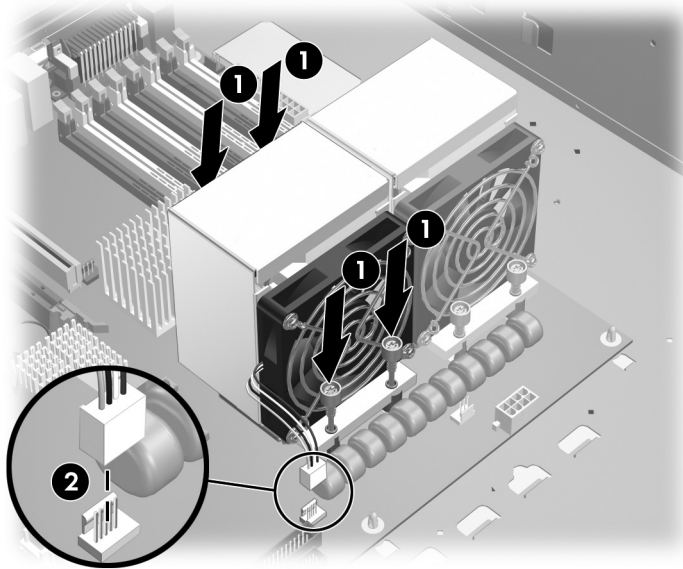
3. To access the mounting screws:

   ● Use a Torx screwdriver to access the heatsink mounting screws.

   ● If installing a high performance heatsink in an HP xw8600 Workstation, use a long blade T-15 torx driver to access the heatsink mounting screws.

   Figure 9 Long blade Torx screwdriver access route to tighten the high performance heatsink mounting screws
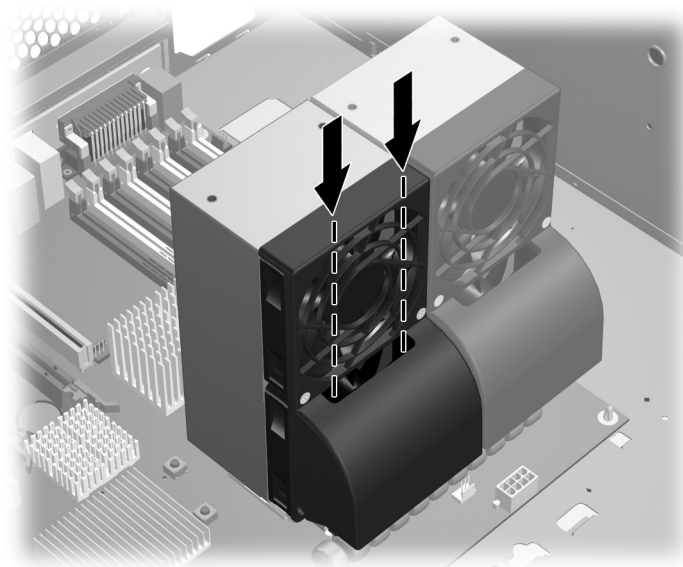
4. To tighten the screws:

   a. Partially tighten the four heatsink screws so that the heatsink body remains level.

   b. Fully tighten one pair of diagonally opposite screws ❶.

   c. Fully tighten the remaining pair ❷.

   d. Tighten all screws to 6 inch-lb of torque.

   Figure 10 Tightening the heatsink screws

Step 5—Reassembling the workstation

To reassemble the workstation after installation:

1. Reinstall the memory fan assembly, if applicable.

2. Reinstall the airflow guide, if applicable.

3. Reinstall the side access panel.

4. Reconnect power to the workstation and all external devices.

5. Restore power to the workstation and all external devices.

Step 6—Configuring the operating system and verifying the processor upgrade

This section explains the second processor configuration and verification process for Windows Vista Business, Microsoft Windows XP Professional, and Red Hat Linux operating systems.

Windows Vista Business

When the workstation starts, Windows Vista Business detects the new processor hardware. A window might appear above the System Tray (lower right of the display), indicating **Installing Device SW** and then **Your devices are ready to use**, but no action is required.

Windows Vista Business — To verify the presence of two processor chips, complete the following:

1. Click **Start**.

2. Click **Windows Welcome**.

3. Click **Show more details**. The **Processor** line indicates **(2 processors)** at the end of the line.

Microsoft Windows XP Professional

When the workstation starts, Windows XP Professional detects the new processor and silently installs it without sending any prompt or information to the user. After you install the processor upgrade, you see twice as many processors as before the upgrade.

📝 **NOTE:** Microsoft Windows XP Professional counts the total number of processor cores contained within the fabric of each processor chip, and not just the number of physical processor chips that are installed.

To verify total number of processor cores installed in your workstation after the upgrade, complete the following:

1. Click **Start**.

2. Right-click **My Computer**.

3. In the drop-down menu, click **Manage** , then click **Device Manager** in the resulting window to expand the Device Manager menu options.

4. In the Device Manager menu options, click **Processors**. Each processor core currently installed in the workstation is listed on a separate indented line under the Processors option.

5. Compare this information with the processor core information you recorded in Step 1—Verifying the workstation processor on page 3. Twice as many processor cores appear when compared with before the installation.

Red Hat Linux

All versions of Red Hat Linux automatically detect the new processor hardware. In addition, Red Hat Linux, as shipped with HP xw Series Workstations, is configured with an SMP kernel.

To verify total number of processor cores installed in your workstation after the upgrade, complete the following:

1. Right-click anywhere in the blank workstation display, and select **Open Terminal**.

2. At the terminal prompt, enter `cat /proc/cpuinfo.`.

    The screen displays detailed information on each processor core detected on the workstation at this time.

3. Compare this information with the processor core information you recorded in Step 1—Verifying the workstation processor on page 3. The cpuinfo screen displays detailed data for **Processor 0** through either **Processor 3** or **Processor 7**, depending on the model of the processor chips installed on your workstation.

Japanese 日本語

This document is available in Japanese. See http://www.hp.com/support/workstation_manuals, then select your workstation product and select **Japanese** from the drop down **Manual Language** menu.

このドキュメントは日本語版が用意されています。http://www.hp.com/support/workstation_manuals にアクセスし、ご使用のワークステーション製品を選択し、**Manual Language** ドロップダウン メニューから **Japanese** を選択してください。