HP 10000 G2 Series Rack
User Guide

Part Number 391312-006
August 2010 (Sixth Edition)
Intended audience

This document is for the person who installs racks and rack products. This procedure is performed only by trained personnel. HP assumes you are qualified in performing installations and trained in recognizing hazards in rack products.
## Contents

**Configuration factors** ........................................................................................................................................ 5
  - Rack configuration software ......................................................................................................................... 5
    - HP eCo-Enterprise Configurator .................................................................................................................. 5
  - Optimum environment ..................................................................................................................................... 5
    - Space requirements ......................................................................................................................................... 5
    - Power requirements ......................................................................................................................................... 6
    - Temperature requirements ............................................................................................................................ 6
    - Airflow requirements ...................................................................................................................................... 6
  - Populating your new rack ................................................................................................................................. 6
  - Additional rack considerations ....................................................................................................................... 7
  - General component placement guidelines ..................................................................................................... 8

**Preventing the rack for component installation** ......................................................................................................... 10
  - Checking the hardware ..................................................................................................................................... 10
  - Hardware kit contents ...................................................................................................................................... 10
  - Required tools .................................................................................................................................................. 11
  - Removing the rack doors ................................................................................................................................. 11
    - Removing the front door ............................................................................................................................... 11
    - Removing the rear doors .............................................................................................................................. 13
  - Removing the side panels ................................................................................................................................. 13
  - Stabilizing requirements .................................................................................................................................. 15
    - Rack stabilizer option kit ............................................................................................................................... 16
    - Rack baying option kit .................................................................................................................................... 17
    - Rack tie-down option kit ............................................................................................................................... 17

**Installing components** ........................................................................................................................................ 19
  - Installing components ....................................................................................................................................... 19
  - Installing the cage nuts ...................................................................................................................................... 19
  - Installing the hook-and-loop components ....................................................................................................... 21
  - Installing the cable management brackets ..................................................................................................... 22

**Rack options** ...................................................................................................................................................... 23
  - Ordering rack options ...................................................................................................................................... 23

**Specifications** .................................................................................................................................................... 25
  - HP G2 rack specifications .................................................................................................................................. 25
  - HP 10622 G2 Rack specifications .................................................................................................................... 25
  - HP 10636 G2 Rack specifications .................................................................................................................... 25
  - HP 10642 G2 Rack specifications .................................................................................................................... 25
  - HP 10647 G2 Rack specifications .................................................................................................................... 25
  - HP 10642 1200 mm Full Frame Rack specifications .......................................................................................... 25
  - HP 10647 1200 mm Full Frame Rack specifications .......................................................................................... 25
  - HP 10842 G2 Rack specifications .................................................................................................................... 26
  - HP 10642 Extended Depth Rack specifications ............................................................................................... 26
  - HP 10647 Extended Depth Rack specifications ............................................................................................... 26

**Electrostatic discharge** .......................................................................................................................................... 27
  - Preventing electrostatic discharge .................................................................................................................. 27
Configuration factors

Rack configuration software

To help you plan your rack configuration more efficiently, HP provides eCo-Enterprise Configurator, a powerful web-based service that enables you to build, store, and export end-to-end rack configurations. HP strongly recommends that you configure the rack using the eCo-Enterprise Configurator, which provides factory default racking. The latest version of the software is available on the HP website (http://h30099.www3.hp.com/eGlue/eco/begin.do).

HP eCo-Enterprise Configurator

HP Custom Builder was retired from service on 12 December 2005.

If you require factory default racking for the HP hardware portfolio, you can still use the HP eCo-Enterprise Configurator, which is available on the HP website (http://h30099.www3.hp.com/eGlue/eco/begin.do).

If you require custom rack configuration capabilities, contact the HP Customer Business Center or an HP authorized partner for assistance.

The HP eCo-Enterprise Configurator now provides factory default racking for HP hardware. This approach is aligned with the strategic direction to meet the needs and expectations of valued customers. If you require a custom rack configuration, contact the HP Customer Business Center or an authorized partner for assistance.

Optimum environment

Specific requirements for space, power, temperature, and airflow must be met to provide optimum performance with minimum maintenance for your rack environment.


Space requirements

When deciding where to place your rack:

- At least 1219 mm (48 in) of clearance is needed all the way around the pallet and above the rack to enable the removal of the packing material.
- At least 1219 mm (48 in) of clearance is needed in front of the rack to enable the door to open completely.
- At least 762 mm (30 in) of clearance is needed in the rear of the rack to provide access to components.
- At least 380 mm (15 in) of clearance is needed around a power supply to facilitate servicing.
Power requirements

When planning for power distribution requirements for your rack configuration:

- The power load must be balanced between available AC supply branch circuits.
- The overall system AC current load must not exceed 80% of the branch circuit AC current rating.
- If a UPS is used, the load should not exceed 80% of the marked electrical current rating for the UPS.

This equipment must be installed in accordance with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by the Nation Electric Code (ANSI/NFPA-70, 1993) and the code for protection of Electronic Computer/Data Processing Equipment (NFPA-75, 1992).

For electrical power ratings on options, refer to the products rating label or user documentation supplied with that option.

Temperature requirements

To ensure continued safe and reliable equipment operation, install or position the rack in a well ventilated, climate-controlled environment.

The operating temperature inside the rack is always higher than the room temperature and is dependent on the configuration of equipment in the rack. Check the TMRA for each piece of equipment before installation.

⚠️ **CAUTION:** To reduce the risk of damage to the equipment when installing third-party options:

- Do not permit optional equipment to impede airflow around the component or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer’s TMRA.

Airflow requirements

HP rack-mountable products typically draw in cool air through the front and exhaust warm air out through the rear of the rack. The front door of the rack, therefore, must be adequately ventilated to enable ambient room air to enter the rack, and the rear door must be adequately ventilated to enable the warm air to escape the rack. Do not block the ventilation apertures.

Blanking panels

If the front of the rack is not completely filled with components, the remaining gaps between the components can cause changes in the airflow, which can adversely affect cooling within the rack. Cover these gaps with blanking panels.

Populating your new rack

Before populating your new rack, you must plan the placement of each component. Factors of each component, such as weight, accessibility, power, temperature, and airflow requirements affect installation order and component placement in the rack.

Apply the following rules to the physical placement of components in the HP 10000 G2 Series Rack:
• Weight—Sort all of the components by weight, placing the heaviest components at the bottom of the rack.
• KVM Switch—Mount the switch either behind the keyboard or within a sidewall cavity to provide a 0U space solution.
• RKM—Install the RKM at a level that is the correct ergonomic position where your shoulders and neck are relaxed.
• Monitor—Arrange the screen a minimum of 4Us above the keyboard tray.
• Rack-mountable flat-panel monitor—Select a position to accommodate the desired viewing height (a minimum of 4Us above the keyboard tray).
• Balance—Be sure to balance the weight load between the racks, placing the heaviest components at the bottom of the rack. For example, if you have several UPS units and several servers, do not put all of the UPS units into one rack. Distribute them evenly in the bottom positions of each rack.

For further information regarding component placement, refer to the Important Safety Instructions that are shipped with the rack. Also, refer to the Safety and Comfort Guide—Precautions for Server and Network Products on the HP website (http://www.hp.com) (search for Safety and Comfort Guide).

Additional rack considerations

Consider the following specifications and components, with regard to your specific rack configuration:

• Power—If a UPS is installed, do not exceed its output rating. Be sure to review the installation instructions provided with each component for important cautions and warnings.
• PDUs—Install PDUs before installing other components.
• Height—The height of the rack and of rack-mountable components is measured in U increments, where U = 4.5 cm (1.75 in). When you are configuring your rack installation, remember that the total U measurement of the components you want to install cannot exceed the stated U height of the rack.
• Keyboard—The rack keyboard requires installation of a 1U keyboard drawer rack option kit.
• Monitor—The monitor requires installation of a monitor/utility shelf rack option kit unless you are using a rack-mountable flat-panel monitor.
• Server console switch—If a console switch is configured, use the CPU-to-console switch cable included with the server. The standard distance between the console switch and the keyboard, monitor, and mouse can vary by 3-, 7-, 12-, 20-, and 40-ft lengths.
NOTE: National electrical regulations governing the installation of building wiring require that an appropriate cable, meeting fire-safety standards, must be used any time cabling is routed:
- Through an overhead drop-ceiling
- Under raised flooring
- From room to room
- From floor to floor

Be sure that the cable jacket or sleeving is made of material that does not burn easily and does not exude toxic fumes when exposed to heat. Be sure that the cable you have selected is appropriate for your installation site. If you require a U.S. plenum-rated (CL2P) cable, contact your local HP authorized reseller to obtain any of the following options:
- 149363-B21-20-foot plenum cable
- 149364-B21-40-foot plenum cable

- Rack baying option kits—The number of baying kits needed to join a series of racks is one less than the number of racks in the suite. Each baying kit supplies parts to bay two cabinets on 600 mm (24 in) center line spacing.
- Side panels—Only one set of side panels is required for each row of bayed racks.
- Stabilizer kit—A stabilizer kit is either required or recommended, depending on your rack configuration. There are four stabilizer kit options.
  - The standard 600-mm (23.6 in) or 800-mm (31.5 in) front foot is required with deployments of stand-alone racks. Rack rows with four or more bayed racks, without a single rack-mountable component exceeding 99.8 kg (220 lb), do not need a stabilizer kit installed.
  - The heavy duty 600-mm (23.6 in) or 800-mm (31.5 in) front foot is required when a single rack-mountable component weighing 99.8 kg (220 lb) or more is installed in a stand-alone rack or in a rack belonging to a rack row of three or fewer bayed racks.

**General component placement guidelines**

⚠️ **WARNING:** To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

⚠️ **WARNING:** To reduce the risk of personal injury or damage to the equipment, always load the heaviest item first from the bottom of the rack up. This makes the rack bottom-heavy and helps prevent the rack from becoming unstable. Refer to Configuration Factors.

⚠️ **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:
- The leveling feet are extended to the floor.
- The full weight of the rack rests on the leveling feet.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.
CAUTION: To reduce the risk of damage to the equipment when installing third-party options:
- Do not permit optional equipment to impede airflow around the component or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer’s TMRA.

IMPORTANT: HP strongly recommends that you configure the rack using the HP eCo-Enterprise Configurator, which provides factory default racking. The latest version of this software is available on the HP website (http://h30099.www3.hp.com/eGlue/eco/begin.do).

When loading your components, observe the general guidelines:
- For detailed instructions on installing specific component or third-party hardware, see the user documentation that shipped with that component.
- Before installing components into the rack, see the "Electrostatic Discharge (on page 27)" section.
- Use the configuration prepared by the eCo Enterprise Configurator as a guideline for installation components.
- Load the heavier components first from the bottom of the rack.
- Be sure to balance the weight load among bayed racks. For example, if you have several UPS units and several servers, do not load all of the UPS units into one rack. Instead, distribute them evenly in the bottom positions of each rack.
- Allow a minimum clearance of 76 cm (30 in) between the wall and the rear of the rack to provide adequate access for installation and service.
Preparing the rack for component installation

Checking the hardware

After unpacking the component to be installed, locate the documentation that was shipped with that component. Verify that you received all of the listed hardware pieces.

You will typically have extra fasteners after completing your component installation.

**IMPORTANT:** Retain the extra fasteners for future use.

Hardware kit contents

If any of the following items are missing or damaged, contact your HP authorized reseller.

1. M6 screws (50)
2. Cage nut insertion tool (1)
3. M5.5 x 10 self tapping screws (6)
4. M6 cage nuts (50)
5. T-25 Torx bit (1)
6. Cable management bracket (6)
7. Rack ID plate (1)
8. Leveling foot base (4)
9. Documentation CD (1)
Preparing the rack for component installation

10. Hook-and-loop cabling strap 12.7-cm (5 in) clip (1)
11. Hook-and-loop cabling strap 20.32-cm (8 in) clip (1)
12. Hook-and-loop cabling strap 30.48-cm (12 in) clip (1)

Extra hardware might be included for your convenience.

Required tools

The following tools are required for installation:

- Flathead screwdriver
- T-25 Torx driver (T-25 bit is included with your hardware kit)
- T-30 Torx driver
- Adjustable wrench
- Cage nut insertion tool (included with your hardware kit)

For comfort and efficiency while setting up your rack, use power tools where applicable.

Removing the rack doors

To provide access to all sides of the rack while you are installing the various components, first remove the rack doors. If your rack has side panels, also remove them before installing mounting brackets and other hardware.

Removing the front door

1. Unlock the door and open it.
2. Lift the top hinge pin up, and tilt the door away from the rack.

3. Lift the door up to remove it from the bottom hinge. Store the door in an upright position, taking care to protect it from damage.
Removing the rear doors

1. Unlock the doors and open them.

2. Open the hinge brackets (1) by pulling up on the top hinge pin and pulling down on the bottom hinge pin for each door.

3. Lift the rear doors off of the hinge brackets, and remove them from the rack (2). Store the doors in an upright position, taking care to protect them from damage.

Removing the side panels

**NOTE:** The side panels come preinstalled on all HP 10622 G2 Racks.
1. Unlock the middle side panel locks, and remove the side panel from the rack.
2. Lift the bottom and top side panels up and away from the rack.

3. Store the panels in an upright position, taking care to protect them from damage. To replace the side panels, reverse this procedure.

**Stabilizing requirements**

Rack stability is important when equipment is routinely installed, removed, or accessed within the rack. Stabilization can be achieved through the use of an HP Rack Stabilizer Option Kit, HP Rack Baying Option Kit, or HP Rack Tie-Down Option Kit.

Observe the following tips when using multiple-rack configurations:

- A stabilizer kit is required or recommended, depending on your rack configuration.
- The side feet are required for stand-alone racks.
- The number of baying kits needed is one less than the total number of racks in a row.
• Position and install the baying option kit before populating the racks with components.
• The weight of the rack should rest on the leveling feet.

**Rack stabilizer option kit**

The HP Rack Stabilizer Option Kit provides stability and support and prevents possible tipping when equipment is installed, removed, or accessed within the rack.

There are four stabilizer kit options:

• Standard 600-mm (23.6-in) or 800-mm (31.5-in) front foot—Required if you have a stand-alone rack.

**NOTE:** The standard 600-mm (23.6-in) front foot ships with all HP 10622 G2 Racks.
• Heavy duty 600-mm (23.6-in) or 800-mm (31.5-in) front foot—Required if you have a stand-alone rack with a single rack-mountable component that exceeds 99.8 kg (220 lb). This kit is also required if you have three or fewer bayed racks with a single rack-mountable component that exceeds 99.8 kg (220 lb).

For more information, see the HP Rack Stabilizer Option Kit Installation Instructions.

Rack baying option kit

The 10000 and 10000 G2 series rack can be bayed together by installing the HP Rack Baying Option Kit, as long as they are the same series, height, and depth. For example, an HP 10636 Series Rack and an HP 10636 G2 Series Rack can be bayed together. This configuration helps decrease space needs and increase stability. For more information, see the HP Baying Rack Option Kit Installation Instructions.

Rack tie-down option kit

The HP 10000 G2 Series Rack Tie-Down Option Kit enables you to secure HP 10000 G2 Series Racks to the floor.
The following figure indicates where to drill the holes to secure the rack to the floor. The distances are measured from the holes on the tie-downs. Have your building structural engineer drill the holes. Then secure the rack to the floor by inserting a bolt with a washer into each hole.

A separate tie-down kit is used exclusively for the 1200 mm Full Frame Rack. The following figure illustrates the 1200 mm Full Frame Rack Tie-down Kit.

For more information, see the HP 10000 G2 Series Rack Options Installation Guide.
Installing components

Installing components

IMPORTANT: These installation instructions are for standard installations. For specific installation instructions, refer to the documentation included with your component.

The following steps outline the sequence for installing rack-mountable components in a rack. HP strongly recommends installing a stabilizer foot before any other component. Install 0U devices first, such as PDUs, console switches, and so on.

To install components:
1. Install the cage nuts ("Installing the cage nuts" on page 19) into the rack (if required).
2. Prepare and install the rails into the rack.
3. Prepare and install the component into the rack and secure it.
4. Attach the cable management arm to the rack and then to the component.
5. Attach any cables and power cords, being sure that you adhere to all cautions and warnings contained in the individual component installation instructions.
6. Remove the cable access panel and route the cables.

Installing the cage nuts

Use the cage nut insertion tool to install the cage nuts on the inside of the mounting rails.

NOTE: The cage nut insertion tool and the cage nuts are included in the hardware kit with this rack.

To install the cage nuts:
1. Hook the bottom lip of the cage nut in the square-rail perforation.
2. Insert the tip of the insertion tool through the perforation, and then hook the top lip of the cage nut.
3. Use the insertion tool to pull the cage nut through the hole until the top lip snaps into position.
Installing the hook-and-loop components

Route and secure your cables with the hook-and-loop cabling strap clips.
Installing the cable management brackets

1. Position the cable management bracket so that one side is attached to the inside of the rack frame.
2. Slide the cable management bracket into place (1).
3. Secure the cable management bracket to the rack frame and extension kit using one screw (2).

Installation is complete.
Rack options

Ordering rack options

In addition to the standard racks, HP also provides rack options to complement or complete your rack solution. The following list is only a sample of the many rack option kits available. For information about ordering rack option kits, refer to the HP website (http://www.hp.com) or contact the nearest HP authorized reseller or service provider.

<table>
<thead>
<tr>
<th>Rack option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side panel rack option kit</td>
<td>Enclosures for the sides of a rack</td>
</tr>
<tr>
<td>Stabilizer rack option kit</td>
<td>Increases the stability of free-standing racks</td>
</tr>
<tr>
<td>Front door rack option kit</td>
<td>Enables you to add a front door to the front of your rack</td>
</tr>
<tr>
<td>Rear extension rack option kit</td>
<td>Enables you to add 15.5 cm (6.1 in) of depth to the rear of your rack</td>
</tr>
<tr>
<td>Ground bonding rack option kit</td>
<td>Reduces the level of electromagnetic emissions outside of the rack</td>
</tr>
<tr>
<td>Ballast rack option kit</td>
<td>Provides rack stability when heavy equipment is installed, removed, or accessed within the rack</td>
</tr>
<tr>
<td>Tie-down rack option kit</td>
<td>Enables you to secure your rack to the floor</td>
</tr>
<tr>
<td>Baying rack option kit</td>
<td>Joins multiple racks of the same series, height, and depth</td>
</tr>
<tr>
<td>Fan (110V/220V) rack option kit</td>
<td>Enhances natural convection cooling by increasing the airflow in the rack</td>
</tr>
<tr>
<td>Monitor/utility rack option kit</td>
<td>Holds a monitor or other rack component</td>
</tr>
<tr>
<td>Hook-and-loop option kit</td>
<td>Enables you to add hook-and-loop cabling strap clips to manage your cable configurations</td>
</tr>
<tr>
<td>Server console switch</td>
<td>Programmable switch panel with connection hardware used to switch a keyboard, monitor, and mouse among multiple servers</td>
</tr>
<tr>
<td>Networking cable and recessed rail management kits</td>
<td>Routes and organizes cables within the rack</td>
</tr>
<tr>
<td>Rack option</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cable management D-ring rack option kit</td>
<td>Helps with cable management</td>
</tr>
<tr>
<td>25-in rail adapter option kit</td>
<td>Allows the inner rack rails to accommodate third-party rack options</td>
</tr>
<tr>
<td>1U keyboard drawer option kit</td>
<td>Holds and conceals a keyboard</td>
</tr>
<tr>
<td>100 kilo sliding shelf rack option kit</td>
<td>Allows easy access to various rack components</td>
</tr>
<tr>
<td>TFT7600RKM</td>
<td>Rack-mountable 1U keyboard and flat-panel monitor on a drawer with room in the rear to add a switchbox</td>
</tr>
<tr>
<td>TFT7210R flat panel monitor rackmount</td>
<td>Rack-mountable 1U flat-panel monitor</td>
</tr>
<tr>
<td>Depth adjustable fixed rail kit</td>
<td>Provides rails that can be adjusted to various depths</td>
</tr>
<tr>
<td>Shock pallet spares kit</td>
<td>Transports configured racks</td>
</tr>
</tbody>
</table>
Specifications

HP G2 rack specifications

For a current list of all rack specifications, see the Best Practices document on the HP website (http://www.hp.com/support/HP10000G2SeriesRack_Manuals).

HP 10622 G2 Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>22U</td>
<td>600 mm (23.8 in)</td>
<td>1,000 mm (39.4 in)</td>
<td>544.3 kg (1,200 lb)</td>
<td>544.3 kg (1,200 lb)</td>
</tr>
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</table>

HP 10636 G2 Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>36U</td>
<td>600 mm (23.6 in)</td>
<td>1,000 mm (39.4 in)</td>
<td>689.5 kg (1,520 lb)</td>
<td>907.2 kg (2,000 lb)</td>
</tr>
</tbody>
</table>

HP 10642 G2 Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>42U</td>
<td>600 mm (23.8 in)</td>
<td>1,000 mm (39.4 in)</td>
<td>907.2 kg (2,000 lb)</td>
<td>1,360.8 kg (3,000 lb)</td>
</tr>
</tbody>
</table>

HP 10647 G2 Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>47U</td>
<td>600 mm (23.8 in)</td>
<td>1,000 mm (39.4 in)</td>
<td>Not applicable</td>
<td>1,360.8 kg (3,000 lb)</td>
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</table>

HP 10642 1200 mm Full Frame Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>42U</td>
<td>600 mm (23.8 in)</td>
<td>1,200 mm (47.2 in)</td>
<td>1134 kg (2,500 lb)</td>
<td>1,360.8 kg (3,000 lb)</td>
</tr>
</tbody>
</table>
This tie-down kit is exclusively for the 1200 mm Full Frame Rack. For more information, see the *HP 10000 G2 Series Rack Options Installation Guide*.

### HP 10647 1200 mm Full Frame Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
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<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>47U</td>
<td>600 mm (23.8 in)</td>
<td>1,200 mm (47.2 in)</td>
<td>1134 kg (2,500 lb)</td>
<td>1,360.8 kg (3,000 lb)</td>
</tr>
</tbody>
</table>

This tie-down kit is exclusively for the 1200 mm Full Frame Rack. For more information, see the *HP 10000 G2 Series Rack Options Installation Guide*.

### HP 10842 G2 Rack specifications

<table>
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<th>U height</th>
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<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
</tr>
</thead>
<tbody>
<tr>
<td>42U</td>
<td>800 mm (31.5 in)</td>
<td>1,000 mm (39.4 in)</td>
<td>453.6 kg (1,000 lb)</td>
<td>907.2 kg (2,000 lb)</td>
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</tbody>
</table>

### HP 10642 Extended Depth Rack specifications

<table>
<thead>
<tr>
<th>U height</th>
<th>Width</th>
<th>Depth</th>
<th>Dynamic load (gross)</th>
<th>Static load</th>
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<tbody>
<tr>
<td>42U</td>
<td>600 mm (23.8 in)</td>
<td>1,200 mm (47.2 in)</td>
<td>907.2 kg (2,000 lb)</td>
<td>1,360.8 kg (3,000 lb)</td>
</tr>
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### HP 10647 Extended Depth Rack specifications

<table>
<thead>
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<td>907.2 kg (2,000 lb)</td>
<td>1,360.8 kg (3,000 lb)</td>
</tr>
</tbody>
</table>
Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

• Avoid hand contact by transporting and storing products in static-safe containers.
• Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
• Place parts on a grounded surface before removing them from their containers.
• Avoid touching pins, leads, or circuitry.
• Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

• Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
• Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
• Use conductive field service tools.
• Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

For more information on static electricity or assistance with product installation, contact an authorized reseller.
Technical support

Before you contact HP

Be sure to have the following information available before you call HP:

- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For the name of the nearest HP authorized reseller:

- See the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).

For HP technical support:

- In the United States, for contact options see the Contact HP United States webpage (http://welcome.hp.com/country/us/en/contact_us.html). To contact HP by phone:
  - Call 1-800-HP-INVENT (1-800-474-6836). This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored.
  - If you have purchased a Care Pack (service upgrade), call 1-800-633-3600. For more information about Care Packs, refer to the HP website (http://www.hp.com/hps).
- In other locations, see the Contact HP worldwide (in English) webpage (http://welcome.hp.com/country/us/en/wwcontact.html).
Acronyms and abbreviations

CPU
central processing unit

CRT
cathode-ray tube

KVM
keyboard, video, and mouse

PDU
power distribution unit

RKM
rackmount keyboard monitor

TMRA
recommended ambient operating temperature

UPS
uninterruptible power system
Index

A
airflow requirements 6

B
blanking panels 6

C
cable management brackets, installing 22
cage nuts, installing 19
checking the hardware 10
components, installation 19
configuration factors 5
configuration, software 5

E
electrostatic discharge 27

F
front door, removing 11

G
grounding methods 27

H
hook-and-loop straps, installing components 21
HP 10622 G2 Rack, specifications 25
HP 10636 G2 Rack, specifications 25
HP 10642 Extended Depth Rack, specifications 26
HP 10642 G2 Rack, specifications 25
HP 10647 Extended Depth Rack, specifications 26
HP 10647 G2 Rack, specifications 25
HP 10842 G2 Rack, specifications 26
HP eCo-Enterprise Configurator 5
HP Rack Baying Option Kit 17, 23
HP Rack Stabilizer Option Kit 16, 23
HP Rack Tie-Down Option Kit 17, 23

I
installing cable management brackets 22
installing cage nuts 19
installing components 19

K
kit contents 10

O
optimum environment 5

P
populating your new rack 6
power requirements 6
preparing the rack for component installation 10

R
rack baying option kit 17, 23
rack configuration software 5
rack doors, removing 11
rack options 23
rack stabilizer option kit 16, 23
rack tie-down option kit 17, 23
rear doors, removing 13
removing the front door 11
removing the rear doors 13
removing the side panels 13
required tools 11
requirements, airflow 6
requirements, power 6
requirements, space 5
requirements, temperature 6

S
side panels, removing 13
space requirements 5
specifications 25, 26
stabilizing your rack 15

T
temperature requirements 6
tools 11