

# HP ProLiant m700 Server Cartridge User and Maintenance Guide

## Abstract

This document is for the person who installs, administers, services, and troubleshoots cartridges. This guide describes identification and maintenance procedures, and specifications and requirements for hardware components and software. HP assumes you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.



Part Number: 751372-002  
April 2014  
Edition: 2

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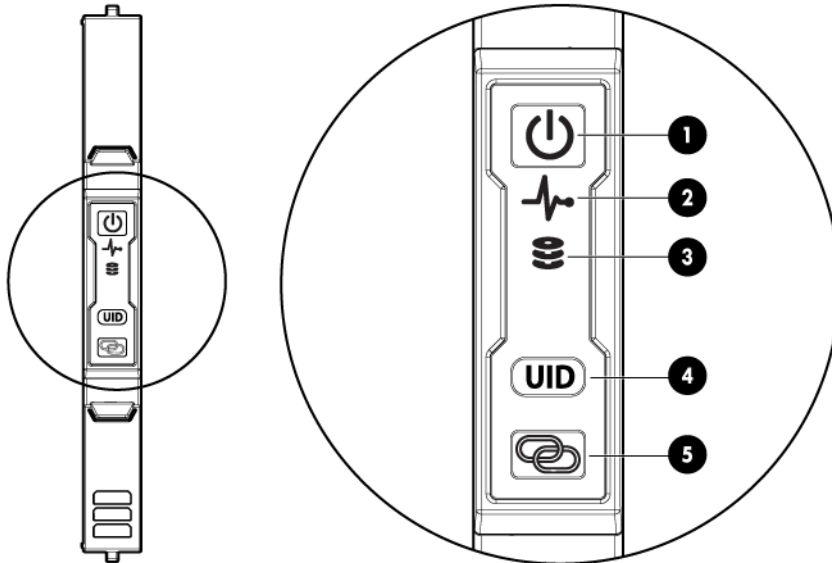
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# Component identification

## Cartridge LEDs and buttons



Item	Description	Status
1	Cartridge power LED/button	Green = Normal operation Amber = Standby operation Off = No power
2	Cartridge health LED	Green = Normal operation Flashing amber = Degraded condition Flashing red = Critical condition Off = No power
3	Drive LED*	Green = Activity Off = No activity
4	Cartridge UID LED/button	Blue = Cartridge ID is selected. Flashing blue = Cartridge firmware update is in progress. Off = Cartridge ID is not selected.
5	Cartridge link LED/button**	Flashing white = Cartridges are linked. Off = Cartridge is not linked to other cartridges.

\* Depending on the cartridge installed, there might be 0, 1, or 2 drive LEDs.

\*\* The cartridge link LED flashes for 10 seconds after the link button is pressed.

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# Operations

## Power down the node

Depending on the procedure, you may need to power down a single node or all nodes on the cartridge. Choose the step that is appropriate for your procedure.

### Power down a node on a single cartridge

If you are powering down one node but leaving other nodes in a powered up state on the cartridge, the cartridge power LED will remain illuminated, indicating at least one node is powered up.

To power down a node on a single cartridge:

1. Log in to the iLO CM firmware (on page 11).
2. Power down a node on the cartridge by issuing the appropriate command.  
For a cartridge running a functioning OS:  
`set node power off shutdown C<x>N<y>`  
For a non-responsive system, or when an OS has not been installed:  
`set node power off force C<x>N<y>`
3. Verify that the power is off by reviewing the status of the cartridge power LED. For more information, see "Cartridge LEDs and buttons (on page 5)."

### Power down all nodes on a single cartridge

To power down all nodes on a single cartridge:

1. Log in to the iLO CM firmware (on page 11).
2. Power down all nodes on the cartridge by issuing the appropriate command.  
For a cartridge running a functioning OS with four nodes:  
`set node power off shutdown C<x>N1-4`  
For a non-responsive system, or when an OS has not been installed:  
`set node power off force C<x>N1-4`
3. Verify that the power is off by reviewing the status of the cartridge power LED. For more information, see "Cartridge LEDs and buttons (on page 5)."

## Extend the chassis from the rack

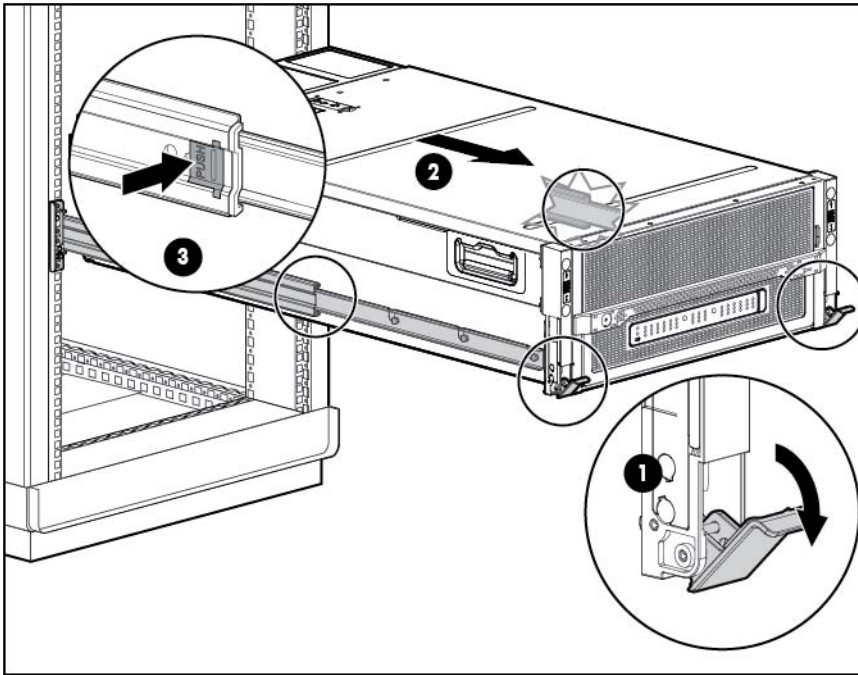
1. Pull down the quick release levers on each side of the chassis.
2. Extend the chassis from the rack until it locks once.
3. Press the push tab on the rail, and then fully extend the chassis.



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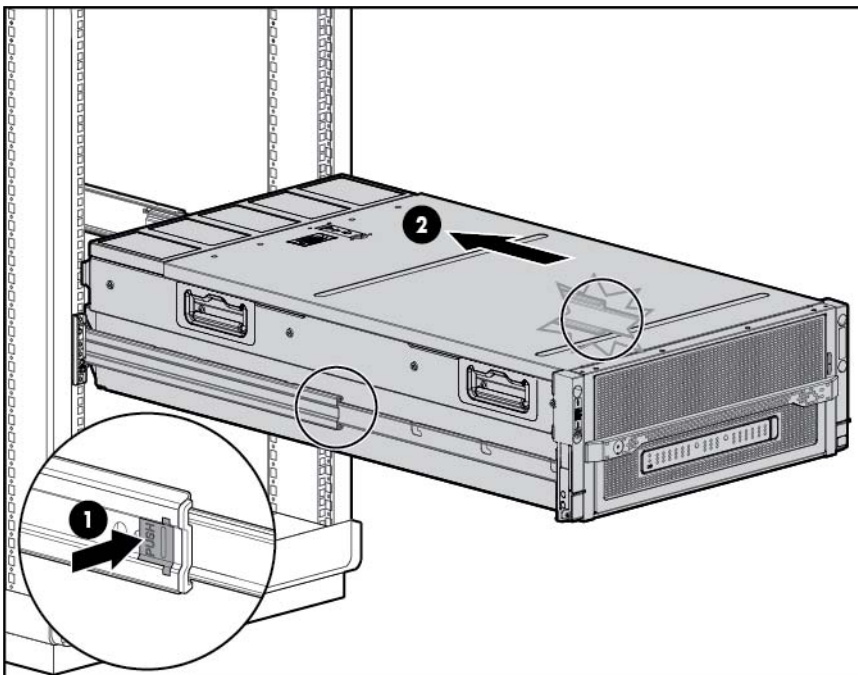
**WARNING:** To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

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4. After performing the installation or maintenance procedure, slide the chassis back into the rack, and then press the chassis firmly into the rack to secure it in place.

**⚠ WARNING:** To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.



## Remove the access panel



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**IMPORTANT:** After performing a procedure inside the chassis, always install the access panel on the chassis when complete. Do not operate the chassis for long periods of time with the access panel removed.

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**IMPORTANT:** To maintain appropriate cooling, fans will operate at a high speed when the access panel is removed.

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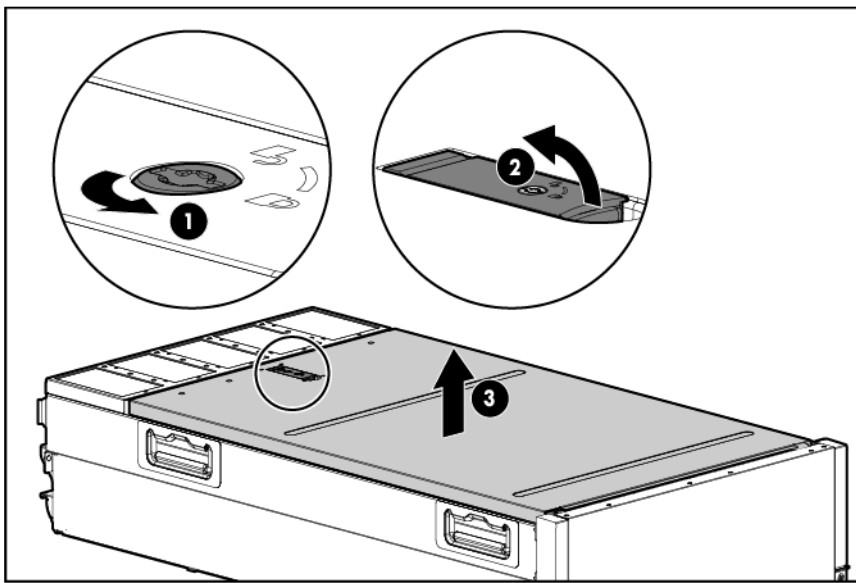


**IMPORTANT:** When the access panel is removed, the cartridge might be placed into a low power operating state to reduce thermal stress.

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To remove the access panel:

1. Release the access panel latch.
2. Slide the access panel back about 1.5 cm (0.5 in).
3. Lift and remove the access panel.



Turn the access panel over to locate the HP Moonshot 1500 Chassis label. This label provides information on LED status indicators, component identification, and cartridge and switch installation procedures.

## Remove the cartridge blank



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**CAUTION:** For proper cooling, be sure that a cartridge or a cartridge blank is always installed in each cartridge slot in the chassis. When replacing a cartridge, leave the cartridge slot empty for no more than 30 seconds. Failure to do so can disrupt airflow in the chassis.

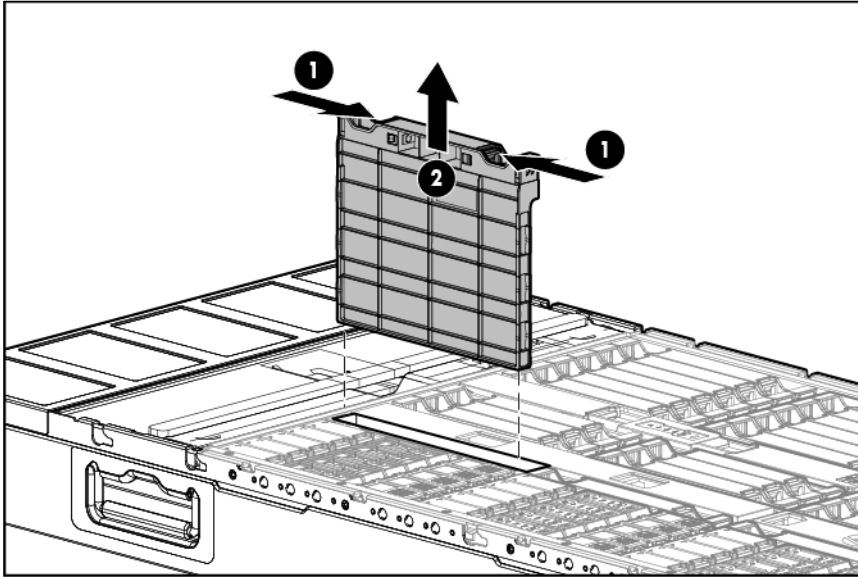
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To remove the component:

1. Extend the chassis from the rack (on page 6).
2. Remove the access panel (on page 7).



3. Remove the component as indicated.

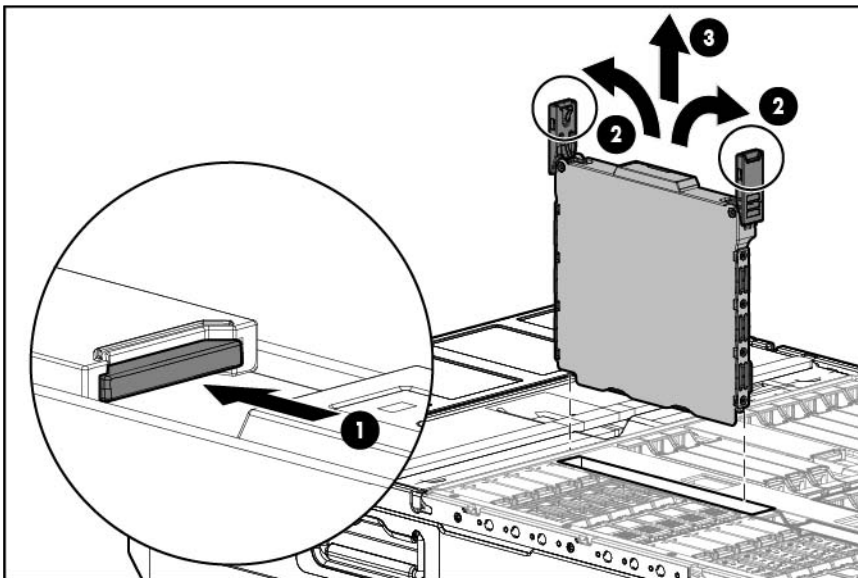


## Remove the cartridge

**CAUTION:** For proper cooling, be sure that a cartridge or a cartridge blank is always installed in each cartridge slot in the chassis. When replacing a cartridge, leave the cartridge slot empty for no more than 30 seconds. Failure to do so can disrupt airflow in the chassis.

To remove the component:

1. Power down the cartridge ("Power down the node" on page 6).
2. Extend the chassis from the rack (on page 6).
3. Remove the access panel (on page 7).
4. Remove the cartridge from the chassis.



# Install the access panel



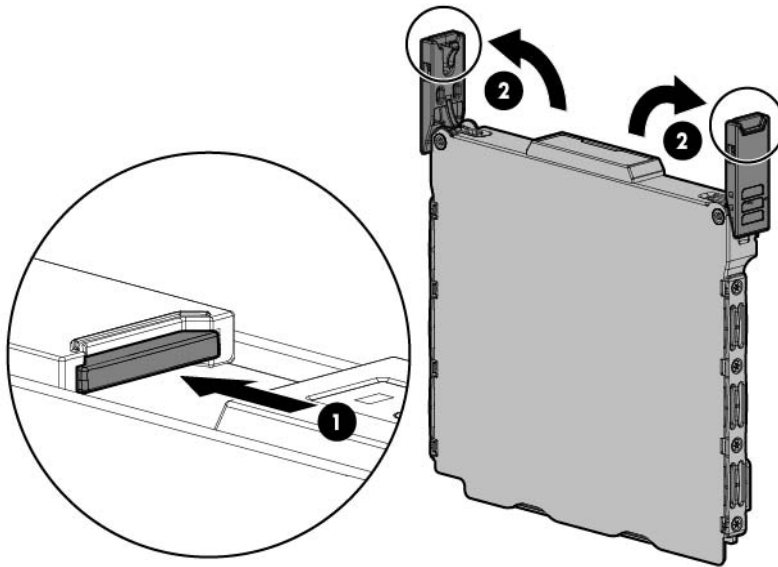
**IMPORTANT:** After performing a procedure inside the chassis, always install the access panel on the chassis when complete. Do not operate the chassis for long periods of time with the access panel removed.

To install the component:

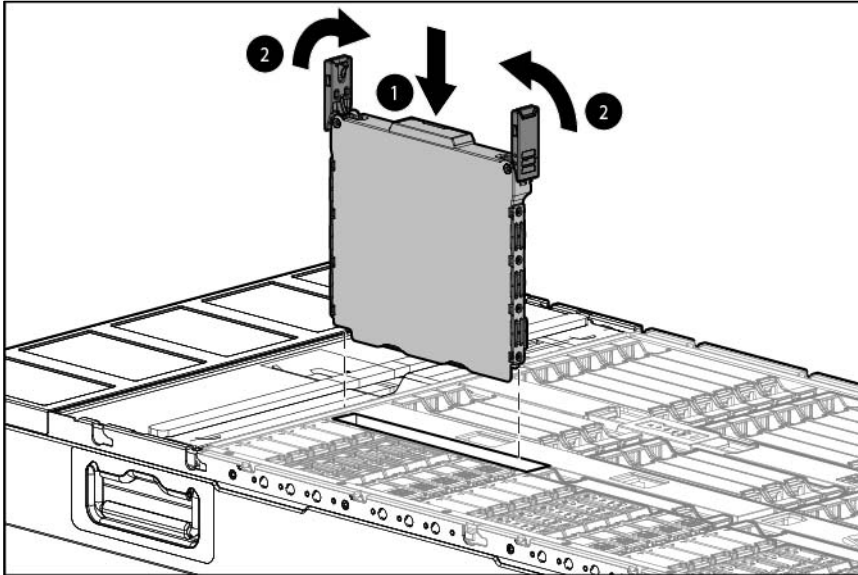
1. Place the access panel on top of the chassis.
2. Slide the access panel toward the front of the chassis. The access panel locks into position.

# Install the cartridge

1. Extend the chassis from the rack (on page 6).
2. Remove the access panel (on page 7).
3. Prepare the cartridge.



4. Align and install the cartridge into the chassis.



5. Install the access panel (on page 10).

## Log in to the iLO CM firmware

1. Connect to the iLO CM firmware locally or remotely:
  - o To connect remotely, use an SSH session over the network.
  - o To connect locally, use a serial cable to connect a PC or terminal to the iLO CM management serial port on the Moonshot 1500 CM module.
2. If no changes were made, enter the user name and password assigned for the chassis or the default user name and password:

Default username:

Administrator

Default password:

password

For more information about the iLO CM firmware, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

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# Setup

## Overview

Installing a cartridge requires the following steps:

1. Install and configure an HP Moonshot 1500 Chassis ("[Installing and configuring an HP Moonshot 1500 Chassis](#)" on page 12).
2. Install and configure the switch and uplink modules ("[Installing and configuring the switch and uplink modules](#)" on page 12).
3. Install the cartridge (on page 10).
4. Power up the chassis ("[Powering up the chassis](#)" on page 13).
5. Power up the node ("[Powering up the node](#)" on page 13).
6. Install the operating system ("[Installing the operating system](#)" on page 13).
7. Update the cartridge firmware ("[Updating cartridge firmware](#)" on page 13).
8. Register the product ("[Registering the product](#)" on page 14).

## Installing and configuring an HP Moonshot 1500 Chassis

Before performing any cartridge-specific procedures, install an HP ProLiant Moonshot 1500 Chassis. For more information on installing a chassis, see *HP Moonshot 1500 Chassis Setup and Installation Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## Installing and configuring the switch and uplink modules

For specific steps to install the switch modules and uplink modules, see the switch documentation in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## Installing the cartridge

1. Do one of the following:
  - Remove the cartridge blank (on page 8).
  - Remove a cartridge ("[Remove the cartridge](#)" on page 9).
2. Install the cartridge (on page 10).

# Powering up the chassis

If the chassis was powered off while installing the cartridge, then power up the chassis. The cartridges are hot-pluggable and do not require that you power down the chassis for installation.

1. Connect the power cables to the power supplies.
2. Connect the power cables to the power source (UPS or wall outlet) or to an installed PDU.
3. Wait while the chassis powers on. Verify the status of the chassis power LED located on the front panel display on the chassis. For more information on the chassis power LED status, see the *HP Moonshot 1500 Chassis Setup and Installation Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

# Powering up the node

Upon installation into the chassis, auxiliary power is provided to the cartridge. Depending on chassis autopower state, nodes may power up automatically upon cartridge installation.

To power up the node:

1. Log in to the iLO CM firmware (on page 11).
2. Show the installed cartridges to determine node status:  
`hpiLO -> show node list`
3. Power up the preferred node:  
`hpiLO -> set node power on C<x>N<y>`

For more information on configuring the cartridge, see the following documents on the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>):

- *HP Moonshot System Configuration and Compatibility Guide*
- *HP Moonshot iLO Chassis Management CLI User Guide*

# Installing the operating system

The HP Moonshot 1500 Chassis supports up to 45 cartridges. Each HP ProLiant m700 Server Cartridge has four nodes per cartridge and each node is capable of running an operating system.

- To quickly provision a full complement of cartridges with Linux or Windows operating systems, HP recommends the HP Insight Cluster Management Utility for large-scale image deployment. For more information on HP Insight CMU features and links to technical documents, QuickSpecs, and a product demonstration, see the HP website (<http://www.hp.com/go/cmu>).
- HP ProLiant m700 Server Cartridge nodes can be provisioned with Linux or Windows operating systems using PXE deployment. For OS deployment procedures, see the *Operating System Deployment on HP ProLiant Moonshot Server Cartridges User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

# Updating cartridge firmware

The minimum supported chassis manager firmware version for use with this cartridge is iLO Chassis Manager Firmware version 1.10.

A system ROM flash does not take effect on a node until the node is rebooted. The iLO CM firmware will reflect the system ROM flash immediately.

To update the firmware:

1. Verify the firmware version by entering one of the following commands:  

```
show firmware revisions all
show firmware revisions list
```
2. Download the correct firmware version from the HP Moonshot Component Pack download site (<http://www.hp.com/go/moonshot/download>).
3. After downloading the firmware image, upload all files to the chassis manager repository:  

```
add firmware file <source URL>
```
4. Verify the images were uploaded successfully:  

```
show firmware files
```
5. Update the chassis manager or system firmware:  

```
update firmware <filename>
```
6. Update the cartridge firmware:
  - o Single cartridge  

```
update firmware <filename> [C<x>]
```
  - o All cartridges  

```
update firmware <filename> all
```

For more information on updating the firmware, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## Registering the product

To experience quicker service and more efficient support, register the product at the HP Product Registration website (<http://register.hp.com>).

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# Software and configuration utilities

## HP product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP Product Bulletin website (<http://www.hp.com/go/productbulletin>).

## HP Moonshot iLO Chassis Management Firmware

HP Moonshot iLO Chassis Management Firmware is the gateway for aggregated chassis management on the HP Moonshot System. As a single point of access to the chassis, iLO CM firmware enables you to configure, update, and operate the HP Moonshot System through CLI, IPMI, and remote serial console access.

For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## HP Moonshot iLO CM Integrated Management Log

The iLO CM IML records hundreds of events and stores them in an easy-to-view form. The iLO CM IML timestamps each event with 1-minute granularity. To view recorded events in the iLO CM IML, use the `show log iml all` command in iLO CM firmware. To save the log, cut and paste the content from the session window or set session logging in the SSH client.

For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## HP Moonshot iLO CM Event Log

The iLO CM Event Log is an operating system-independent log that maintains a record of events by date and time. Logged events include major events, such as a power outage or a reset, and iLO CM firmware events. To view recorded events in the iLO CM Event Log, use the `show log ilo all` command in iLO CM firmware. To save the log, cut and paste the content from the session window or set session logging in the SSH client.

For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## HP Insight Cluster Management Utility

HP Insight CMU is an efficient and robust hyperscale cluster lifecycle management framework and suite of tools for large Linux clusters. A simple graphical interface enables an at-a-glance view of the entire cluster across multiple metrics, provides frictionless scalable remote management and analysis, and allows rapid software provisioning to all system nodes. HP Insight CMU makes cluster management more user friendly, efficient, and error-free than if it were being managed by scripts, or on a node-by-node basis. HP Insight

CMU is highly flexible and customizable, offers both GUI and CLI interfaces, and is used to deploy a range of software environments, from simple compute farms to highly customized, application-specific configurations.

For more information on HP Insight CMU features and links to technical documentation, QuickSpecs, and a product demo, see the HP website (<http://www.hp.com/go/cmu>).

To download the product, go to the HP Software Depot (<https://h20392.www2.hp.com/portal/swdepot/index.do>). Click **HP Insight Management**, then click **Insight Cluster Management**.

## HP Moonshot Component Pack

HP Moonshot Component Pack is a comprehensive firmware solution tested on the HP Moonshot System and delivered as a compressed file. The compressed file includes all the component files needed to update a Moonshot System. Firmware updates contained in the Moonshot Component Pack are deployed via the iLO Chassis Manager CLI interface. Flashing the firmware components consists of delivering and executing updated files in the HP Moonshot iLO Chassis Management Firmware, which distributes the flash file. Download the latest pack from the HP website (<http://www.hp.com/go/moonshot/download>).



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# Troubleshooting

## Troubleshooting resources

The *HP Moonshot System Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance on the HP Moonshot System. The document is available in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

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# Illustrated parts catalog

## Customer self repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

**NOTE:** Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

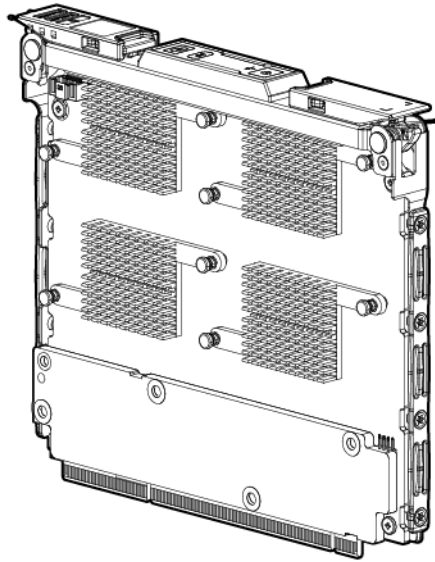
For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (<http://www.hp.com/go/selfrepair>).

## Parts only warranty service

Your HP Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, HP will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

# Cartridge replaceable components



Item	Description	Spare part number	Customer self repair (on page 18)
1	Cartridge	—	—
	a) HP ProLiant m700 Server Cartridge with 32-GB iSSD mezzanine	734012-001	Mandatory <sup>1</sup>
	b) HP ProLiant m700 Server Cartridge supports removable iSSD mezzanine	764974-001	Mandatory <sup>1</sup>
2	HP ProLiant m700 4x64 GB removable iSSD mezzanine*	764976-001	Mandatory <sup>1</sup>
3	Cartridge blank*	712680-001	Mandatory <sup>1</sup>

\* Not shown

<sup>1</sup>Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

<sup>2</sup>Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

<sup>3</sup>No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

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# Removal and replacement procedures

## Preparation procedures

To access some components and perform certain service procedures, you must perform one or more of the following procedures:

- Remove the access panel (on page 7).
- Install the access panel (on page 10).
- Remove the cartridge (on page 9).
- Install the cartridge (on page 10).

## Safety considerations

Before performing service procedures, review all the safety information.

### 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.

## Symbols on equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.



This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

**WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

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This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

**WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure.



This symbol on an RJ-45 receptacle indicates a network interface connection.

**WARNING:** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

**WARNING:** To reduce the risk of injury from a hot component, allow the surface to cool before touching.



43.09 kg  
95.00 lb

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

**WARNING:** To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.



These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

**WARNING:** To reduce the risk of injury from electric shock, remove all power cords to completely disconnect power from the system.

## Warnings and cautions

Before installing a chassis, be sure that you understand the following warnings and cautions.



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

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Connect the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Disconnect the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the chassis.



**CAUTION:** Do not operate the chassis for long periods with the access panel open or removed. Operating the chassis in this manner results in improper airflow and improper cooling that can lead to thermal damage.

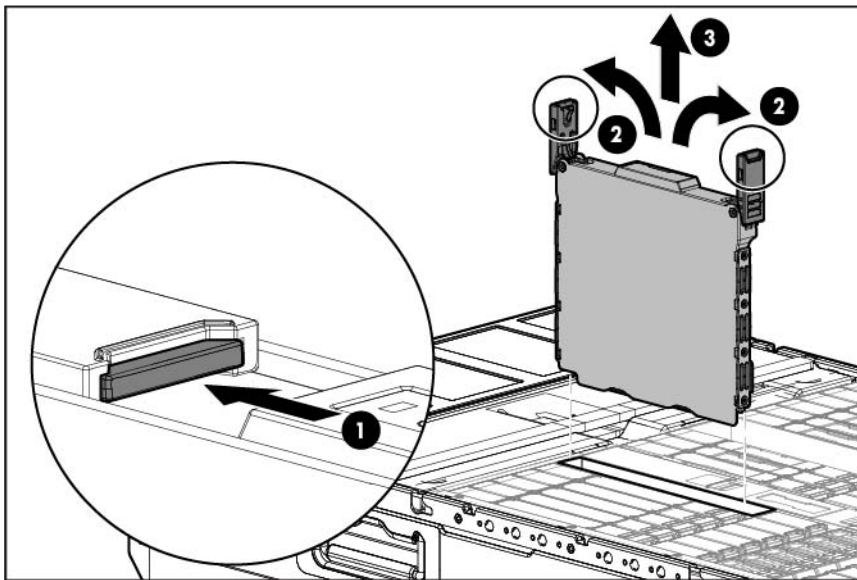
## Cartridge

When a cartridge fails and a replacement cartridge is installed in the chassis, you must update the serial number and the product ID to preserve the warranty entitlement for that cartridge.

Before you begin the replacement procedure, make note of the cartridge slot number for the cartridge being replaced.

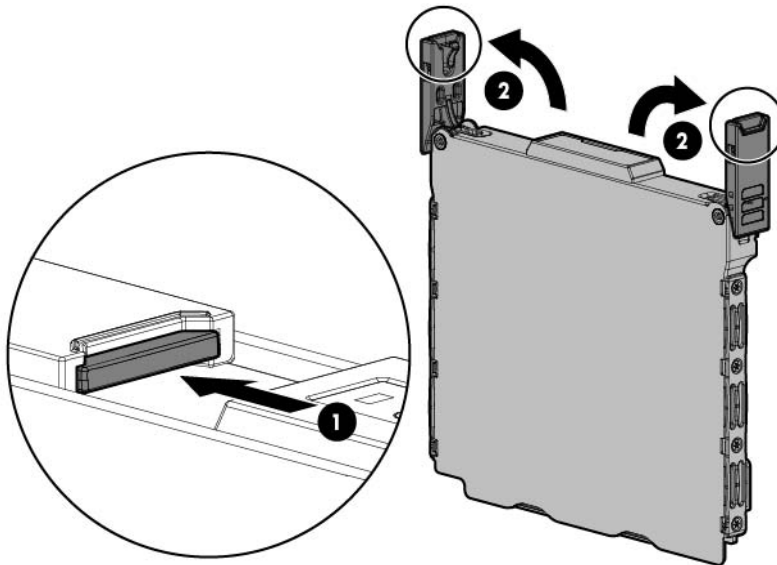
To remove the component:

1. Log in to the iLO CM firmware (on page 11). For more information about the iLO CM firmware, see the *HP Moonshot iLO Chassis Management CLI User Guide* on the HP website (<http://www.hp.com/go/moonshot/docs>).
2. Capture the cartridge serial number using the following command:  
`SHOW CARTRIDGE SN C<x>`
3. Capture the cartridge product ID using the following command:  
`SHOW CARTRIDGE PID C<x>`
4. If the failed cartridge is powered on, then power down the failed cartridge using the following command:  
`SET NODE POWER OFF FORCE C<x>N<y>`  
For multinode cartridges, use the command:  
`SET NODE POWER OFF FORCE C<x>N<1-4>`
5. Power down the node (on page 6).
6. Extend the chassis from the rack (on page 6).
7. Remove the access panel (on page 7).
8. Remove the failed cartridge.

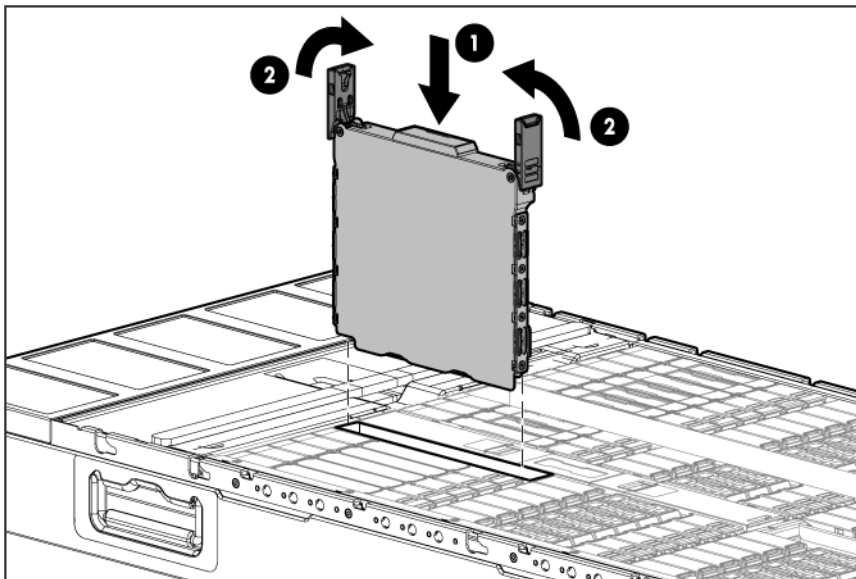


To replace the component:

1. Prepare the replacement cartridge for installation.



2. Install the replacement cartridge.



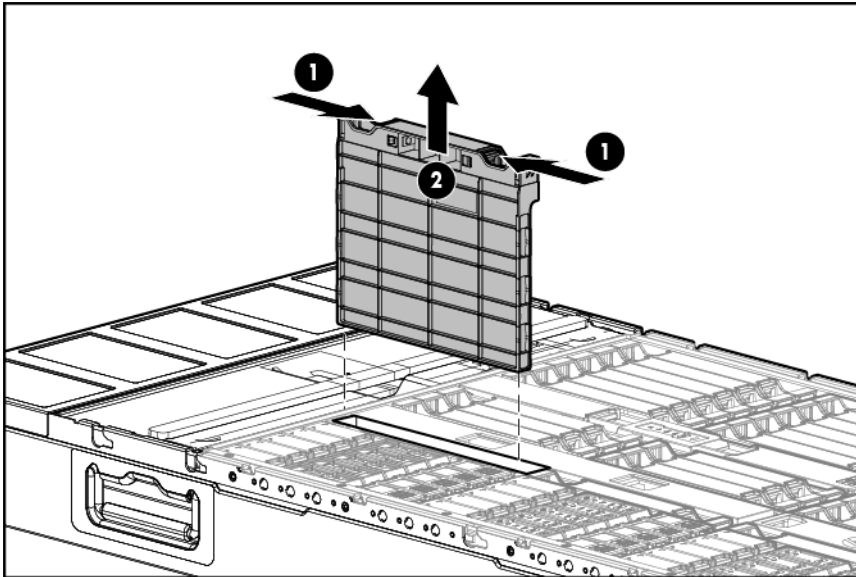
3. Install the access panel (on page 10).
4. Allow the chassis manager to discover the replacement cartridge. The link LED flashes when this process is complete.
5. Assign the original serial number to the replacement cartridge using the following command:  
`SET CARTRIDGE SN <original SN> C<x>`
6. Assign the original product ID number to the replacement cartridge using the following command:  
`SET CARTRIDGE PID <original PID> C<x>`

# Cartridge blank

**CAUTION:** For proper cooling, be sure that a cartridge or a cartridge blank is always installed in each cartridge slot in the chassis. When replacing a cartridge, leave the cartridge slot empty for no more than 30 seconds. Failure to do so can disrupt airflow in the chassis.

To remove the component:

1. Extend the chassis from the rack (on page 6).
2. Remove the access panel (on page 7).
3. Remove the component as indicated.



To replace the component, reverse the removal procedure.

# Mezzanine assembly

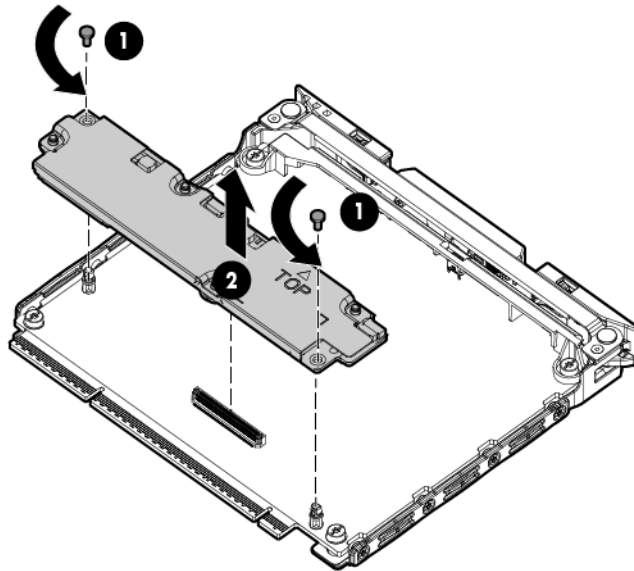
The following procedure only applies to cartridges that support a removable iSSD mezzanine. Never bend or flex the iSSD mezzanine.

To remove the component:

1. Power down the node (on page 6). The HP ProLiant m700 Server Cartridge requires you to power down all nodes for this operation.
2. Remove the access panel (on page 7).
3. Remove the cartridge (on page 9).

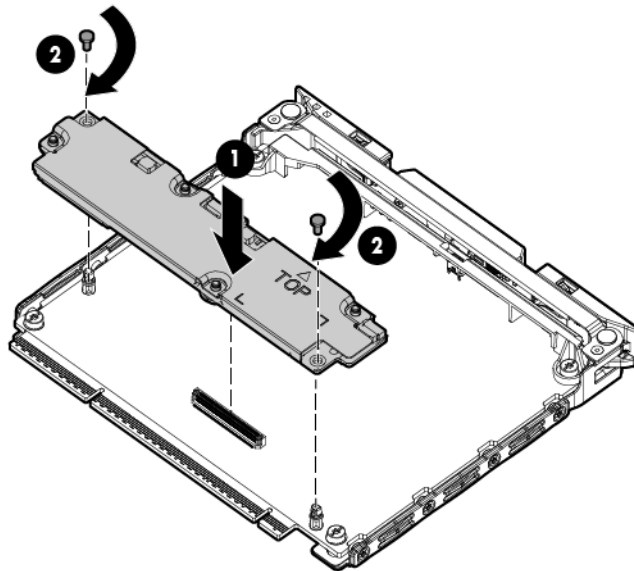


4. Remove the iSSD mezzanine from the cartridge.



To install the component:

1. Align and install the iSSD mezzanine onto the cartridge. Press down on the connector to seat the iSSD mezzanine.



2. Install the cartridge (on page 10).
3. Install the access panel (on page 10).
4. Power up all nodes on the cartridge ("[Powering up the node](#)" on page 13).

---

## Regulatory information

### Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (<http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>).

### Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

### Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

### Warranty information

HP ProLiant and X86 Servers and Options (<http://www.hp.com/support/ProLiantServers-Warranties>)

HP Enterprise Servers (<http://www.hp.com/support/EnterpriseServers-Warranties>)

HP Storage Products (<http://www.hp.com/support/Storage-Warranties>)

HP Networking Products (<http://www.hp.com/support/Networking-Warranties>)

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# 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  $\pm 10$  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.

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# Specifications

## Chassis environmental specifications

Specification	Value
<b>Temperature range*</b>	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
<b>Maximum Wet bulb temperature</b>	—
Operating	28°C (82.4°F)
Non-operating	38.7°C (101.7°F)
<b>Relative humidity (non-condensing)**</b>	—
Operating	10% to 90%
Non-operating	5% to 95%

\* All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048 m (10,000 ft) or 70 kPa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft).

\*\* Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 kPa (10.1 psia).

## Chassis specifications

Specification	Value
Height	18.96 cm (7.46 in)
Depth	84.91 cm (33.43 in)
Width	44.33 cm (17.45 in)
Weight, fully loaded	81.65 kg (180.00 lb)
Weight, empty	43.09 kg (95.00 lb)

---

# Support and other resources

## Before you contact HP

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

- Technical support registration number (if applicable)
- Product name
- Chassis serial number
- Product identification number
- Applicable error messages
- Operating system type and revision level

To obtain product information, log in to iLO CM firmware and use the `Show Chassis Info` command. For more information, see the *HP Moonshot iLO Chassis Management CLI User Guide* in the HP Moonshot Information Library (<http://www.hp.com/go/moonshot/docs>).

## HP contact information

For United States and worldwide contact information, see the Contact HP website (<http://www.hp.com/go/assistance>).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (<http://www8.hp.com/us/en/support-drivers.html>). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (<http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html>).

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# Acronyms and abbreviations

CM

chassis management

CMU

HP Insight Cluster Management Utility

CSR

Customer Self Repair

ESD

electrostatic discharge

IPMI

Intelligent Platform Management Interface

iSSD

integrated solid state drive

PDU

power distribution unit

PXE

preboot execution environment

UID

unit identification

UPS

uninterruptible power system

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# Documentation feedback

HP is committed to providing documentation that meets your needs. To help us improve the documentation, send any errors, suggestions, or comments to Documentation Feedback (<mailto:docsfeedback@hp.com>). Include the document title and part number, version number, or the URL when submitting your feedback.

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