HP E5000 Messaging System for Microsoft Exchange Administrator Guide

Abstract

This document explains how to install, configure, and maintain all models of the E5000 Messaging System for Micosoft Exchange. The intended audience is decision makers, IT support staff, and project managers involved in planning and deploying Microsoft Exchange Server 2010 solutions. For more information on Exchange 2010 terminology and best practices, go to http://www.hp.com/solutions/activeanswers/exchange. For the latest version of this guide, go to www.hp.com/support/manuals. Select **Solution appliances** in the solutions group, and then select an E5000 product.

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Edition: First

Acknowledgments

Revision History

Edition	Date	Software Version	Description
First	February 2011	1.0	First release

Contents

1 HP E5000 Messaging Systems for Microsoft Exchange

The HP E5000 Messaging System for Microsoft Exchange ("messaging system") is an integrated hardware-software solution that simplifies the initial deployment of Microsoft Exchange Server 2010. Each messaging system features HP server blades and dense disk storage in a single 3U enclosure (Figure 1 (page 7)). E5000 expansion nodes are optional or standard depending on the model. The following models are available:

- HP E5300 Messaging System for Microsoft Exchange
- HP E5500 Messaging System for Microsoft Exchange
- HP E5700 Messaging System for Microsoft Exchange

Messaging system features

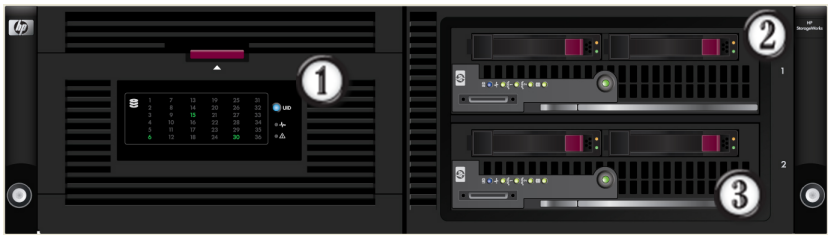
The HP E5000 Messaging System provides the following advantages:

- Each system ships from the factory with pre-integrated hardware and pre-loaded software, to significantly to reduce the time and complexity of deploying Exchange 2010.
- Built on the HP's converged application platform, which combines two server blades and dense storage drawer into a single enclosure
- Simplified deployment with pre-sized, tested, and optimized configurations
- Lower overall TCO with reduced footprint and lower energy consumption
- Pre-sized configurations deliver high availability in hours instead of days
- Setup Wizards. Specially developed setup tools provide guided setup assistance, performing many of the complex and time-consuming tasks needed to configure and deploy a high availability messaging system. The setup tools make it easy to get both Windows and Exchange configured and running quickly – and you can use the HP Sizer for more detailed configurations.
- Automatic database-level recovery from failures.
- HP and Microsoft management integration, including Microsoft Server Manager and System Center and HP System Insight Manager and Integrated Lights Out (iLO).

For more description of E5000 Messaging system features, go to http://www.hp.com/go/E5000.

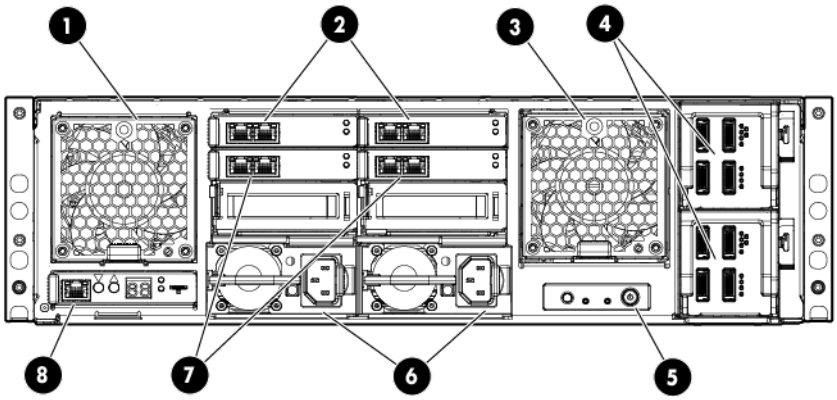
Messaging system hardware components

Figure 1 HP E5000 Messaging System – all models



1. Disk drive drawer
2. Server blade 1, Bay 1
3. Server blade 2, Bay 2

Figure 2 HP E5000 Messaging System rear view



1. System fan
2. HP StorageWorks 2-port Ethernet I/O module (2) (These modules connect to the NIC located on the server blade motherboard)
3. Drive fan
4. SAS I/O module (2)
5. Power button
6. Power supply (2)
7. HP StorageWorks 2-port Ethernet I/O module (These modules (2) connect to the NIC located on top of the Mezzanine card on the server blade. Standard on the E5500 and E5700 and can be added as option for the E5300
8. Management port (for iLO and Enclosure Manager Unit)

Messaging system software components

The E5000 Messaging System includes factory integration of the hardware and pre-loading of the E5000 software image, including Windows Server 2008 R2, which has been pre-installed and activated. The E5000 system configuration also includes the HP E5000 Configuration Wizard and E5000 Messaging System Exchange Deployment Tool, which are used to deploy the Exchange servers and storage in their optimal configurations.

The E5000 Configuration Wizard assists during the initial out of box setup and configuration of the messaging system. This tool helps to configure each of the customer specific settings needed to prepare the server.

Exchange 2010 is then installed and configured using the E5000 Messaging System Exchange Deployment Tool, which has been developed to automate many of the deployment tasks.

To provide ongoing monitoring and facilitate management, the messaging system includes the E5000 System Manager, which provides a snapshot view of the health and status of the messaging system as well as tools to manage firmware updates.

For a more complete description of E5000 Messaging System features, see http://www.hp.com/go/E5000.

2 Preparing to install the messaging system

Before you install the messaging system, plan how you will integrate the system into your network and whether you will use Insight Remote Support (see "HP Insight Remote Support software" (page 60)).

Exchange Server 2010 network requirements

Exchange Server 2010 includes a high-availability feature called Database Availability Group (DAG), which requires two networks:

- Client/MAPI network provides the following functions:
  - Server-to-server connectivity between the Client Access Servers (CAS), Hub Transport, and Mailbox server roles
  - Server-to-server communication with domain controllers, global catalog servers, and name services like DNS.
  - Management of Exchange client traffic such as Outlook and Outlook Web App
  - Exchange client access to mail on Client Access Servers.
  - Replication, if the replication network is unavailable.
- Replication network provides the cluster heartbeat, Exchange Server 2010 log shipping, and database seeding or reseeding when available.

IMPORTANT: The Replication and MAPI networks should be isolated from each other, preventing Client/MAPI and Replication network traffic from being routed between networks.

E5000 EMU network connections

To facilitate manageability and diagnostic services on the messaging system, the server blades require network connections to the EMU. The EMU provides connections to two management processors:

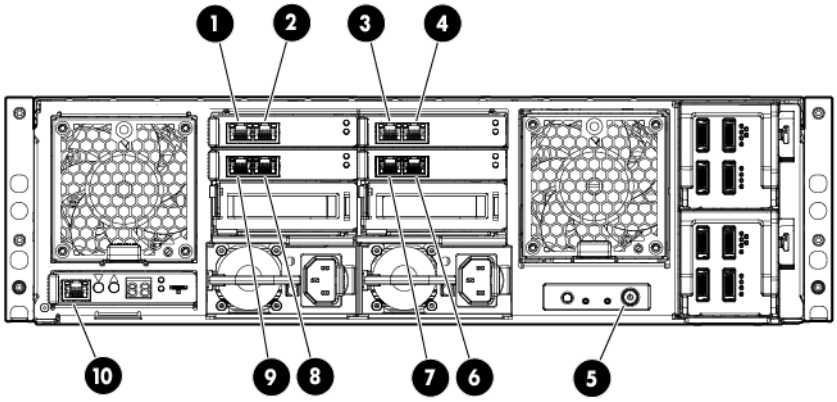
- EMU processor
- iLO processor for each server blade

EMU iLO should be connected to the Client/Mapi network or to the dedicated management network if used. Because many administrators use iLO remote management functions, including virtual console, HP recommends that you configure the EMU so that administrators have remote network access to the unit. The EMU and iLO management processors support DHCP and static network addressing. To simplify initial setup, the processors are configured for static addressing as follows:

- EMU: 10.0.0.10
- Server 1 iLO: 10.0.0.11
- Server 2 iLO: 10.0.0.12
- Subnet: 255.255.255.0

Figure 3 (page 10) shows the network ports on the rear of the messaging system enclosure.

Figure 3 Network ports



1. Server 1, NIC, port 1
2. Server 2, NIC port 1
3. Server 1, NIC port 2
4. Server 2, NIC port 2
5. E5000 enclosure power button
6. Server 2, Mezz NIC, port 2
7. Server 1, Mezz NIC, port 2
8. Server 2, Mezz NIC, port 1
9. Server 1, Mezz NIC, port 1
10. Enclosure Manager NIC. Includes iIO connections for both servers.

NOTE: E5300 models do not come standard with Mezz NICs on the servers.

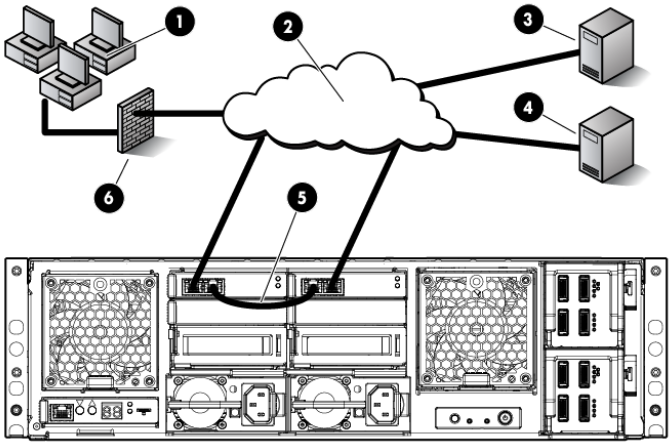
Planning the E5300 Messaging System network configuration

This section describes the recommended E5300 network configuration and EMU connection options.

Typical E5300 Messaging System network configuration

Figure 4 (page 11) shows the recommended E5300 Messaging System network configuration expected by the E5000 Configuration Wizard described in "Configuring the messaging system software" (page 24).

Figure 4 Recommended E5300 Messaging System network configuration



1. Clients
2. Client/MAPI network
3. File share witness
4. Domain controller
5. Replication network
6. Firewall

By default, the E5000 Configuration Wizard sets up the Client/MAPI and Replication networks as follows:

- Client/MAPI network
  - Server 1/Port 1 and Server 2/Port 2 network ports connect to this network.
  - Labels this network as the MAPI network on each server.
  - The default setting is static, but you can use the E5000 Configuration Wizard to configure DHCP addressing.
- Replication network
  - Server 1/Port 2 and Server 2/Port 1 network ports connect to the replication network.
  - The E5000 Configuration Wizard automatically sets these static addresses by default (but also allows you to change them):
    - Server 1 – 10.0.0.1
    - Server 2 – 10.0.0.2

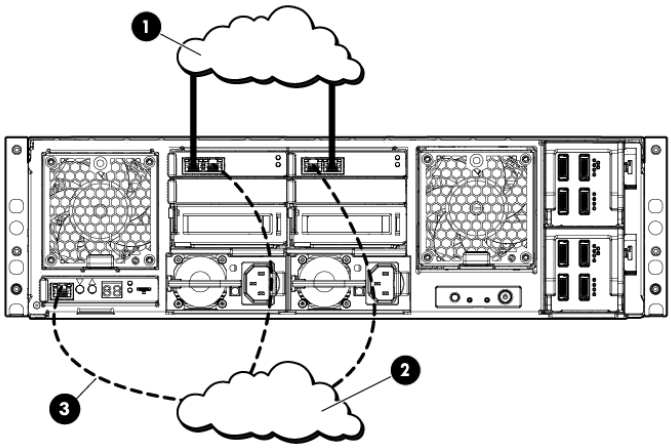
  Use one of the Ethernet cables shipped with the E5000 system to connect the replication ports, as shown in Figure 4 (page 11).

E5300 Messaging System connection options

Figure 5 (page 12) shows the recommended option for connecting the EMU to the servers (this configuration is recommended after the initial configuration. For the initial configuration of EMU and iLO, the EMU port must be connected directly to the administrator's laptop or PC).

Figure 5 (page 12) shows the recommended Replication network configuration option. To use this option, you need a VLAN switch, and you must ensure that the MAPI and Replication networks are kept separate.

Figure 5 E5300 Messaging System connection options



1. Client/MAPI network
2. Replication network
3. Connection to EMU

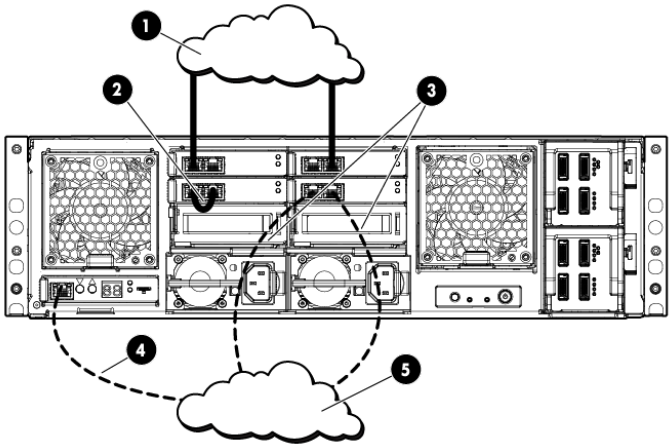
Planning the E5500/E5700 Messaging System network configuration

This section describes the typical E5500/E5700 network configuration and EMU connection options.

Typical E5500/E5700 Messaging System network configuration

Figure 6 (page 12) shows the typical E5500/5700 network configuration expected by the E5000 Configuration Wizard, as described in "Configuring the messaging system software" (page 24).

Figure 6 Management network (recommended)



1. Client/MAPI network
2. Replication network
3. Connections to management network
4. Connection to EMU
5. Management network

By default, the E5000 Configuration Wizard sets up the Client/MAPI and Replication networks as follows:

- Client/MAPI network

- Server1/Port 1 and Server2/Port 2 network ports connect to this network.
- The network is labeled as the MAPI network on each server.

- Replication network
  - Server 1-Mezz NIC/Port 1 and Server 2-Mezz NIC/Port 1 network ports connect to this network.
  - The E5000 Configuration Wizard automatically assigns these static addresses:
    - Server 1 – 10.0.0.1
    - Server 2 – 10.0.0.2

  Use one of the Ethernet cables shipped with the messaging system to connect the replication ports, as shown in Figure 4 (page 11).

E5500/E5700 Messaging System EMU connection options

The E5500 and E5700 enclosures have more NIC ports than the 5300 Messaging System enclosure, and provide more network connection options. Figure 6 (page 12) shows the recommended management network configuration. The Mezz B ports may be used to connect to the EMU, and while this is the intention, this method of connection is not required.

While alternate network ports can be used for network-based backup or teamed with the MAPI network, they can also be used for EMU connectivity. As with the E5300 Messaging System system, the Client/MAPI or Replication network can also be used to establish EM network connectivity to the servers.

3 Installing the messaging system

This chapter explains how to install the messaging system hardware.

Check the kit contents

Remove the contents, making sure you have all the components listed below. If components are missing, contact HP technical support.

Hardware

- HP E5000 Messaging System base system configuration
- Expansion nodes if deploying an E5700 configuration or if purchased as an upgrade option for other configurations
- Power cords
- 1.2m CAT5 Ethernet cable
- 0.5m mini SAS cable and 2m mini SAS cable per expansion node

Media and documentation

- Safety and Disposal Documentation CD
- HP E5000 System Recovery DVD
- End User License Agreement
- Certificate of Authenticity Card
- Storage System Rail Kit
- HP ProLiant Essentials Integrated Lights-Out Advanced Pack

Locate and record the product number, serial number, and SAID number

Before you begin installation, locate and write down the product number of the storage system, serial number, and support contract service agreement ID (SAID) number.

The product number of the storage system and serial number are located in three places:

- Top of the storage system
- Back of the storage system
- On the storage system shipping box

The SAID number is listed on your service contract agreement (see "Obtaining the Service Agreement ID (SAID)" (page 61)).

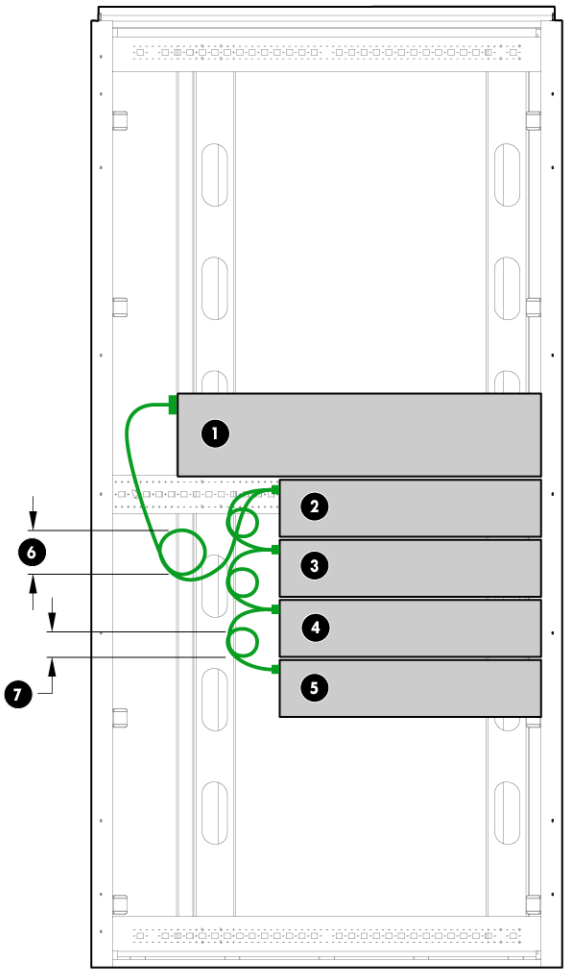
Unpack and rack the messaging system hardware

WARNING! The messaging system enclosure is heavy. Always use at least two people to move the storage system into the rack.

1. If you ordered the messaging system without the rack, install the rail kit and enclosure by following the *HP Rail Kit Installation Instructions* that are included with the rail kit.

   If your messaging system is delivered in a rack, proceed to Step 2.

IMPORTANT: Ensure that cabling in the back of the rack system does not interfere with system operation or maintenance. Bind cables loosely with cable ties and route the excess out of the way, along the side of the rack, to keep system components and indicators visible and accessible.



1. Messaging system enclosure

2–5. Expansion nodes (optional)

6, 7. Cable connection, with no bend radius smaller than 5 cm

2. If you purchased an expansion node, rack and cable the expansion node(s) before moving to the next step.
   a. Add expansion nodes to the rack by following the *HP StorageWorks 2U Storage System Rail Kit Installation Instructions*, packaged with the rail kit.
   b. Cable the expansion nodes to the messaging system chassis. For recommended cabling, see "Install E5000 expansion nodes" (page 16).
3. Cable the messaging system to your network and attach the power cords. See "HP E5000 Messaging System rear view" (page 8) for connecting ports. For information on network configurations, see "Preparing to install the messaging system" (page 9).

Install E5000 expansion nodes

IMPORTANT: If you order optional expansion nodes, be sure to rack and cable them to the messaging system before powering on for initial configuration.

Install the hardware and cabling

To install the hardware and cabling:

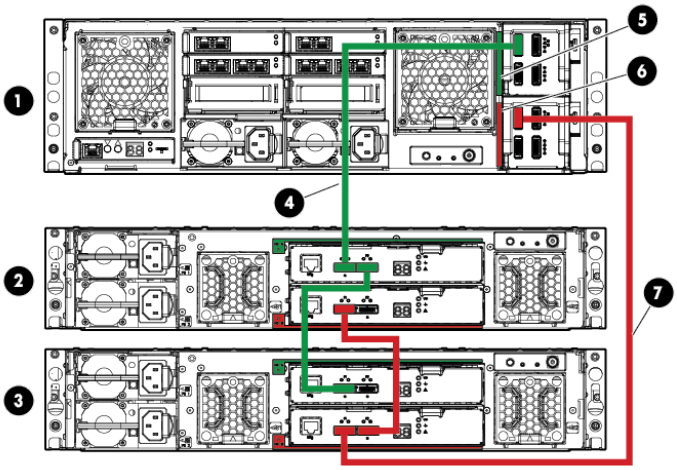
1. Cable the additional expansion nodes to your messaging system.
2. Rack the expansion nodes.

   For instructions, see the *HP Rail Kit Installation Instructions*.
3. Cable the additional expansion nodes to your messaging system.

IMPORTANT: Ensure that cabling in the back of the rack system does not interfere with system operation or maintenance. Bind cables loosely with cable ties and route the excess out of the way, along the side of the rack, to keep system components and indicators easily visible and accessible.

Figure 7 (page 16) shows an E5700 base configuration with two expansion nodes.

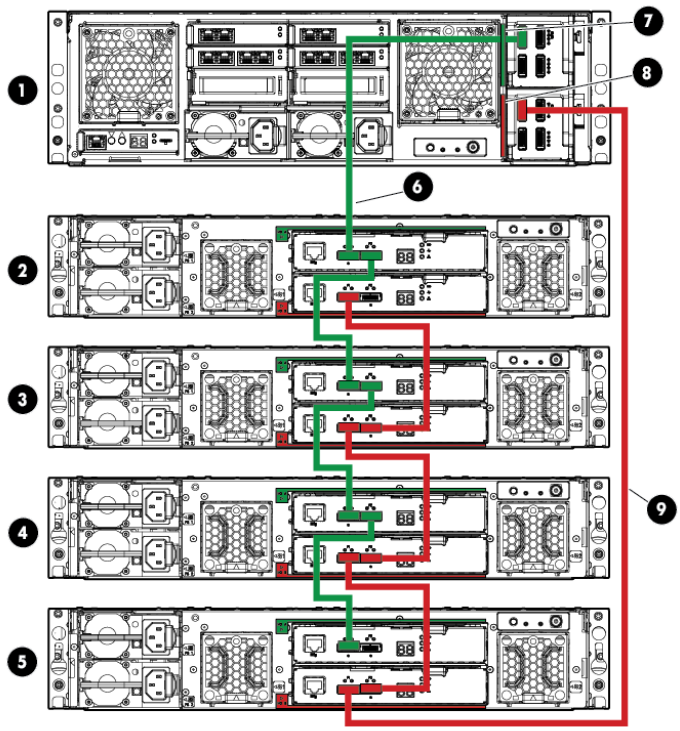
Figure 7 E5700 base configuration with 2 expansion nodes



1. Messaging system
2, 3. Expansion nodes
4. SAS cable connecting expansion node 1 (green cable)
5. Green color code for upper SAS I/O module
6. Red color code for lower SAS I/O module
7. SAS cable connecting expansion node 2 (red cable)

Figure 8 (page 17) shows an E5700 maximum configuration with 4 expansion nodes.

Figure 8 E5700 maximum configuration with 4 expansion nodes



1. Messaging System
2–5. Expansion nodes
6. SAS cable connecting expansion node 1 (green cable)
7. Green color code for upper SAS I/O module
8. Red color code for lower SAS I/O module
9. SAS cable connecting expansion node 2 (red cable)

Power on the messaging system

1. Power on any expansion nodes.
2. Power on the messaging system by pushing the power button on the back of the chassis.

   Once the messaging system power is on, power on the server blades if they do not automatically power on.

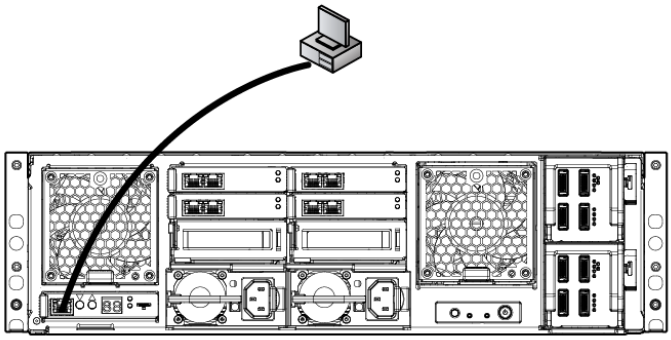
Configure the EMU and iLO management processors

Before configuring the management processors, verify the following:

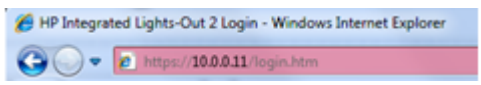
- You have determined whether the network ports on the server are to use DHCP or static addresses. If the network ports are to use static addresses, you must provide the addresses.
- The server NIC ports are cabled to the appropriate switches/VLANs (see"Planning the E5300 Messaging System network configuration" (page 10)).
- The expansion nodes (if present) are powered up and cabled to the messaging system enclosure, and the messaging system enclosure system is powered up.
- For this step, the EMU port should not be connected to a switch. You can connect the EMU port to a switch once the EMU is configured.

Configure the EMU and iLO management processors as follows on both servers.

1. Establish physical connectivity to the EMU port.
   1. Connect the EMU NIC port directly to a local system or laptop. You can use either a crossover or a straight through Ethernet cable.



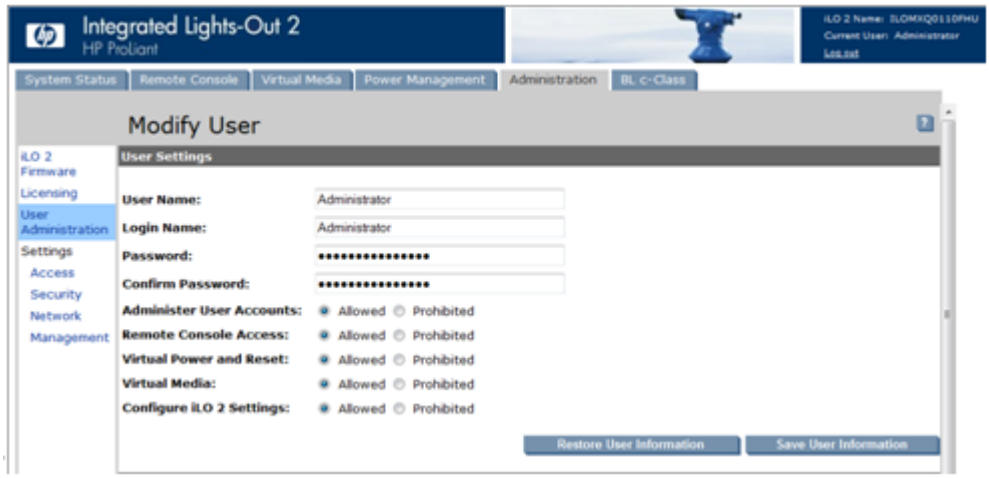
   2. Configure the TCP/IP properties:
      1. Open Control Panel.
         - For computers running Windows Visa or Windows 7, select Network and Sharing Center.
         - For computers running Windows XP, select Network Connections.
      2. Select Local Area Connection, and then select **Properties**.
      3. For Windows Vista or Windows 7, select Internet Protocol Version 4 (TCP/IPv4), and then select **Properties**.

         For Windows XP, select Internet Protocol (TCP/IP), and then select **Properties**.
      4. If Use the following IP address: is selected, record values for the following items and restore them after completing the EMU and iLO setup:
         - IP address
         - Subnet mask
         - Default gateway
      5. Enter the following values:
         - IP address: 10.0.0.20
         - Subnet mask: 255.255.255.0
   3. The EMU and iLO interfaces have been assigned IP addresses during factory setup. You must either update the factory values with site-specific static IP addresses or, to obtain IP address automatically, select Obtain an IP address automatically in the TPC/IP **Properties** dialog. Before continuing, ping the following IP addresses to test connectivity to the EMU and the iLO located in each of the servers: 10.0.0.10, 10.0.0.11, and 10.0.0.12.
2. Configure each iLO.
   1. Point Internet Explorer at the iLO IP address: 

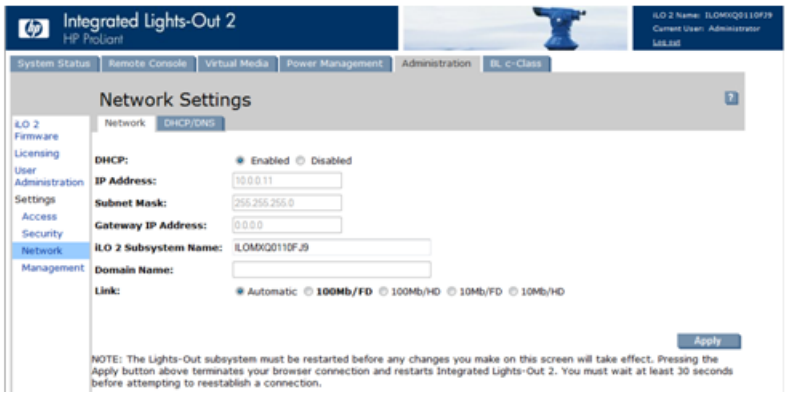
   2. Enter the administrator password found on the pull tab on the front of the server blade.

      HP recommends that you change the administrator password. Launch Internet Explorer and enter the URL of the first iLO address: `https://10.0.0.11`. You will be prompted to enter the user name and password. The password for the Administrator account is located on the pull-out tab on the front of the server blade. After you have successfully

logged into the iLO, you can change the Administrator password and select the Administration tab under the User Administration section.



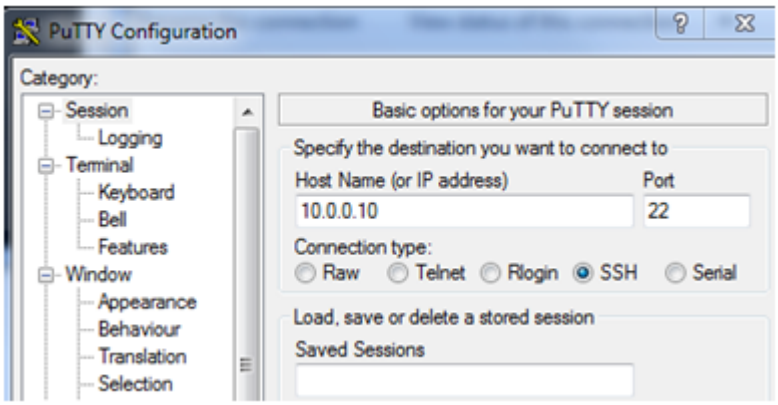
3. Under the **Administration** tab, configure the network as required for your environment. Select the section labeled **Network**. You can either enable DHCP or edit the IP address details and enter site-specific network settings. The following example shows a DHCP configuration.



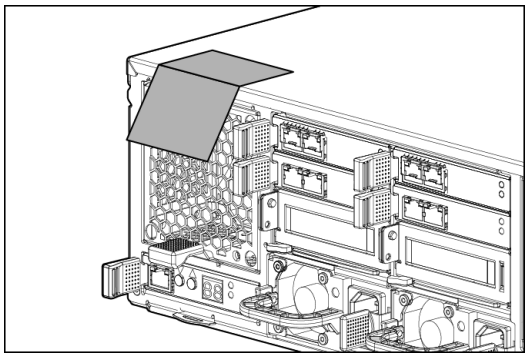
4. After completing your changes, click **Apply** to save your settings.
5. Repeat the process on the other server blade. Launch Internet Explorer and entering the following URL: `https://10.0.0.12`.

3. Configure the EMU.

1. Connect to the Enclosure Manager software using an `ssh` compatible tool like PuTTY. In the PuTTY session basic options, enter the IP address of the EMU (10.0.0.10), port 22, and connection type SSH.



TIP: The password is printed on a tear away label attached to the top rear of the enclosure.



2. After you have connected to the EMU, set the following attributes:
   - EMU (DNS) name
   - rack name
   - EMU password
   - IP addressing method.

Example 1 Setting attributes

```
E5000-1-EM> set em name E5000-1-EM

IDP Enclosure Manager name changed to E5000-1-EM.

E5000-1-EM> set rack name CustomerRackName

Changed rack name to "CustomerRackName".

E5000-1-EM> set password

New Password: ********
Confirm     : ********
Changed password for the "Administrator" user account.

E5000-1-EM> set ipconfig dhcp

DHCP successfully enabled.
This setting change will take effect immediately.

E5000-1-EM>
```

NOTE: See "EMU reference" (page 153) for information on using CLI commands.

4. Complete the configuration.
   1. Now that both server iLO and the EMU have been properly configured for the network environment, connect the EMU to the appropriate switch/VLAN/subnet.
   2. Log in to the EMU using `ssh` and the newly assigned EMU name and validate connectivity.

Example 2 Verifying connectivity

```
E5000-1-EM> show server list all  show server list all

Bay iLO Name                      iLO IP Address  Status   Power   UID
--- ----------------------------- --------------- -------- ------- ---
  1 ILOMXQ0110FJ9                 16.78.90.51     OK       On      Off
  2 ILOMXQ0110FHU                 16.78.90.113    OK       Off     Off
Totals: 2 server blades installed, 1 powered on.
```

Accessing the messaging system

For initial configuration of the messaging system, you must have console access for each of the server blades. You can use either a local I/O diagnostic (SUV) cable or an iLO connection. The iLO connection is the preferred method because it allows for remote access.

For remote access, open an Internet Explorer window and enter the iLO name or IP address for the server blade located in Bay1. For more information about IP addressing and subnets, see "E5000 EMU network connections" (page 9). You log in using the iLO Administrator name and newly created password for that blade.

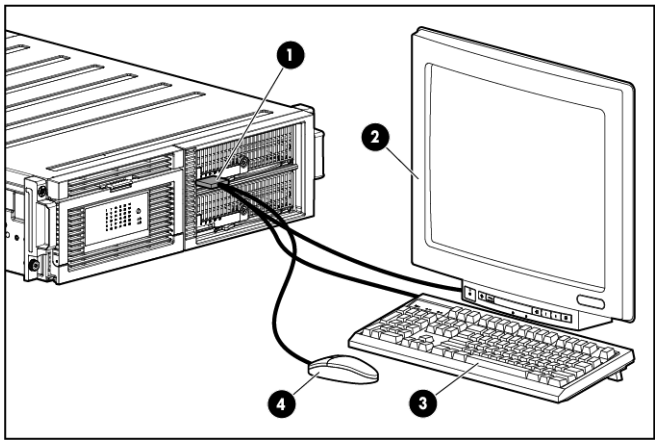
For instructions on using iLO, see the Integrated Lights Out user guide available from

http://www.hp.com/go/ilo. On the iLO web page, select **iLO Firmware** (under iLO Support & Downloads, on the right), then select **Manuals** (from menu on the left).

If you are using the direct connect method, connect the supplied SUV cable to the front of the messaging system server blades in the following sequence: keyboard, mouse, monitor cable, and monitor power cable.

NOTE: The keyboard, mouse, and monitor are not provided with the messaging system.

Figure 9 Keyboard, mouse, and monitor



1. Messaging system enclosure
2. Monitor
3. Keyboard
4. Mouse

Adding expansion nodes to an installed messaging system

To add expansion nodes to the messaging system:

1. Use the Exchange Management Console or the Exchange Management Shell to failover the databases from the bay 1 server to the bay 2 server.
2. Power on the expansion node.
3. Reboot the bay 1 server and run the E5000 Configuration Wizard on the bay 1 server from the **All Programs** shortcut.

CAUTION: In some cases, when adding new expansion nodes, disks are seen through a single path. This condition is reported as an error in the diagnostics initially performed by HP E5000 Configuration Wizard. To fix this problem, power cycle the expansion nodes by pressing and holding the button on the back of the unit, then pressing and holding the button once again to power them back on. Then re-run the HP E5000 Configuration Wizard from the **All Programs** shortcut.

For instructions, see (page 24).

The messaging system identifies the new storage and creates new LUNs.

4. Exit the Initial Configuration Wizard at the first opportunity.
5. On the bay 2 server, use the Exchange Management Console or the Exchange Management Shell to manually failover the databases from the bay 2 server to the bay 1 server.
6. Reboot the bay 2 server and manually run the E5000 Configuration Wizard on the bay 2 server.

7. Rebalance the databases using the `RedistributeActiveDatabases.ps1` script located (by default) at `\Program Files\Microsoft\Exchange Server\V14\scripts`. Run this script within the Exchange Management Console.
8. Within the Microsoft Exchange Management Console, select **New Mailbox Database**.
   a. Name the new database the next item in the sequence (for example, *DB10*).
   b. Select a server.
   c. Set the path based on the newly created LUNs.
9. Use Microsoft Exchange Management Console to add a mailbox copy.

Adding hard drives to an installed E5300 system

If you ordered an E5300 system with fewer than the maximum number of hard drives, you can add drives as follows:

1. Power off the system as described in (page 63).
2. Install the new drives as described in (page 125)
3. Power on the system.
4. Run the E5000 Configuration Wizard on the first server manually from the **All Programs** shortcut. The wizard recognizes the new storage and creates new LUNs. Exit the wizard at the first opportunity.
5. Run the wizard on the second server.
6. Using Microsoft Exchange Management Console, select **New mailbox database** and name the new the next item in the sequence. For example, if the previous is DB9, name the new one DB10.
7. Choose a server and set the path based on the new LUNs.
8. Use Microsoft Exchange Management Console to add a mailbox copy on the other server.

4 Configuring the messaging system software

This chapter explains how to configure system software using the HP E5000 Configuration Wizard and how to deploy Microsoft Exchange Server 2010 using the HP E5000 Messaging System Exchange Deployment Tool.

IMPORTANT: To configure the E5000 messaging system, you must run these tools on each server blade.

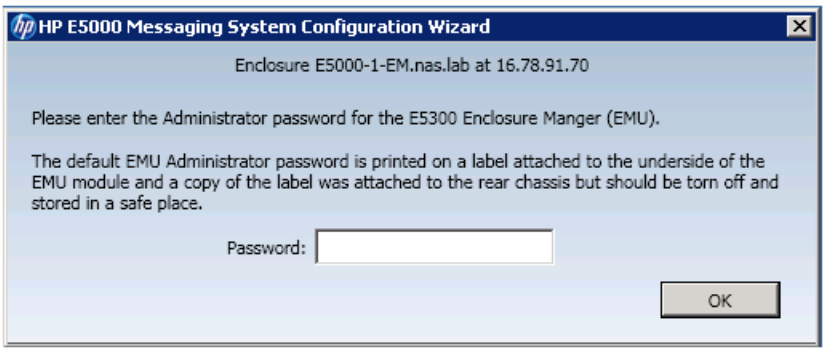
HP recommends that you fully complete the Configuration Wizard and Exchange Deployment Tool on the Bay 1 server blade before beginning to configure the Bay 2 server blade.

After you have completed the initial configuration, be sure to install any available software updates as described in " Updating the messaging system software" (page 63).

Configuring server software

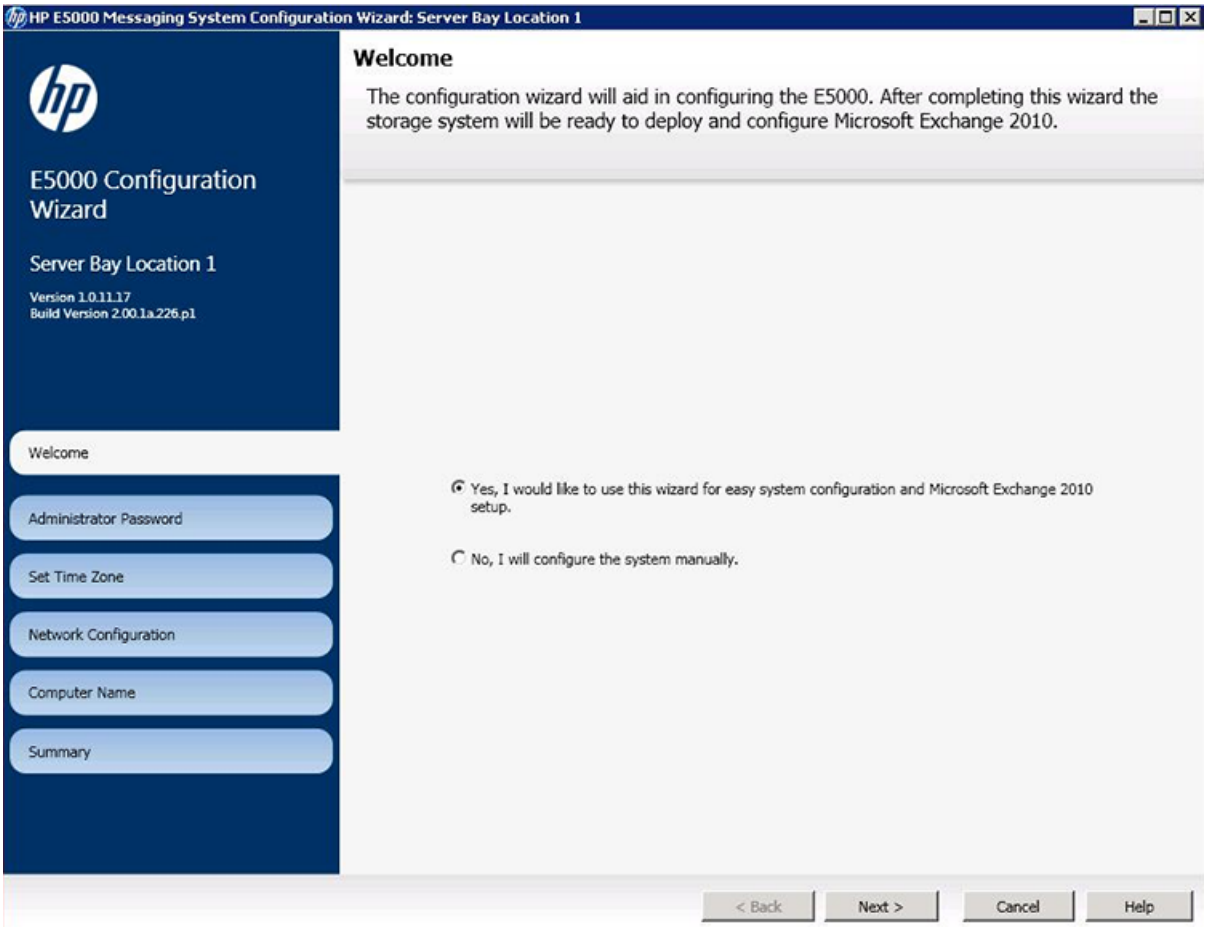
The HP E5000 solution should be powered up and the network ports cabled for your network configuration, including the EMU port. For configurations that use expansion nodes, such as the E57000, all storage enclosures should be cabled to the messaging system and powered on. Complete the following steps, first on server 1, and then on server 2. Do not start on the second server until you have completed the steps on server 1. When the server is powered up for the first time, it completes the initial Windows configuration process and then launches the E5000 Messaging System Configuration Wizard

1. Enter your locale information in the Windows setup dialog and accept the license terms. The Windows setup completes in approximately 15 minutes and the E5000 Configuration Wizard starts.
2. Enter the EMU Administrator password as instructed in the E5000 Configuration Wizard window:



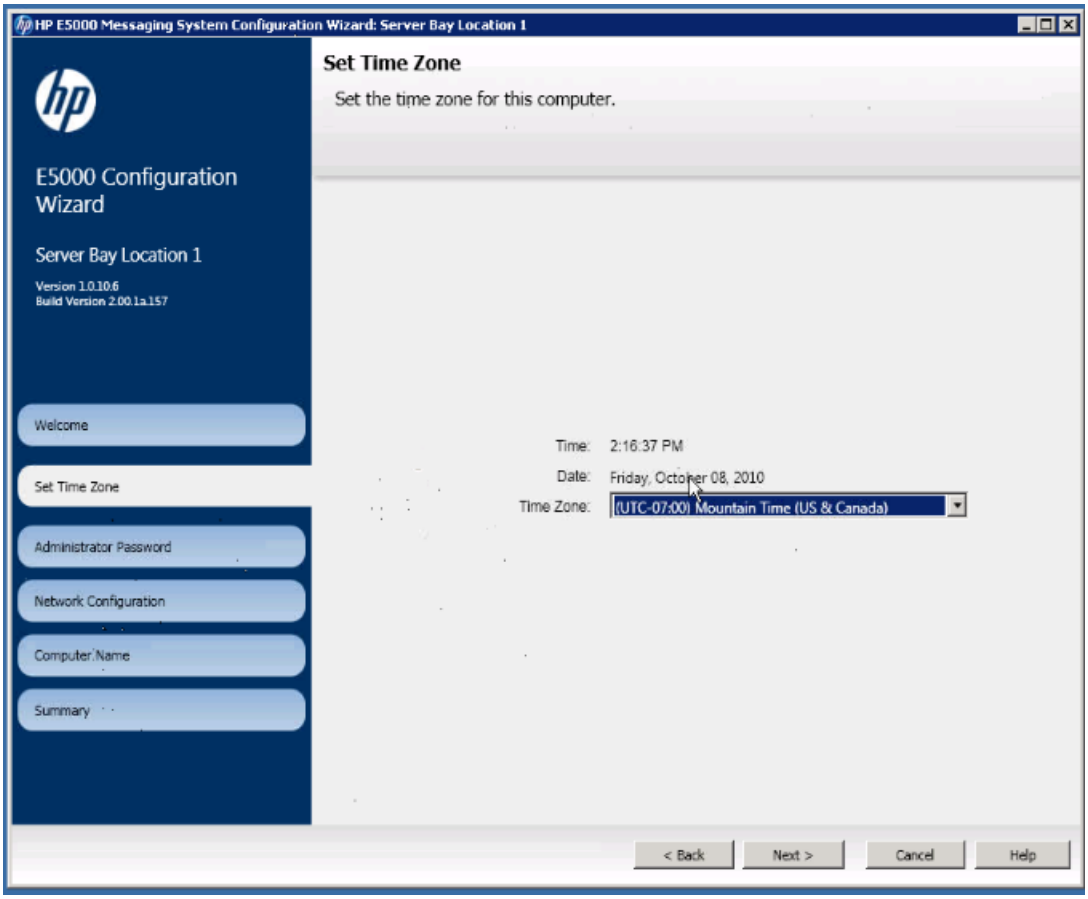
The wizard automatically runs a diagnostics program to ensure that the HP E5000 solution is correctly configured. An error message appears if there is a configuration error. When the configuration is correct, the E5000 Configuration Wizard resumes.

3. When the **Welcome** screen appears, HP recommends that you select the default action, **Yes, I would like to use this wizard for easy system configuration and Microsoft Exchange 2010 setup.**

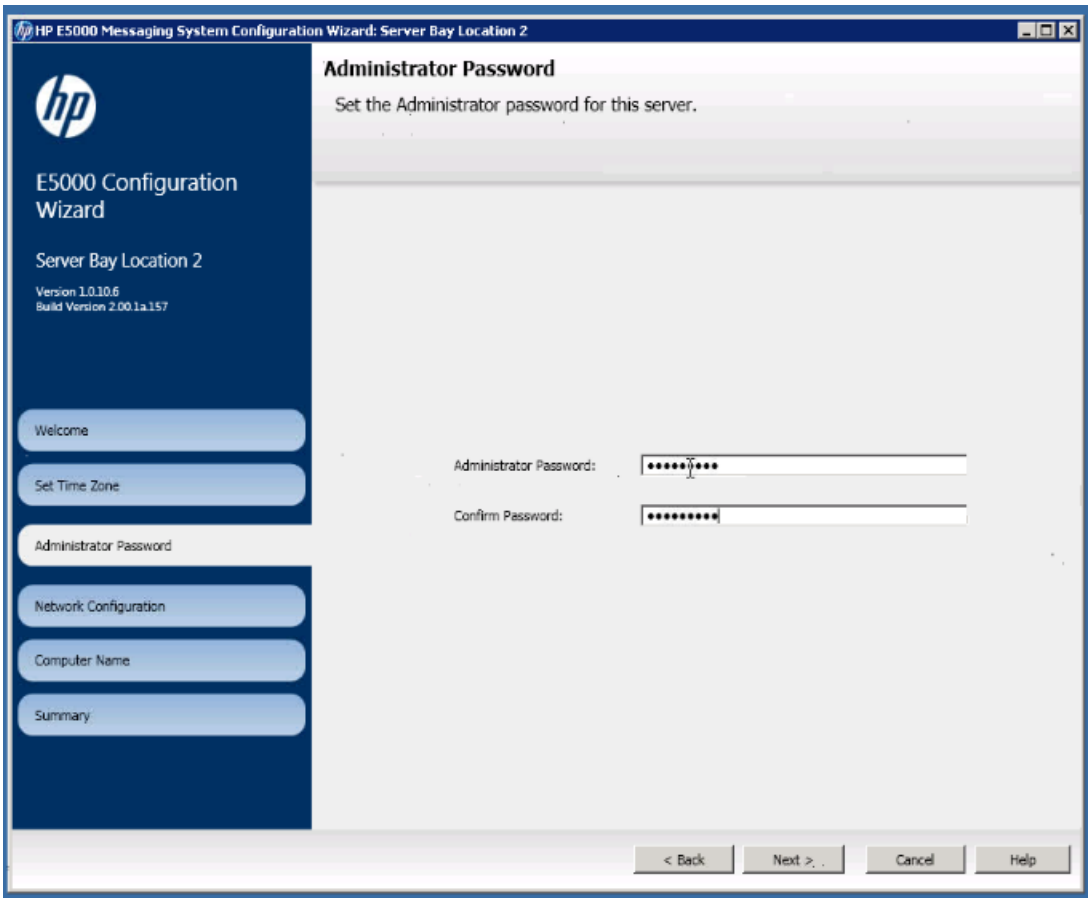


Click **Next**.

4. Set the time zone and then click **Next**. The correct local time zone is set when the server joins a domain.

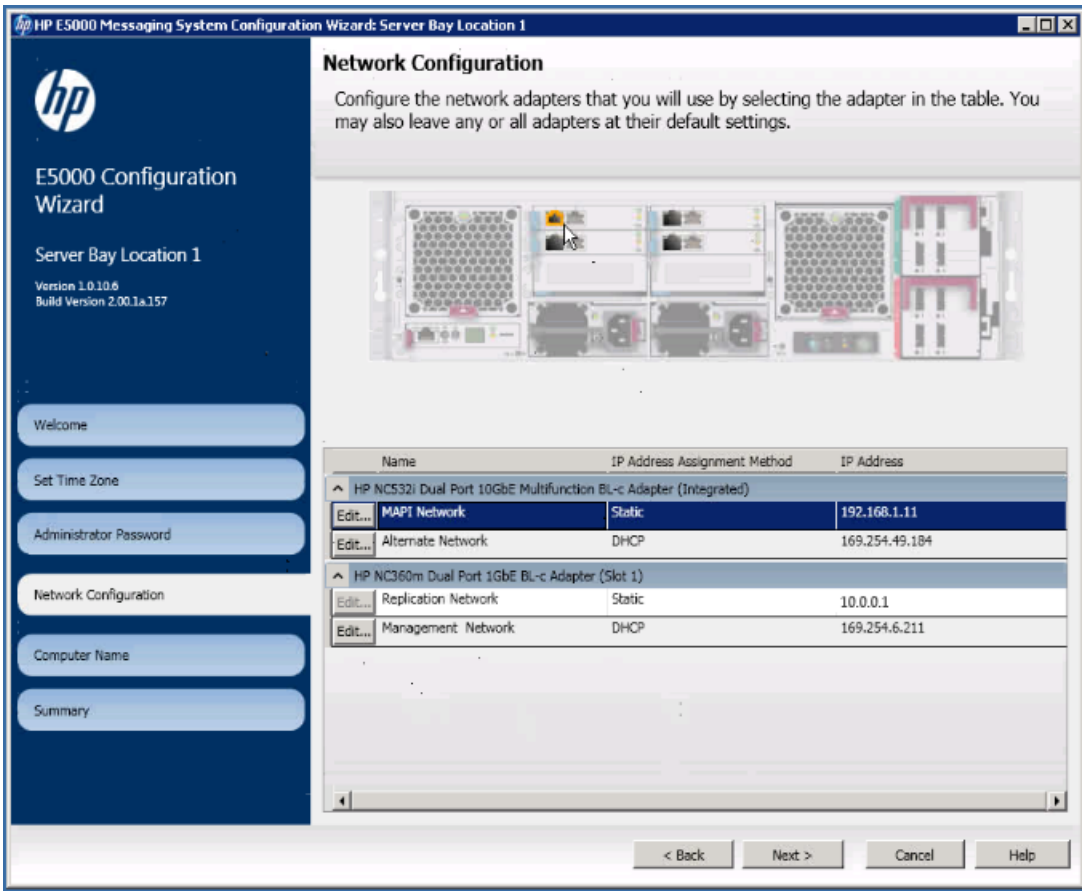


5. Set the Administrator password and then click **Next**.



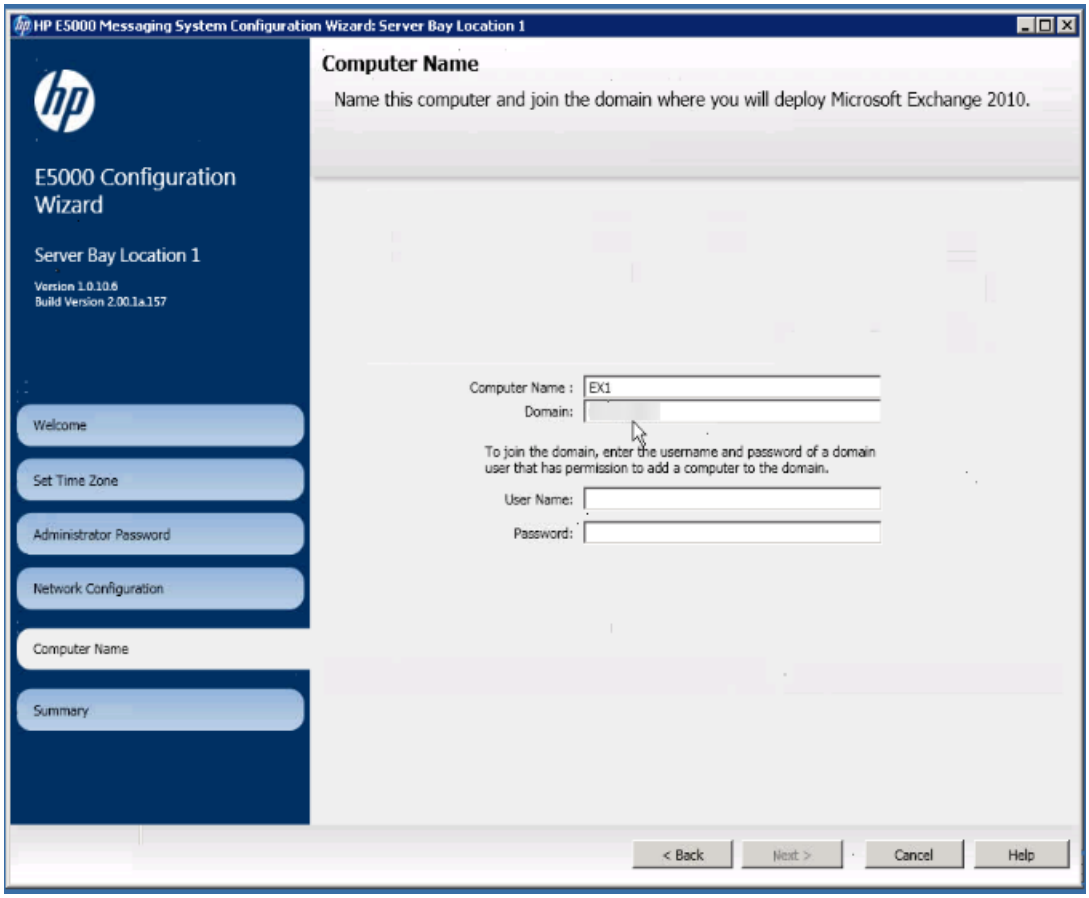
6. Set the network configuration. Review each network port configurations and either accept the default values or press **Edit** to change them. Click **Next** when finished.

IMPORTANT: By default, the Replication network is set to a static network 10.0.0.0/30 with IP 10.0.0.1 on the first node and 10.0.0.2 on the second. If these addresses conflict with addresses on your network, please reconfigure them to some other unused static network. The following figure shows an E5300 configuration, which has 2 networks: Client/Mapi and Replication. E5500/5700 configurations have 4 networks: Client/Mapi, Replication, Management, and Alternate (see Figure 6 (page 12)).

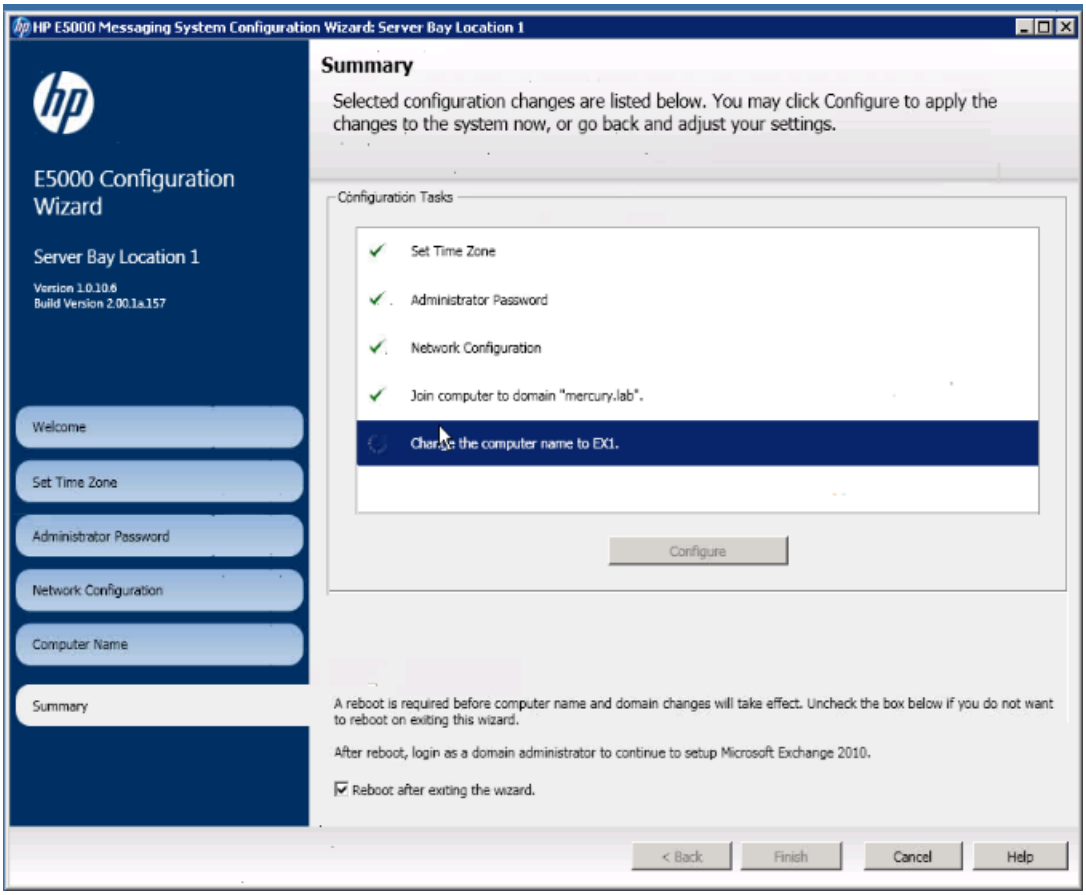


7. Set the computer name and join a domain. Enter the computer name and the name of the domain that the computer will join. Enter the name and password of a user who has permission to add the computer to the domain. Click **Next** when finished.

IMPORTANT: Be sure to record the name of the first server. You need that name when you configure the second server.



8. Review the summary report and complete the configuration. The **Summary** screen lists the configuration settings you have made.



9. Click **Configure** to apply the configuration settings or **Back** to modify them.

   When you are ready to accept the settings, click **Finish** to reboot the server. If you do not want to reboot at this time, clear the box **Reboot after exiting the wizard**.

   NOTE: The server blades contain redundant storage controllers. When a server reboots, one of the controllers shuts down. The partner server sees this event as a redundancy loss and creates a log entry: "drive array controllers are no longer redundant". You can ignore the message if it coincides with a reboot you initiated.

Continue with the next procedure, "Deploying Microsoft Exchange Server 2010" (page 30), and complete the setup on the Bay 1 server before setting up the Bay 2 server.

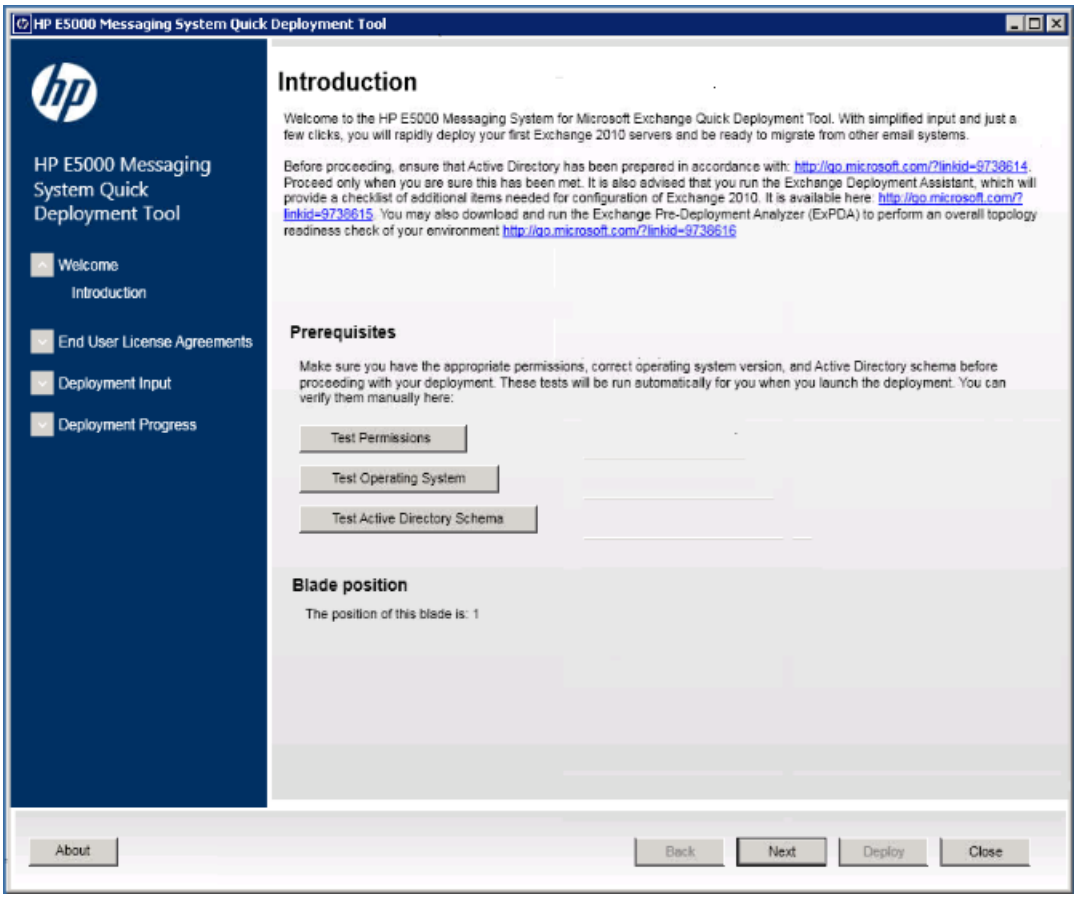
Deploying Microsoft Exchange Server 2010

Follow this procedure to deploy Microsoft Exchange Server 2010. Complete the deployment of Microsoft Exchange Server 2010 on the bay 1 server blade before beginning the configuration of the bay 2 server blade.

IMPORTANT: Before proceeding, ensure that Active Directory has been prepared in accordance with http://go.microsoft.com/?linkid=9738614. You must also provide a witness server to be used by the DAG. For details on selecting and configuring a server to be a witness server, see http://technet.microsoft.com/en-us/library/dd351107.aspx .

1. Log in to the bay 1 server. If you have completed this procedure for the bay 1 server, log in to the bay 2 server now.

   When you log in, the Windows Security screen appears. Log in using the domain administrator credentials you used to join the server to the domain. The Exchange Deployment Tool launches automatically and displays the **Introduction** screen.

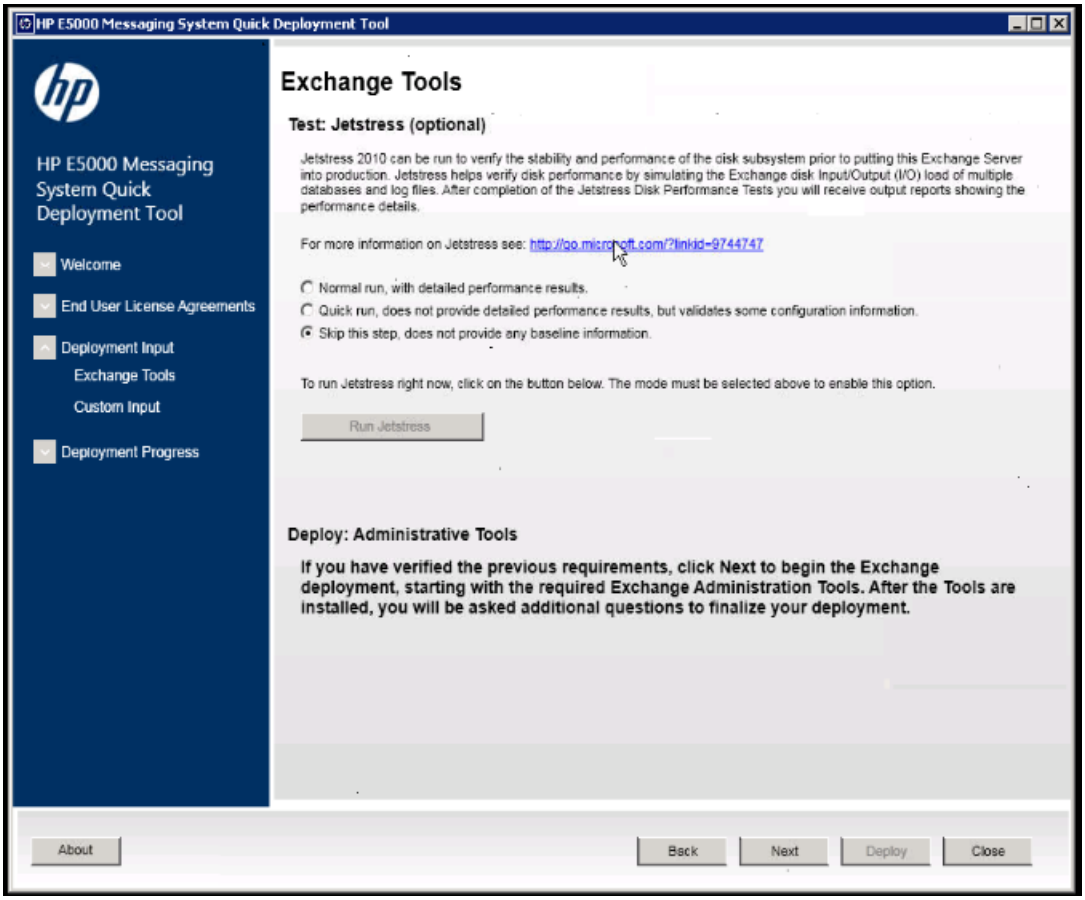


   HP recommends that you run the tests in the **Prerequisites** section. For detailed information on Microsoft prerequisites, visit the links on the page.

   After you have run the tests, click **Next**.

   NOTE: You need a properly configured browser, including proxy configuration (if applicable), to access the links.

2. The End User License Agreement Confirmation screen appears. After reading and accepting the agreements, click **Next**.
3. The Exchange Tools screen appears. If you choose to run a Jetstress test, select the type of Jetstress test. For more information about Jetstress, see (page 35).



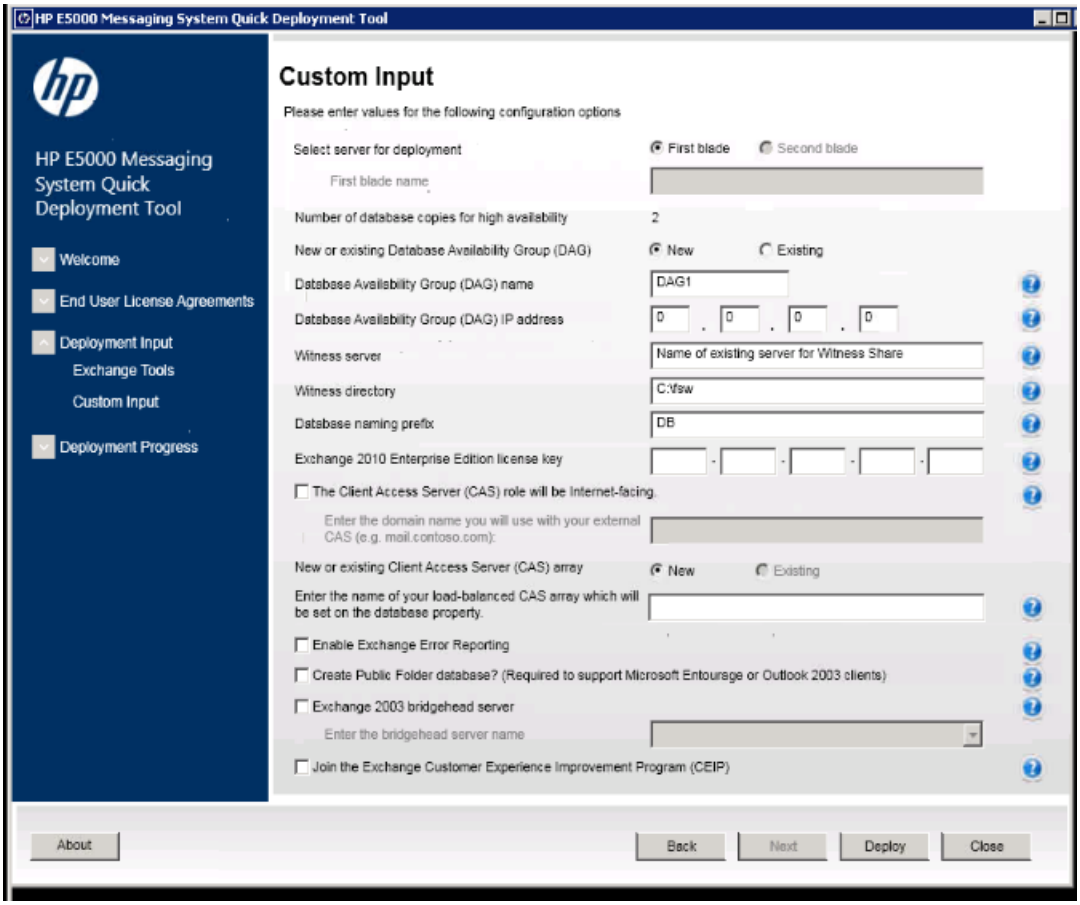
a. A normal run of the Jetstress test provides a baseline benchmark of the system. HP recommends that you run the test now, but only if you have sufficient time before deploying the server into production. Click **Next** to begin deployment of the Exchange Administration Tools. This should take approximately five minutes.

NOTE: A normal run of the Jetstress test can take 24 hours to complete.

b. A quick run of the Jetstress test does not provide detail performance results but can be used to validate some of the configuration information .

Choose a quick run if you cannot dedicate the time for a normal Jetstress test. If neither option is acceptable, you may choose to skip the Jetstress test. Click **Next** to begin deployment of the Exchange Administration Tools.

4. After the deployment completes, complete the Custom Input screen.



NOTE: When you reach this screen while deploying to the bay 1 server, select **First blade**. The Exchange Deployment Tool automatically detects whether any are found in the existing Exchange organization (when existing is selected). When you reach this screen while deploying to the bay 2 server, select **Second blade**, and then enter the name of the bay 1 server (not the name of the bay 2 server).

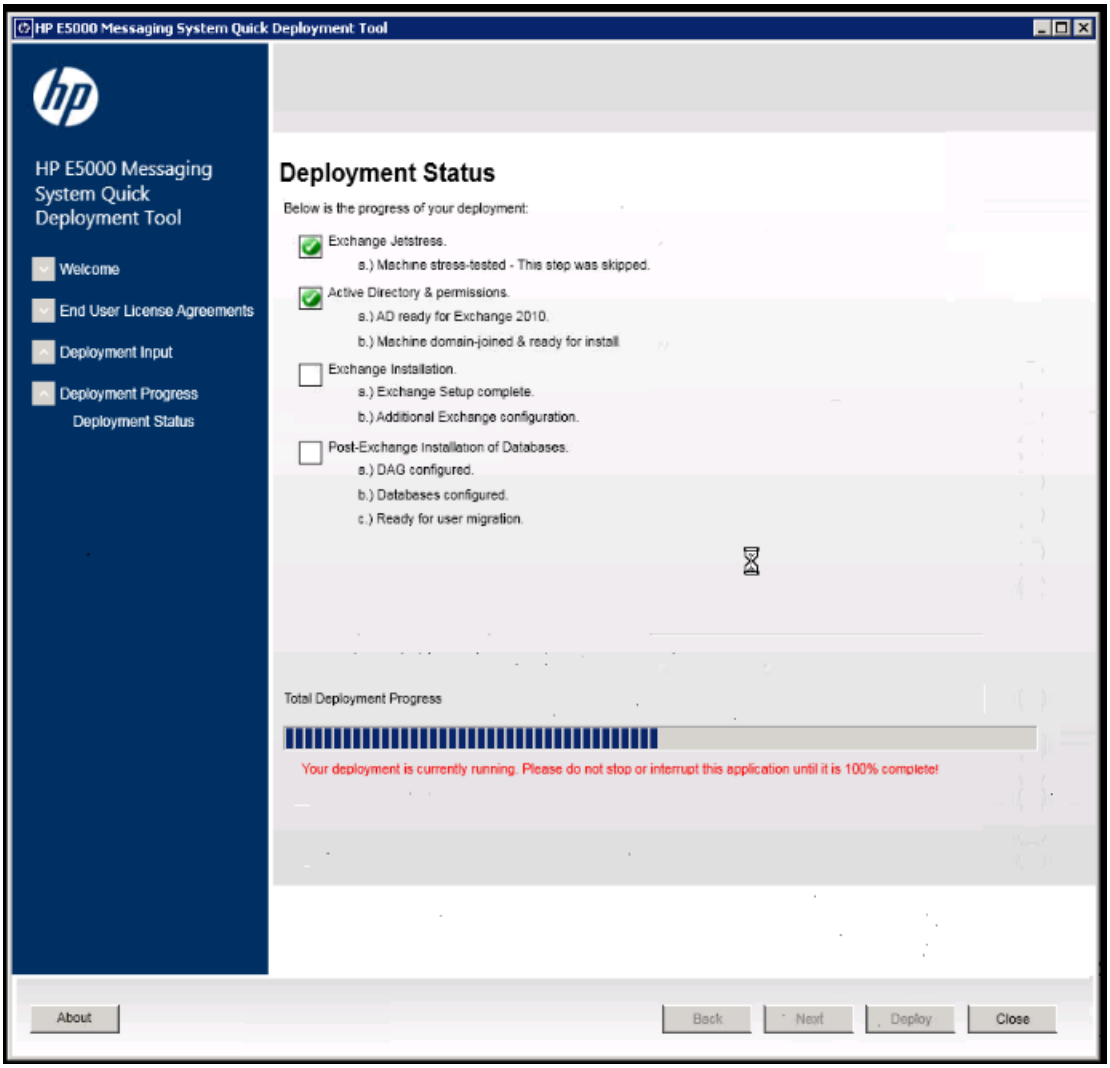
Complete each item on this screen as needed for your deployment:

- **New or existing Availability Group (DAG) name**. The Exchange Deployment Tool automatically detects if any are found in the existing Exchange organization. Accept the default name or enter a new name of one already exists.
- **Availability Group IP address**. Using an IP address of 0.0.0.0 configures the DAG to use DHCP. You can update the configured IP address later using the Exchange Management Shell, or additional addresses can be added later using the Set-AvailabilityGroup PowerShell command.
- **Witness Server name**. See http://technet.microsoft.com/en-us/library/dd351107.aspx for information about special considerations if placing the suggested default Witness Server on a domain controller:
- **Witness directory**. Specify the local path on the Witness Server.
- **name prefix**. Use the suggested default or enter a new name. The Exchange Deployment Tool appends numbers to the name and verifies that the name is unique at the organization level (an Exchange 2010 requirement).
- **Client Access Server (CAS)** is Internet facing. For more information, see http://technet.microsoft.com/en-us/library/dd351198.aspx for more information.
- **New or Existing CAS array**. Enter a name for New or select from the drop-down for Existing (if detected).

- **Enter the name of your load-balanced CAS array** which is set on the database property. If no load-balanced CAS array is available, see:
  - http://go.microsoft.com/?linkid=9738617
  - http://go.microsoft.com/?linkid=9738618
- **Enable Error Reporting**. For more information, see http://go.microsoft.com/?linkid=9738619
- **Create Public Folder database**. To connect to Exchange 2010 Microsoft Entourage or Outlook 2003, clients require a public folder database. The Exchange Deployment Tool runs Exchange setup to create the public folder database for you. This option is available only on the first Exchange 2010 Mailbox server being deployed. The public folders on this system are designed primarily for Free-Busy usage and not large-scale folder replicas or other applications.
- Exchange 2003 bridgehead server. Use the parameter to specify an Exchange 2003 bridgehead server that is located in the routing group to which you plan to create the initial routing group connector. A routing group connector is required for mail flow between Exchange 2010 and Exchange 2003 when these Exchange server versions coexist in the same organization.
- **Customer Experience Improvement Program**. See http://go.microsoft.com/?linkid=9738620.

Click **Deploy** to start the tools deployment process. This process typically requires about 45 minutes to one hour.

5. The Exchange Deployment Tool displays the Deployment Status screen.



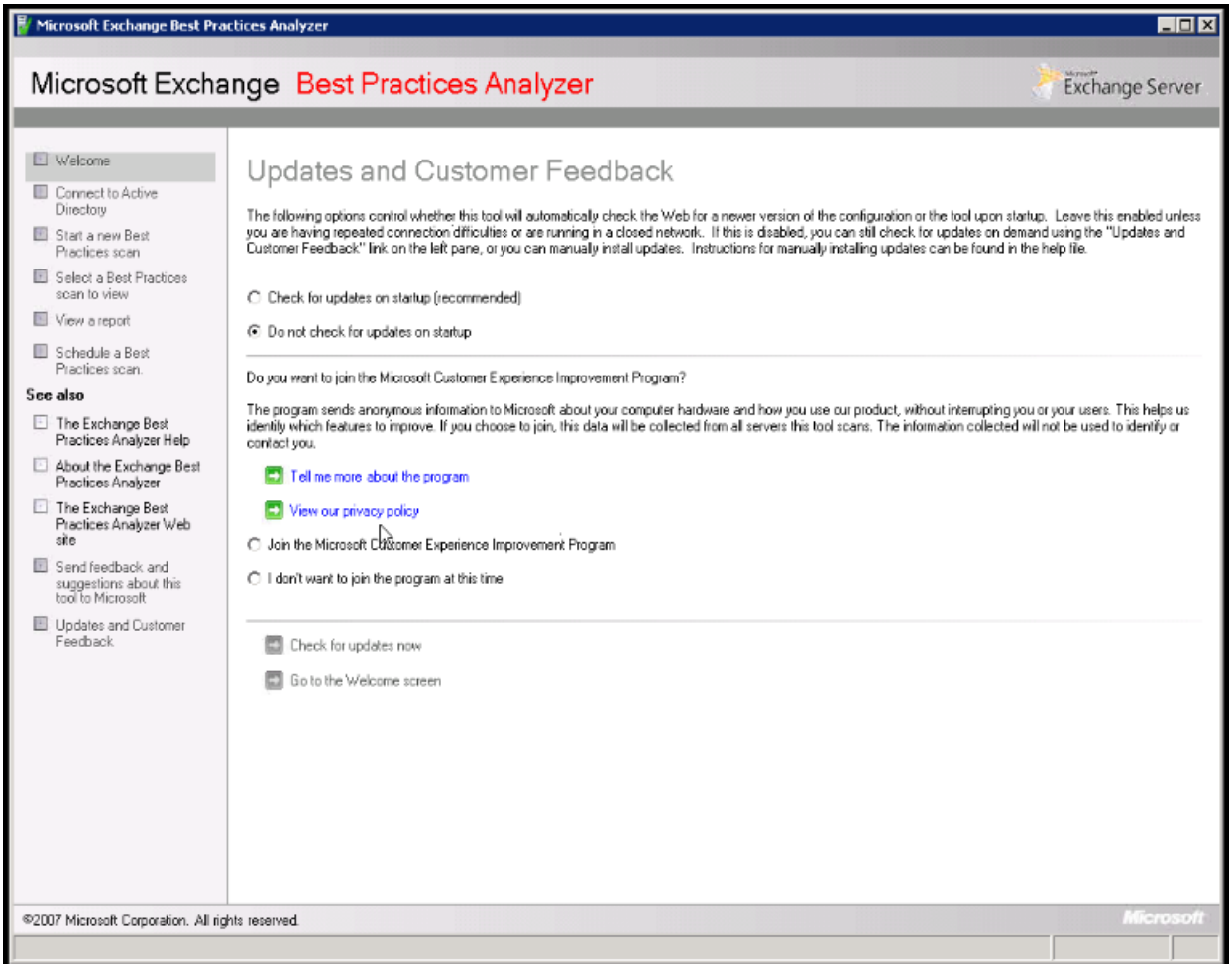
When the process completes, you are prompted to allow the server to reboot. After the reboot, log in again with Exchange administrator credentials (see http://technet.microsoft.com/en-us/library/ee681663.aspx) to complete the deployment (the Exchange Deployment Tool reappears automatically when you log in).

6. After deployment completes, the Exchange Deployment Tool displays a success message and prompts you to run the Best Practices Analyzer.

IMPORTANT: Complete the E5000 Configuration Wizard and the deployment of Microsoft Exchange Server 2010 on the bay 2 server now before continuing on.

HP recommends that you do not run the Analyzer until the tools deployment completes on the second server.

7. Accept the prompt to run the Analyzer. The **Best Practices Analyzer** screen appears.



The Exchange Best Practices Analyzer is located in the Toolbox node in the Exchange Management Console. You can use the Best Practices Analyzer to connect to Directory, start a scan, and perform other Exchange operations.

For more information about Microsoft Exchange Server 2010 and to download the complete help file, see *Exchange Server 2010* at http://technet.microsoft.com/en-us/library/bb124558.aspx.

Next steps

The messaging system is now installed and configured in a DAG with the number of database copies you have specified. At this time, you may choose to configure event notification. For more information, see "Configuring Event Notifier for proactive email (SMTP) event notification" (page 39).

HP strongly recommends that you also install Insight Remote Support as described in "HP Insight Remote Support software" (page 60).

Using Microsoft Exchange Jetstress and Load Generator

You can use Microsoft Exchange Jetstress and Load Generator (LoadGen) to generate a simulated Exchange workload on your system and analyze the effect of that workload on the messaging system.

IMPORTANT: You must run these tools in a non-production environment to avoid potential loss of data and performance degradation.

For more information about these tools, see *Tools for Performance and Scalability Evaluation* at http://technet.microsoft.com/en-us/library/dd335108.aspx. If you are testing Jetstress, only the E5000 servers are required. The servers must not have Exchange loaded when running Jetstress.

When running LoadGen, Exchange server 2010 SP1 is installed on both servers in the E5000 enclosure, and the Client Access Server, Hub Transport Server, and Mailbox Server roles are installed. Because multiple roles are installed on both servers, and because of the participation of each server in the Database Availability Group (DAG), you must use an external load balancing method. Two possible methods are the following:

- Use a hardware load balancer.
- Use Exchange database configuration to balance load across the CAS servers manually.
  - MAPI Traffic: Assuming the users are evenly split between databases, use the Set-MailboxDatabase cmdlet available from Microsoft at http://technet.microsoft.com/en-us/library/bb123971.aspx and specify the `rpcclientaccessserver` parameter equal to `cas1` for half the databases and `cas2` for the other half.
  - OWA Traffic: OWA requires persistence, so direct all OWA traffic through the first CAS.
  - Exchange Sync (EAS): Direct all OWA traffic through the second CAS.
  - Other protocols (POP3, IMAP, and so forth): use DNS round-robin to get rudimentary load balancing.

5 Monitoring and troubleshooting the messaging system

The messaging system provides several monitoring and troubleshooting options. You can access troubleshooting alerts and solutions to maintain the health of the messaging system from the following:

- Notification alerts, which you sign up to receive during the initial configuration of the storage solution
- HP E5000 System Manager
- System Management Homepage (SMH)
- Hardware component LEDs
- EMU CLI SHOW commands
- HP and Microsoft support websites
- HP Insight Remote Support software
- Microsoft Systems Center Operations Manager (SCOM) and Microsoft websites
- HP SIM. HP SIM 6.3 or later is required for proper messaging system/HP SIM integration.

NOTE: Integration with HP SIM is only supported using the WBEM/WMI interfaces. Do not attempt to configure HP SIM to use the ProLiant SNMP agents, because the configuration is untested and unsupported. The ProLiant SNMP agents are enabled on the messaging system by default and should not be disabled as they are used for internal management functions. If they are enabled for external client consumption, HP SIM must be configured so it does not attempt to communicate with these agents.

If you are unable to resolve a messaging system operation issue after using the various options, contact HP Support. You need to provide your Service Agreement ID (SAID) and your warranty and entitlement labels. See "Obtaining the Service Agreement ID (SAID)" (page 61) and "Locating the messaging system warranty entitlement labels" (page 62).

Using notification alerts

When you receive an alert, open the HP E5000 System Manager (described in "Using the E5000 System Manager" (page 43)) to view a high-level description of the issue. You may then choose to open the System Management Homepage or HP SIM to obtain more detailed information.

IMPORTANT: While the notification alerts report issues as they arise, it is still important to monitor the messaging system regularly to ensure optimal operation.

For more information on receiving notification alerts, see "Using notification alerts" (page 37).

Examples of error messages

Table 1 (page 37) lists examples of possible error messages and describes the needed action to resolve the issue.

Table 1 Examples of possible error messages

Message appears	Issue	Resolution
Not a valid license	Entered an incorrect Exchange license key	Enter the correct Exchange license key.
You cannot reach the domain controller	Adding the wrong information for a domain controller	Enter the correct Administrator password.

Table 1 Examples of possible error messages *(continued)*

Message appears	Issue	Resolution
		You are prompted to enter the Administrator password during the initial configuration by the Configuration Wizard. The messaging system attempts to locate the domain and then report the problem when it is unable to locate the domain you entered.
ID does not exist	Adding incorrect information for the witness server	You are not allowed to progress through the Configuration Wizard until you add the correct witness server information when prompted.
Invalid mask or IP address conflict, can't specify	Adding invalid network information for any port	Enter the correct network or IP address.
Diagnostics flag if you have forgotten to turn on any disks in expansion enclosures that are cabled to the messaging system enclosure. Warning: You will lose your disks and LUNs if you do not turn on the disks in expansion enclosures before beginning the installation process. Note: Diagnostics does not alert you to turn on the disks in expansion enclosures if you have not cabled them to the messaging system enclosure.	Not powering on the expansion nodes before booting the system	Turn on the disks in expansion enclosures and run the Configuration Wizard again. If you have already run the diagnostics, you must turn on the disks in expansion enclosures and then re-rrun diagnostics. If you have already run the complete Configuration Wizard, you need only run diagnostics again. When the window appears that asks you if you want to run the Configuration Wizard, select “No Thanks.”
Single path to disks not correct; Path error; Check your cabling	Incorrect cabling of the messaging system	Make sure the cables are connected correctly and are not loose. **Note:** This message appears during diagnostics. If you see the word “degraded” in the message, use the SMHP to check the status of the hardware. If cables become loose after the initial configuration, the message appears in the System Manager and the SMHP, but you must open these programs to observe the message.
Cannot be reached	Server blades and EMU attached on the wrong networks	Check to make sure you have entered the correct IP address, and then check the cable to make sure the EMU is connected on the network. **Note:** If they are attached to the wrong network, you lose all information about the enclosure during the initial installation. To verify the administrator password, the Configuration Wizard attempts to contact the EMU but is unable to do so. You immediately receive a message after the Microsoft Windows OS sets up.

Table 1 Examples of possible error messages *(continued)*

Message appears	Issue	Resolution
Lost replication connection	Replication and MAPI network not connected	Connect the cable in the back of the enclosure. If the cable is not on, you must use a MAPI network. For the E5300, which does not offer replication networking, you may use a public network for replication and need to configure the IP address manually. **Note:** If you lose a network connection and you've set up notification alerts, you are automatically alerted. If you do not have notification alerts, open the System Manager, **System Summary** tab.
Volumes have failed; Degraded controller	Storage array lock up	Reboot the server blade that has failed. Open the System Manager, **System Summary** tab to identify the server blade that does not say "storage." Microsoft Exchange marks the volumes as failed, and the mail serving processor fails over to the other server blade. **Important:** You must manually rebalance the database server after rebooting. Microsoft also offers a redistribution script to assist you.
Unsupported firmware	Firmware not current	Periodically check the System Manager **Firmware** tab to ensure you are running the most current firmware. **Important:** Be sure to check the firmware status after you replace any component on the messaging system.

Configuring Event Notifier for proactive email (SMTP) event notification

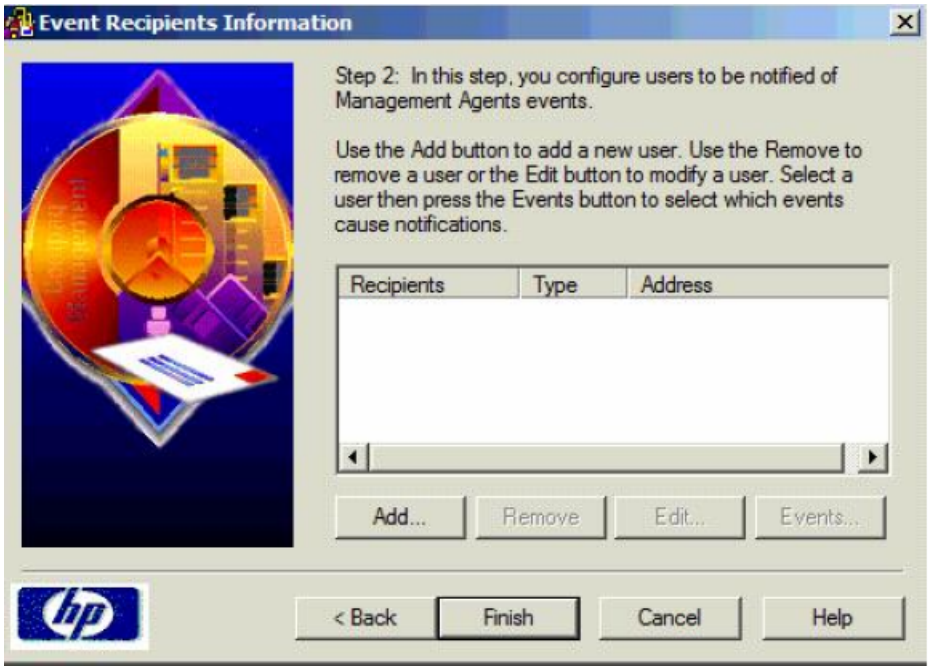
Configure Event Notifier to enable proevent notification to send email notification of system events.

To start the Event Notifier Configuration wizard and provide the required information for your environment (SMTP, notification recipients, and SNMP):

1. Click **Start→All Programs→HP Management Agents→Event Notifier Config**.
   a. On the Welcome window, click **Next**.

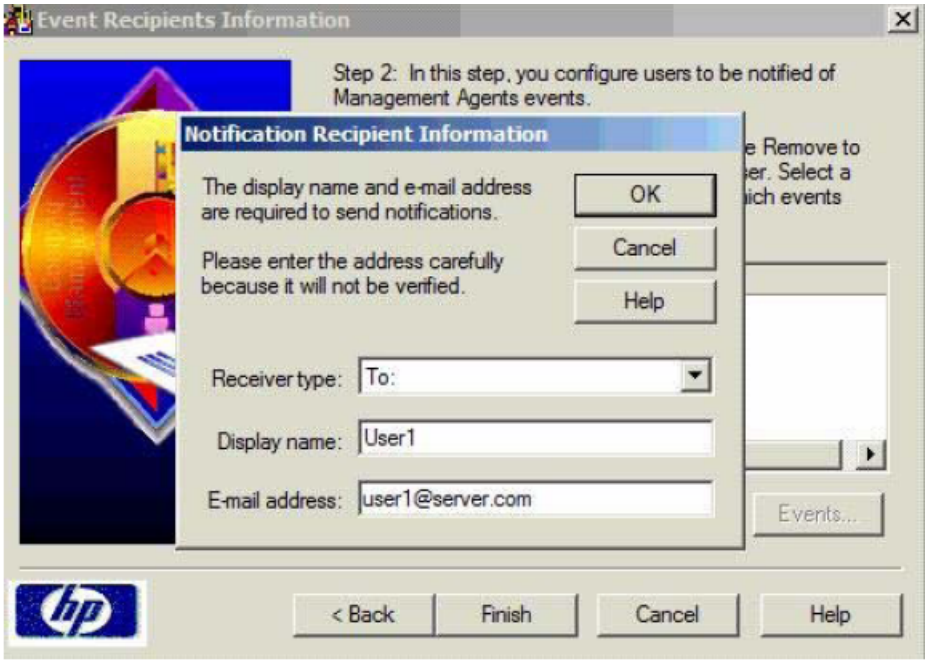
   b. Enter your address and mail server information to set up the **Mail (SMTP) Server Information**, and then click **Next**.

   c. On the **Event Recipients Information** screen, click **Add** to add a notification recipient.

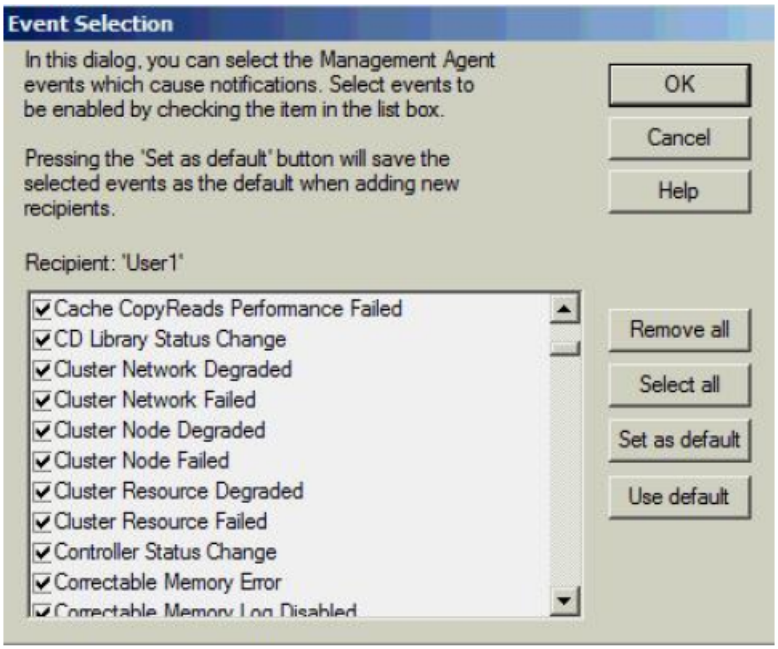


d. Add a user name and address to the **Notification Recipient Information** dialog box, and then click **OK**. Repeat this step for each user.

Click **Finish** after completing the notification list.



e. Select the events for which you want to be notified, and then click **OK**. HP recommends that you select all events.



2. To configure the SNMP settings, provide the contact and location information for the System Administrator, and then click **OK**.

3. To make SNMP visible externally:
   1. Select **Start→Administrative Tools→Services**.
   2. Select **SNMP Service**.
   3. Right click and select **Properties** to display the SNMP Service properties.
   4. Select the **Security** tab and specify the following items:
      - The external hosts that may use the SNMP protocol.
      - The SNMP Community string. HP recommends that you use something other than the typical 'Public' string.

IMPORTANT: Configure HP SIM security to prevent the SIM management server from gaining access to SNMP.

The SNMP trap function in the messaging system is enabled by default. Any SNMP client (on `localhost`) listening on default port number 171 can receive traps. You can configure the destination IP address using the `snmp.xml` configuration file in the directory `\Program Files\HPWBEM\Tools\snmp.xml`.

Using the E5000 System Manager

To use the E5000 System Manager, which has been preinstalled a configured, you must Remote Desktop into the server blade. Next, you may access the E5000 System Manager by clicking the icon  located in the tray immediately to the right of the **Start** button. You may also access the E5000 System Manager by clicking **Start→Administrative Tools→Server Manager**. Use the **System Summary** tab in the E5000 System Manager to monitor the system health status of each server blade.

The **System Summary** tab shows the overall, high-level status of the messaging system hardware, Exchange, and firmware.

To troubleshoot using the E5000 System Manager:

1. Open the HP E5000 System Manager.
2. Open the System Summary tab to review the overall health of the messaging system hardware, Exchange, and firmware.

   If the status icon is green, the system is running properly. A yellow icon is a warning that there are conditions that might cause a problem. If the icon is red, a problem exists in the messaging system.
3. Open each tab in the HP E5000 System Manager to assess the status of the messaging system.
4. Follow the instructions provided on the System Manager tabs for any reported issue.

NOTE: The E5000 System Manager provides the status of each server blade that is configured in the messaging system. Be sure to note the server blade that is being assessed when you open the E5000 System Manager. Log into each server blade to evaluate its status.

IMPORTANT: The System Manager identifies the server blade and bay location. You must run the System Manager beginning with server blade 1, although server blade 1 might not be the active server blade. A message appears informing you that the System Manager is evaluating server blade 1.

Table 2 (page 44) shows the description for the messaging system status tray check mark color.

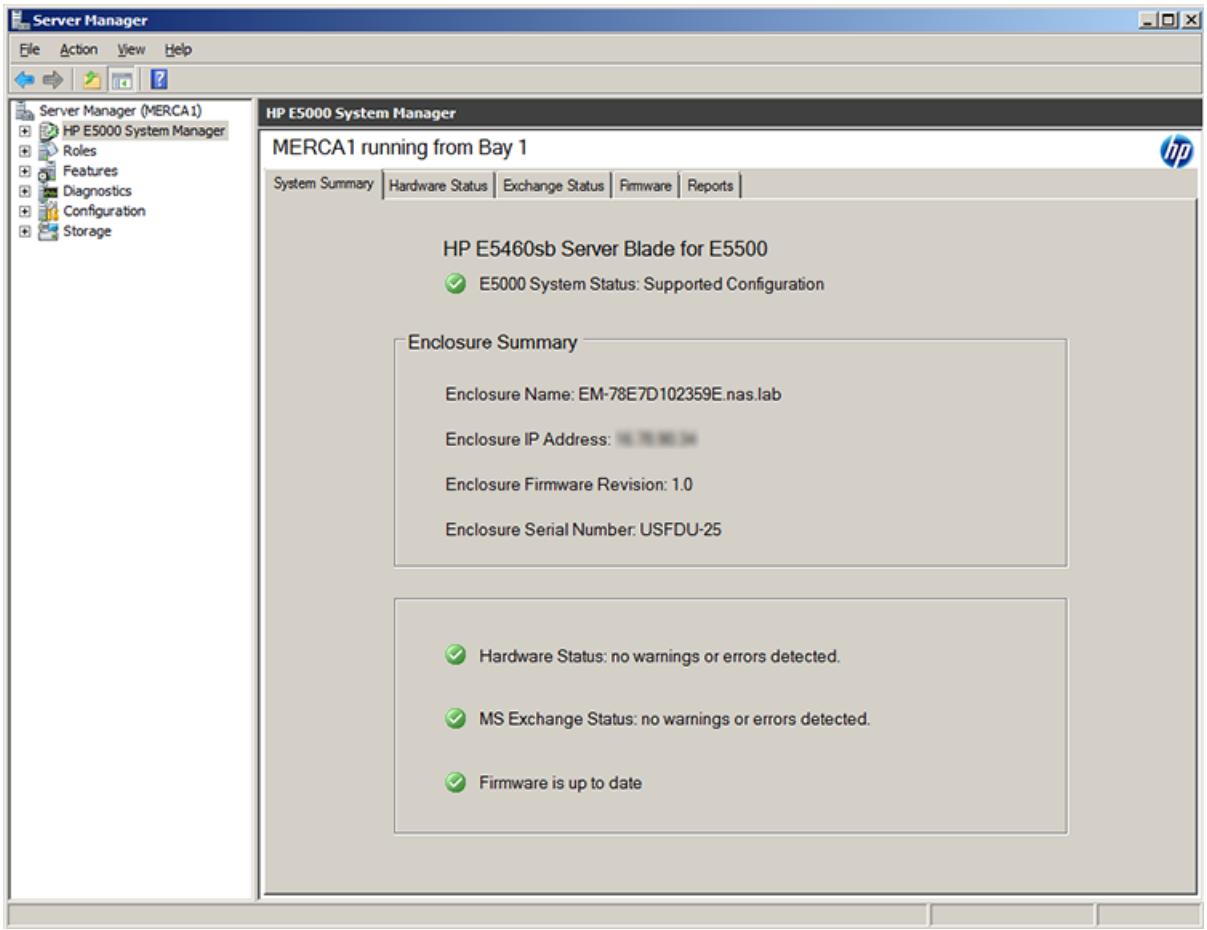
Table 2 System status tray description

Icon check mark color	Description
Green	The system is running a *supported* configuration.
Red	The system is running an *unsupported* configuration. The system tray icon shows a red error symbol until Microsoft Exchange has been fully installed, or if the system is running outside the terms of the service and support agreement (for example, the system is running a server application other than Microsoft Exchange).

System Summary

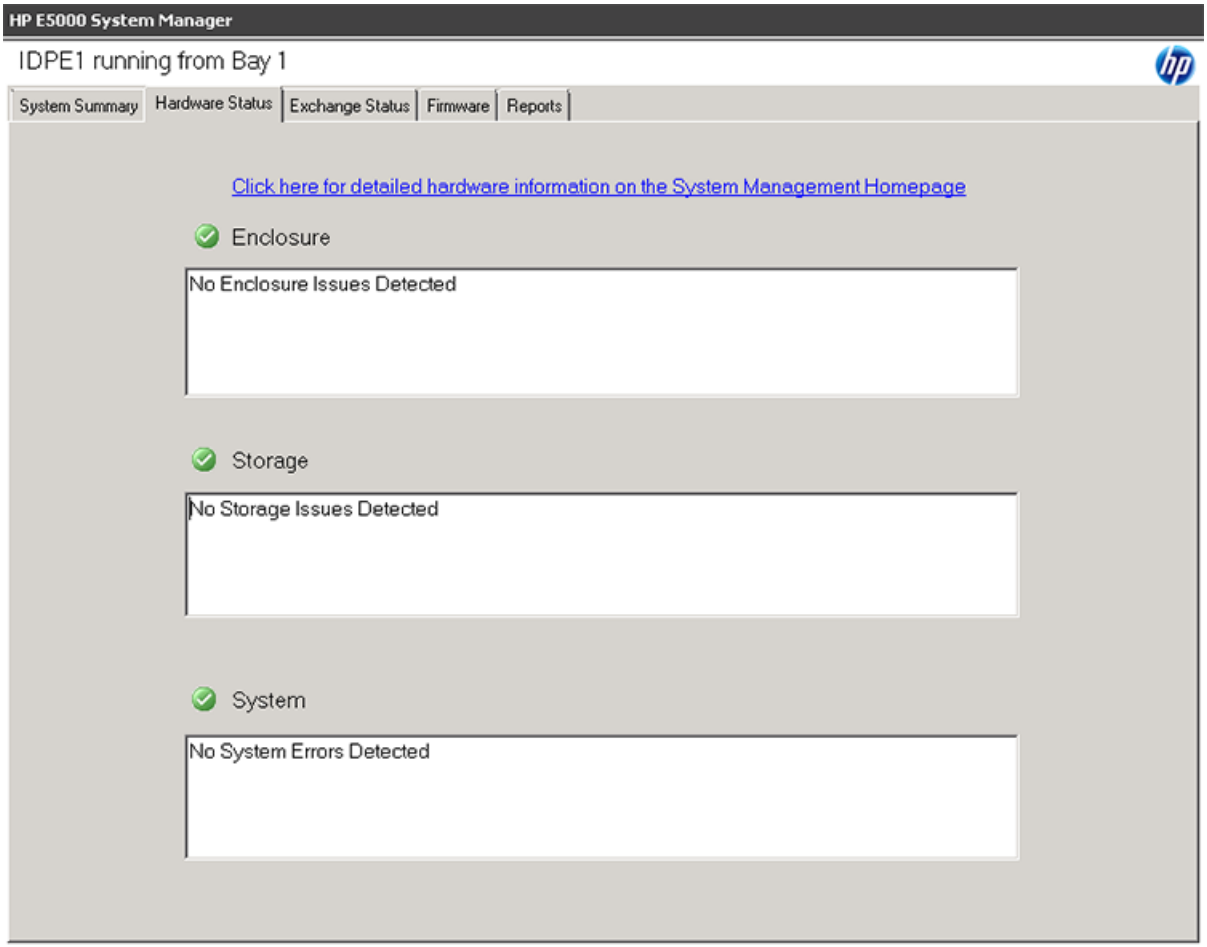
For each server blade (identified at the top of the System Manager window), the **System Summary** tab of the E5000 Messaging System Manager gives information such as the enclosure name, IP Address, firmware revision, and serial number. The lower part of the System Summary also shows the status of hardware and Microsoft Exchange, and whether your current firmware revision is up to date. If a green check mark does not appear beside the configuration status, go to the related tab for information about the issue.

To review the messaging system status, open the E5000 Messaging System Manager, and then click the **System Summary** tab.



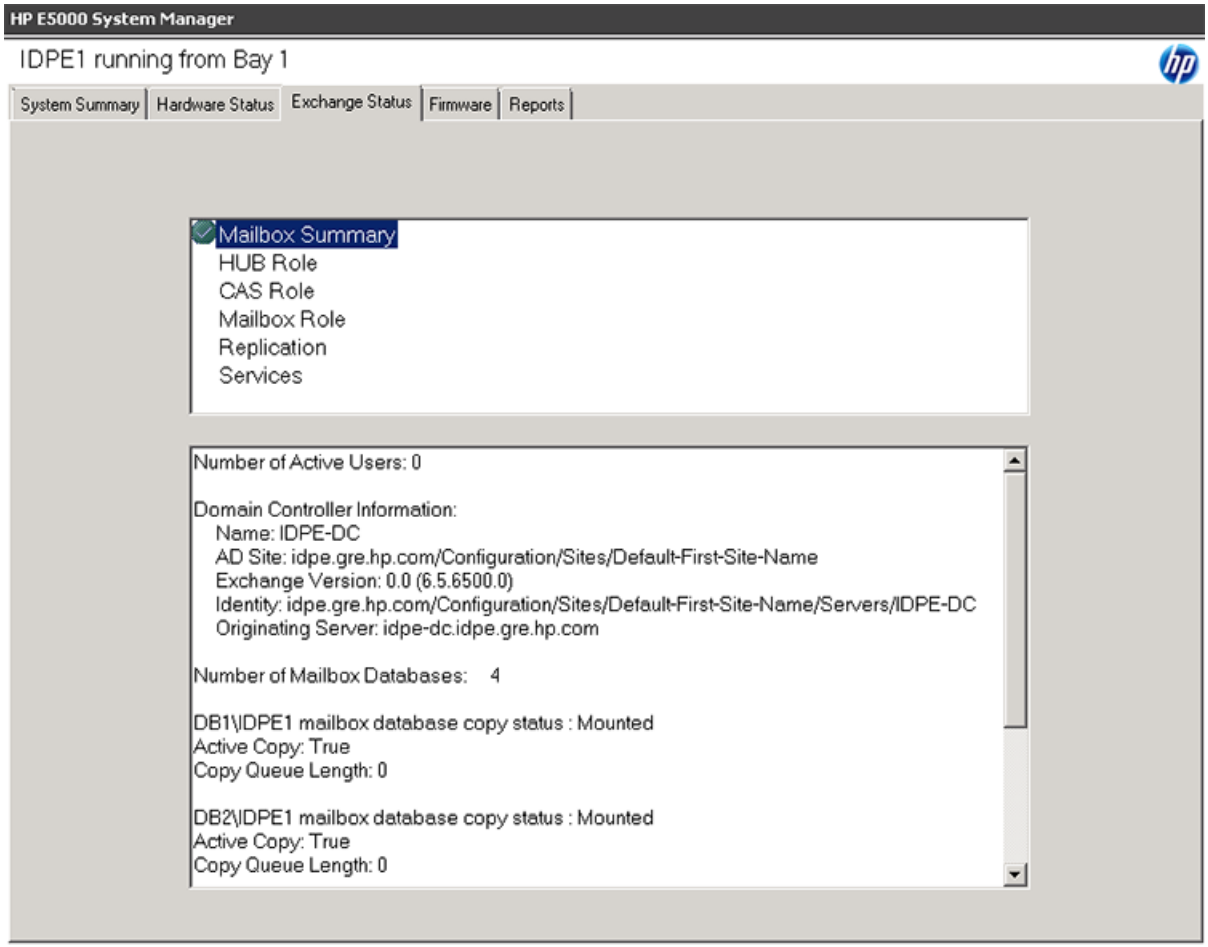
Hardware Status

The **Hardware Status** tab in the System Manager provides the health status for each of the messaging system components.



Exchange Status

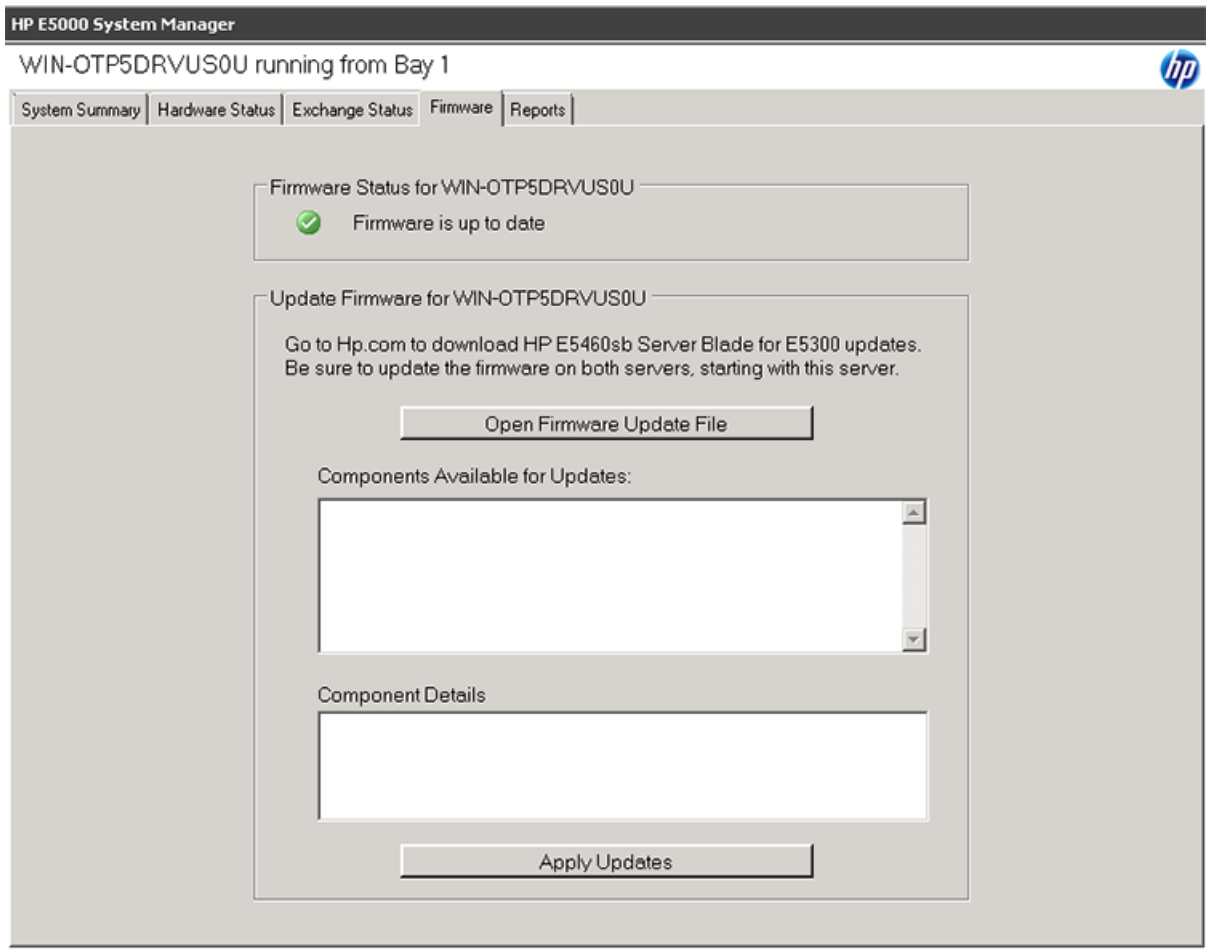
The **Exchange Status** tab in the System Manager provides the overall Microsoft Exchange configuration status (by default). Click any configuration item in the list at the top to see further refined detail.



Firmware

The **Firmware** tab indicates whether the firmware of a component is outdated. To review the components firmware version status, open the System Manager and click the **Firmware** tab. If the specific firmware requires that you reboot after installing the update, a message instructing you to reboot the messaging system appears. Since the tool does not connect to the Internet to identify new firmware, you must periodically check the HP support web page and download new firmware when available.

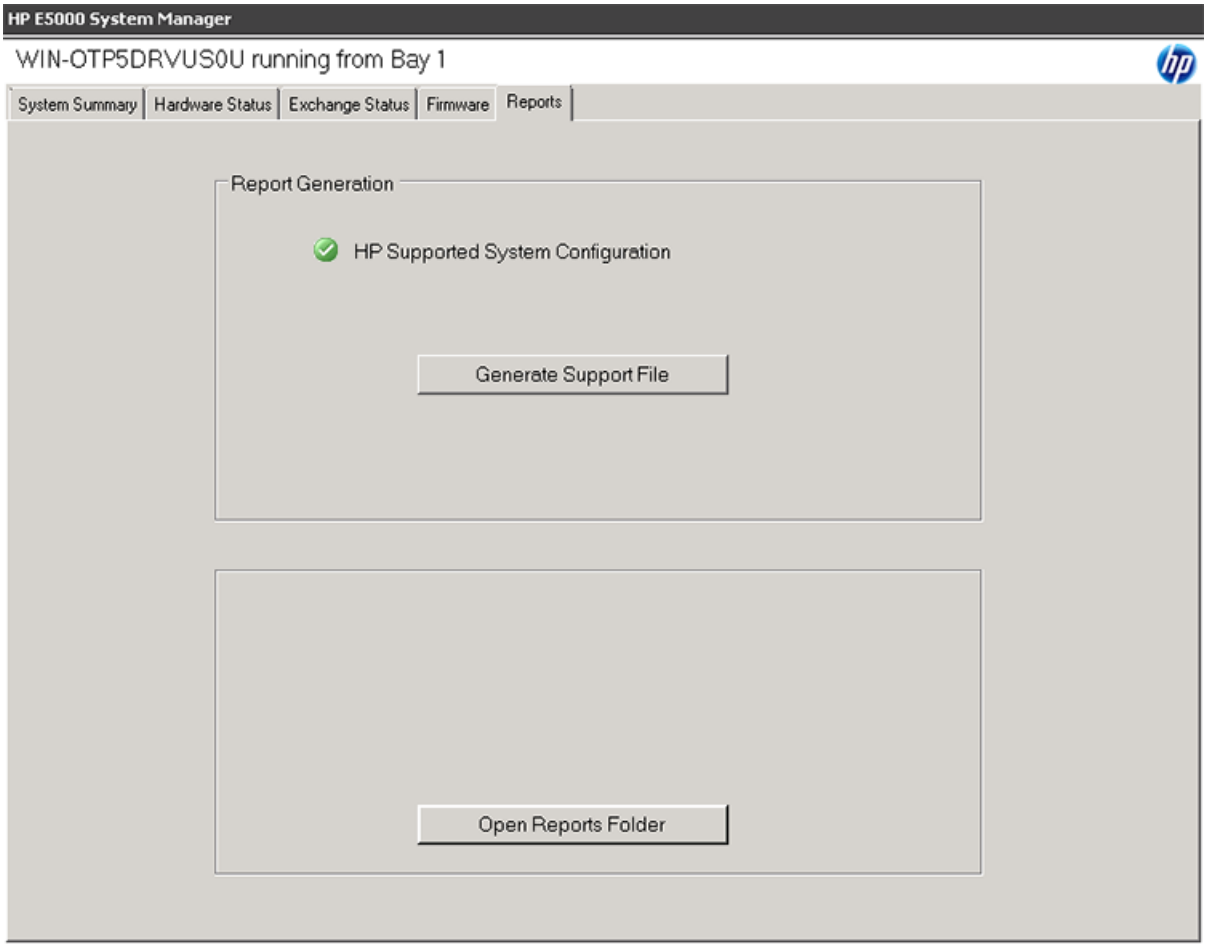
IMPORTANT: If a firmware update requires a reboot, you must reboot your messaging system manually. For more information about firmware updates, see"Upgrading a component's firmware version" (page 64) .



Reports

The **Reports** tab gathers logs for the hardware, software, Microsoft Windows system configuration, and the Microsoft Exchange diagnostics in one place. These logs are used by HP support engineers to help diagnose your system, if needed; you do not need to view and interpret the logs yourself.

To run the diagnostic tools, open System Manager and click the **Reports** tab, and then press the **Generate Support File** button. After running the diagnostic tools, the **Open Reports Folder** button appears. Click the **Open Reports Folder** button to view the diagnostic report results. The diagnostic tools place the reports in one standard directory.



HP System Management Homepage

The HP System Management Homepage (HP SMH) is a web-based interface that consolidates and simplifies single system management for HP servers. The SMH is the primary tool for identifying and troubleshooting hardware issues in the messaging system. You may choose this option to drill down to a suspected hardware problem. Go to the **SMH main page** and open the **Overall System Health Status** and the **Component Status Summary** sections to review the status of the messaging system hardware.

NOTE: The functions described in this section apply specifically to components of the messaging system.

By aggregating the data from HP web-based agents and management utilities, HP SMH provides a common, easy-to-use interface for displaying the following information:

- Hardware fault and status monitoring
- Performance data
- System thresholds
- Diagnostics
- Software version control for an individual server

The SMH Help menu provides documentation for using, maintaining, and troubleshooting the application. For more information about the System Management Homepage software, go to www.hp.com/support/manuals and enter **System Management Homepage** in the Search box. A list of documents and advisories is displayed. To view SMH user guides, click the link to search for matching products, select **System Management Homepage Software**, and then select **Manuals**.

Starting the System Management Homepage application

To start the application, double-click the **HP System Management Homepage** desktop shortcut or enter `https://hostname:2381/` in Internet Explorer. The *hostname* can be `localhost` or the IP address of the server you want to monitor. To log into SMH, enter the same username and password you use to log in to the server. Users who have administrative privileges on the server have the same privileges in the SMH application.

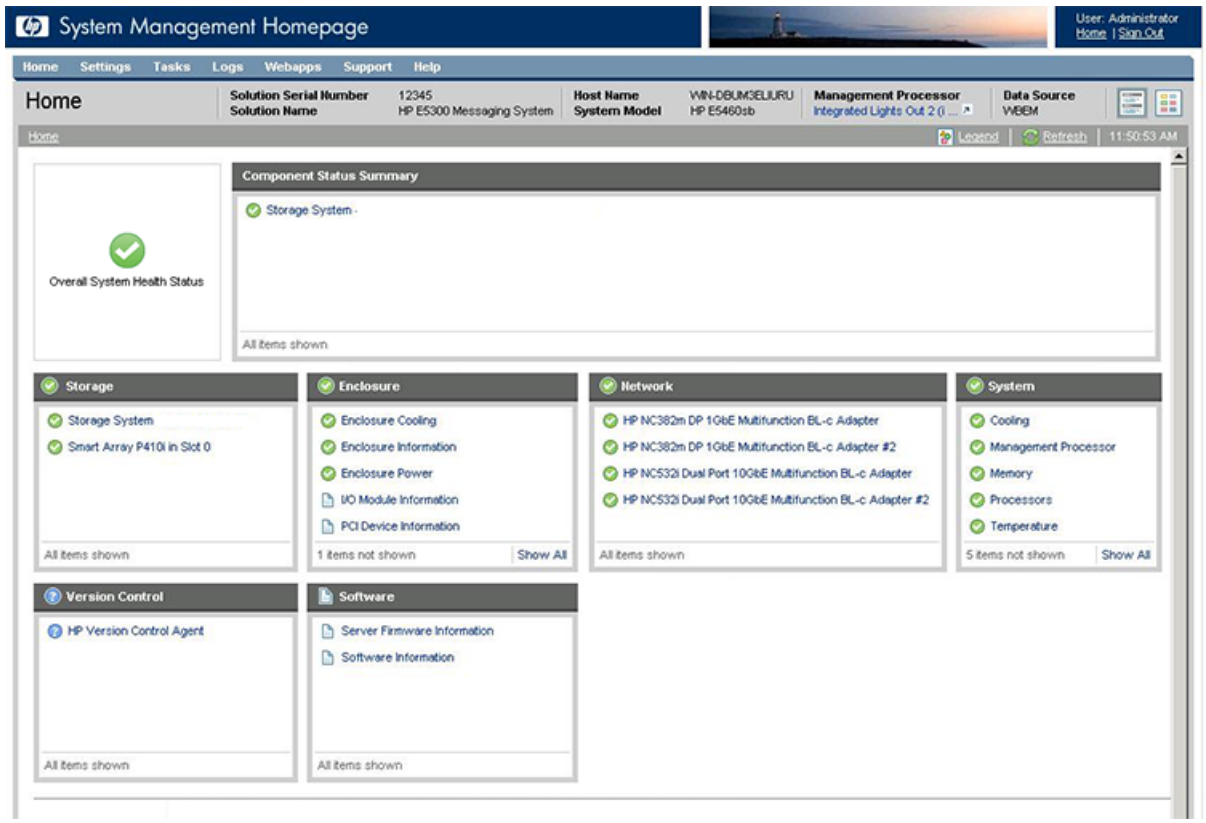
IMPORTANT: You must complete the E5000 Configuration Wizard before using the System Management Homepage. During the initial stages of the installation, the Administrator user password is not set. You cannot use the System Management Homepage to manage the messaging system until you log in.

NOTE: To view the SMH of one server on a different server, you must modify Windows firewall settings. For instructions, open the **Help** menu, select **Getting Started** and then **Configuring Firewall Settings**.

System Management Homepage main page

Figure 10 (page 49) shows the SMH main page.

Figure 10 System Management Homepage main page



The page provides system, subsystem, and status views of the server and displays groupings of systems and their status.

NOTE: When you remove a disk or disconnect a cable, the System Management Homepage GUI might not display alerts when you click the **Refresh** button. You can force a hard refresh by clicking the **Home** button or by drilling down to the problem area. The default refresh interval is 2 minutes. To change the interval in the **Settings** menu, select **Autorefresh**, and then **Configure Page refresh settings**. The minimum interval is 5 seconds and the maximum is 30 minutes.

Overall System Health Status

A webapp sets the value of the **Overall System Health Status** icon by using a predefined heuristic. If no webapp can determine the status, the worst possible status is displayed in the **Component Status Summary** section.

Component Status summary

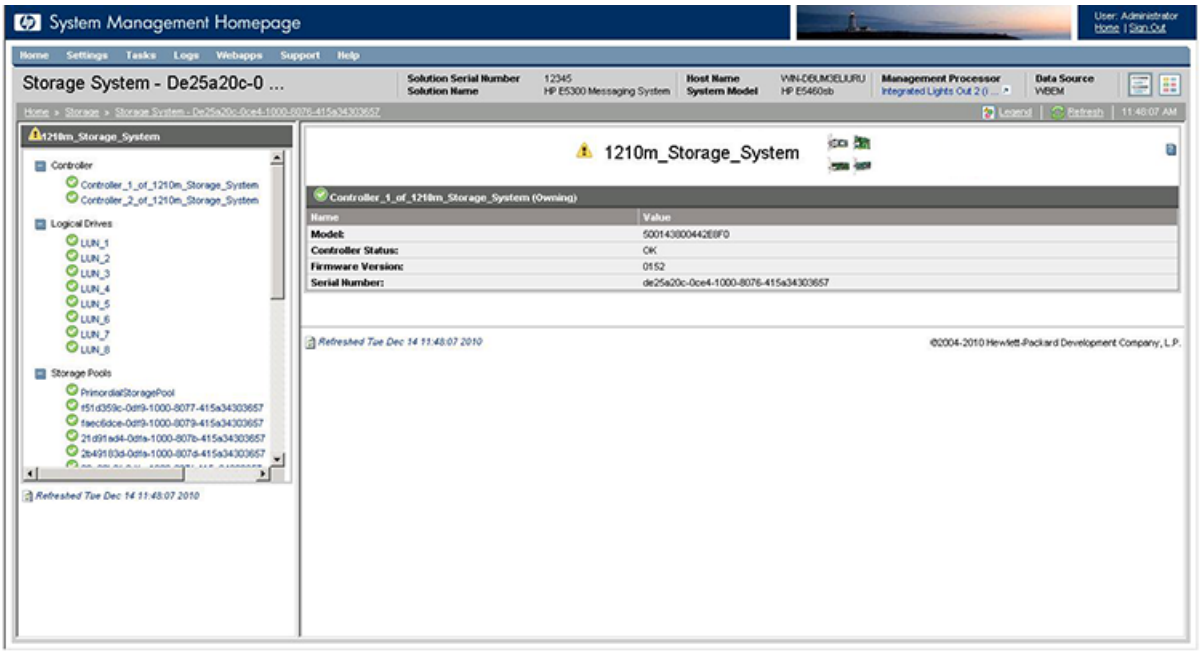
The **Component Status Summary** section displays links to all subsystems that have a critical, major, minor, or warning status. If there are no critical, major, minor or warning items, the **Component Status Summary** section displays no items.

Storage

This section displays information about the following components:

- **Storage System** — Links to the page that displays information about internal and external storage subsystems.
- **Smart array subsystem** — Links to the page that displays information about operating system drives and smart array controllers.

The **Storage System** page is organized as a left panel and a main page:



The left panel provides links to information about the following items:

- **Storage Controller** — Select a storage controller to view its type, status, firmware version, and serial number.
- **Logical Drives (Storage Volumes)**

  A list of logical drives associated with the controller appears in the left panel tree view. Select one of the logical drive entries to display the status of the drive, fault tolerance (RAID level), and capacity (volume size). A link to the logical drive storage pool is also displayed.

- **Storage Pools**

  A list of storage pools associated with the controller displays in the left panel tree view. Select one of the pool entries to display its status, capacity, communication status with the controller, primordial state, and cache properties.

  NOTE: If read or write cache is enabled the value displayed is 2; otherwise, the value is 3.

  The **Storage Pools** page also displays a list of disk drives and storage volumes present in the pool.

  Under the Physical Drives tree, the list of expansion nodes is displayed. Under each enclosure, the list of disk drives present in each expansion node is displayed. When there is no drive in the enclosure, the display shows Bay *Bay number* – Empty. Select one of the expansion nodes or disk drives to see information for that enclosure or drive.

- **Disk Drives**

  This section provides an overview of all disk drives attached to the controller. Each physical drive is listed as a separate entry in the Storage System submenu. Select any of the physical drives to display more information about the drive.

Enclosure

This section provides information about the enclosure cooling, IDs, power, Unit Identification LED, PCIe devices, and I/O modules.

- Because both a system and drive fan are required, the maximum and minimum number of fans required is "2". If either fan becomes degraded, the system could shut down quickly. Because the fans are not mutually redundant, even if the status of a single fan has changed, the new status is reported immediately in the SMH main page **Components Status Summary**.
- When the Enclosure Manager IP address is set incorrectly, the enclosure status displayed is Lost communication. Because the Enclosure Manager has lost communication with the external network, none of the other items in the Enclosure Information section can be displayed.

Network

This section shows the status of the network connections.

System

This section displays status for various system components.

Version Control

This section provides information about the Version Control Agent.

Software

This section provides information about system firmware and software.

Component LEDs

LEDs indicate the status of hardware components. This section provides images of the component LED locations and describes the status of LED behaviors. To obtain additional information on some status indicators, you can use the EMU CLI `SHOW` commands described in "EMU reference" (page 153).

Figure 11 Server blade(s) LEDs

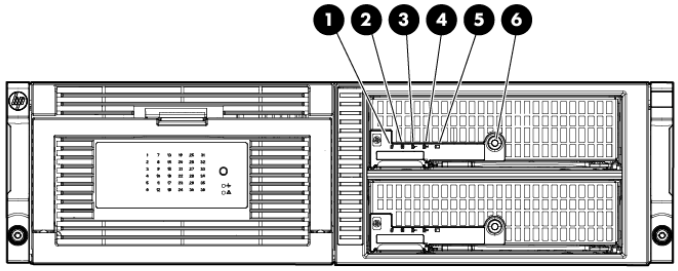


Table 3 Server blade LEDs status

Item	Description	Status
1	UID LED	Blue = Needs service check Blue flashing = remote management (remote console in use via iLO) Off = No remote management
2	Health LED	Green = Normal Flashing = Booting Amber = Degraded condition Red = Critical condition
3	NIC 1 LED*	Green = Network linked Green flashing = Network activity Off = No link or activity
4	Flex-10 NIC 2 LED*	Green = Network linked Green flashing = Network activity Off = No link or activity
5	Reserved	—
6	System power LED	Green = On Amber = Standby (auxiliary power available) Off = Off
*Actual NIC numbers depend on several factors, including the operating system installed on the server blade.		

Figure 12 Front LED display board

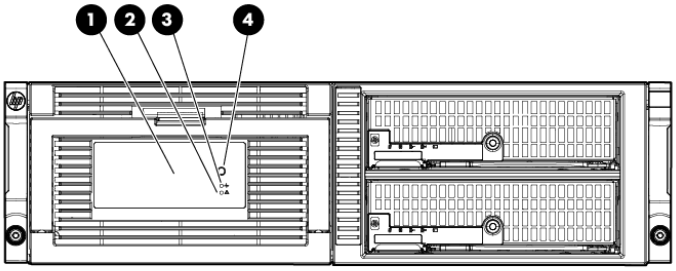
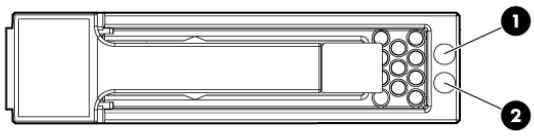


Table 4 Front LED status descriptions

Item	Description	Status
1	Hard drive LEDs Normal mode (UID LED is solid)	Green = The drive is online, but is not currently active. Flashing irregularly green = The drive is and it is operating normally. Flashing green (1 Hz) = Do not remove the drive. Removing the drive may terminate the current operation and cause data loss. The drive is rebuilding, or it is part of an array that is undergoing expansion, logical drive extension, a stripe size migration, or RAID migration. Flashing amber/green = Drive is configured and indicating a predictive failure. The drive may also be undergoing a rebuild, expansion, extension, or migration. Flashing amber (1 Hz) = A predictive failure alert has been received for this drive. Replace the drive as soon as possible. Amber = Drive failure, link failure, or mismatched configuration. Off = The drive is offline, a spare, or not configured as part of an array.
1	Hard drive LEDs Drive locate mode (UID LED is flashing)	Green = The drive has been selected by a management application and it is operating normally. Flashing amber (1 Hz) = The drive is not selected and is indicating a predictive failure. Flashing amber/green = The drive has been selected by a management application and is indicating a predictive failure. Amber = The drive might or might not be selected and is indicating drive failure, link failure, or mismatched configuration. Off = The drive is not selected.
2	Chassis fault LED	Flashing smber if there is a failed component in the system. OFF if the system is in good health.
3	Chassis health LED	Solid green if the system is in good health. OFF if there is a failed component in the system.
4	Chassis UID LED	This is either blue or off. When on it can be steady or blinking. Used only for unit identification. To set the LED, use the following CLI command: `SET ENCLOSURE UID { ON | OFF | SLOW | FAST }` Off = Enclosure is functioning normally.

NOTE: All these LEDs are off if the enclosure has power but is turned off (see Table 11 (page 57)). Then only the equivalent Chassis LEDs (2,3,4) on the rear Power Pod shows status.

Figure 13 Hard drive LEDs



1. Fault/UID LED (amber/blue)
2. Online LED (green)

Table 5 SAS hard drive LED combinations

Item	Description	Status
1	Activity/0nline LED	Green = Force Off (override drive activity output). Drive is not a member of any RAID volumes <or> Drive is configured but in a replacement or failed state for at least one volume that is a member of a RAID volume <or> Drive is a spare drive that is inor has been activated but has not been rebuilt. <and> Drive is not rebuilding <and> Drive is not a member of a volume undergoing capacity expansion or RAID migration. Solid green = Drive is a member of a RAID volume <and> Drive is not an inspare drive <and> Drive is not in a replacement or failed state for any volumes that is a member of a RAID volume <and> Drive is not currently performing I/O.
		Blinking green (@ 4 Hz 50% of duty cycle) = Drive is currently performing I/O activity <and> Drive is a member of a RAID volume <and> Drive is not in a replacement or failed state for any volumes that it is a member of a RAID volume (drive is online) <and> Drive is not rebuilding <and> Drive is not a member of a volume undergoing capacity expansion or RAID migration.
		Blinking green (@1 Hz 50% duty cycle — override drive activity output) = Drive rebuilding <or> member of volume undergoing Capacity Expansion/RAID Migration.
2	Fault/Identification LED – Bicolor amber/blue	Off = Drive is not failed <and> Drive is not selected (unit identification).
		Solid blue = Drive is not failed <and> Drive is selected (unit identification).
		Solid amber = Drive is failed <and> Drive is not selected.
		Blinking amber (@ 1Hz 50% duty cycle) =Drive is in a predictive failure state <and> Drive is not failed <and> Drive is not selected.
		Blinking alternate amber/blue (@ 1Hz 50% duty cycle) =Drive Failed <or> Drive is in a predictive failure state <and> Drive is selected.

Figure 14 Cache module controller LEDs

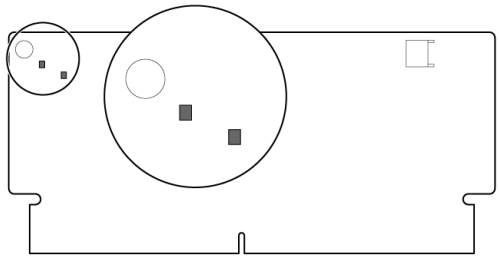


Table 6 Cache module ontroller LED status description

Item	Description	Status
Green LED upper left; Amber LED lower right	Controller LEDs	Green off, amber on = A backup is in progress.
		Green flashing (1 Hz), amber on = A restore is in progress.
		Green flashing (1 Hz), amber off = The capacitor pack is charging.
		Green on, amber off = The capacitor pack has completed charging
		Green flashing (2 Hz) alternating with amber; amber flashing (2 Hz) alternating with green LED = One of the following condition exists: – The charging process has timed out. – The capacitor pack is not connected. Green on, amber on = The flash code image failed to load.
		Green off, amber off = The flash code is corrupt.

Figure 15 Enclosure Manager unit LEDs

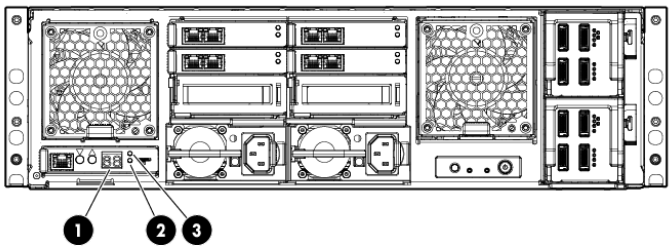


Table 7

Item	Description	Status
1	EM display	The LED blinks during power-up, but then the display only changes in response to commands from the Enclosure Manager Display
2	EM fault LED	Amber flashing/green LED off = issue. Use the CLI commands `SHOW ENCLOSURE STATUS` and `SHOW SYSLOG EM` to determine possible fault causes.

Table 7 *(continued)*

Item	Description	Status
3	EM health LED	The health LED is only green and is either on (Healthy) or off (Power off or Faulted).
LEDs are off when the enclosure is powered off.		

Figure 16 HP StorageWorks 2-port 1 Gb Ethernet I/O modules LEDs

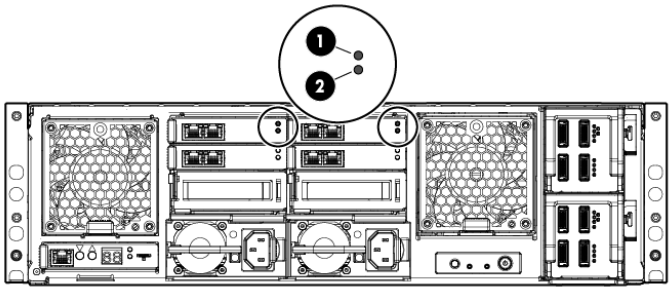


Table 8 HP StorageWorks 2-port 1 Gb Ethernet I/O modules LEDs status description

Item	Description	Status
1	Module health LED	Solid green when module health is good Off* when module has failed
2	Module fault LED	Solid amber when module has failed Off* when module health is good
*LEDs are off when enclosure is powered off.		

Figure 17 HP StorageWorks 2-port 1 Gb Ethernet, Mezz A and B I/O modules LEDs

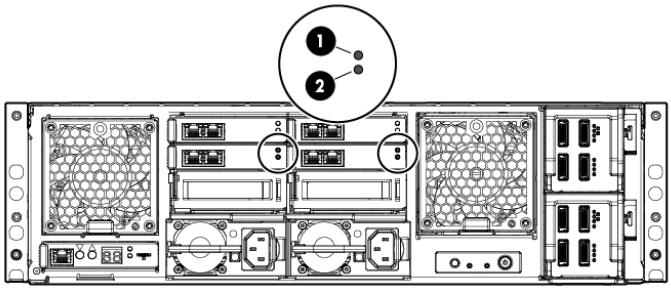


Table 9 HP StorageWorks 2-port 1 Gb Ethernet, Mezz A and B I/O modules LEDs status description

Item	Description	Status
1	Module health LED	Solid green when module health is good Off* when module has failed
2	Module fault LED	Solid amber when module has failed

Table 9 HP StorageWorks 2-port 1 Gb Ethernet, Mezz A and B I/O modules LEDs status description *(continued)*

Item	Description	Status
		Off* when module health is good
*LEDs are off when enclosure is powered off.		

Figure 18 Power supply LEDs

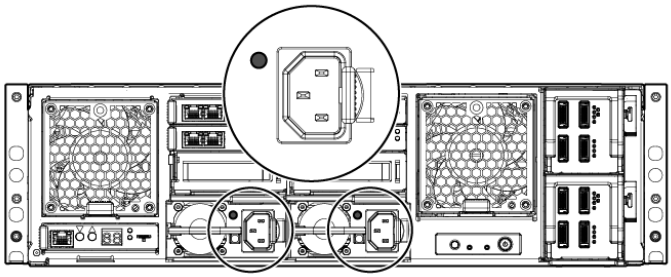


Table 10 Power supply LED status description

Item	Description	Status
1	Power supply	Green = Power on and power supply functioning properly Off = One or more of the following conditions exists: System powered off, AC power unavailable, Power supply failed, Power supply exceeded current limit. Use the CLI command `SHOW ENCLOSURE POWERSUPLY STATUS ALL` for more details.

Figure 19 Chassis switches and indicator LEDs

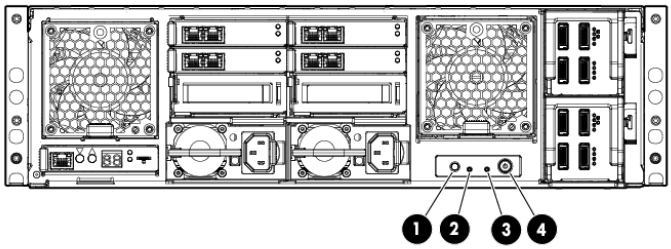


Table 11 Chassis switches and indicator LED status description

Item	Description	Status
1	UID	Solid blue = Requires service check.
2	Chassis health	Solid green when system health is good. OFF if a module or component in the system has failed
3	Chassis fault	Flashing amber if a module or component in the system has failed. OFF if system health is good.

Table 11 Chassis switches and indicator LED status description *(continued)*

Item	Description	Status
4	Power button/LED	Green when enclosure power is ON. Amber when enclosure has AC power but is turned off.

Figure 20 SAS I/O modules LEDs

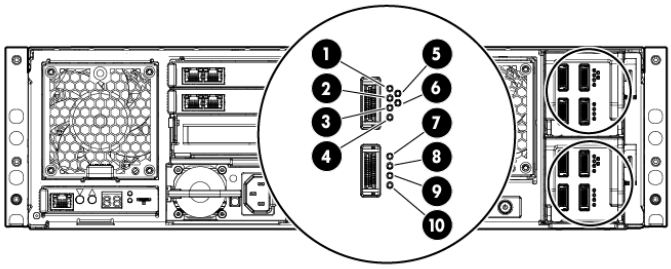
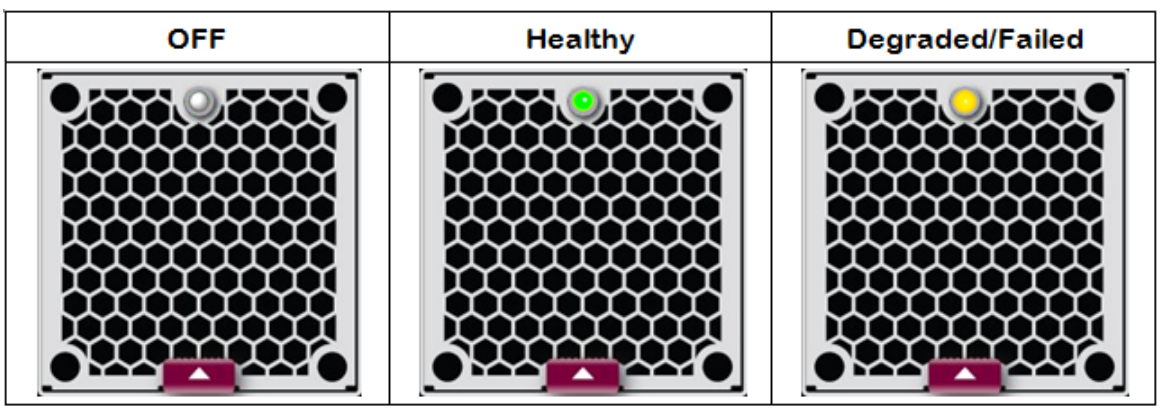


Table 12 SAS I/O module LED status description

Item	Description	Status
1, 2	SAS Port 1	Green* = Healthy Amber = Issue
3, 4	SAS Port 2	Green* = Healthy Amber = Issue
5, 6	Overall I/O module status	Green = Healthy Amber = Issue
7, 8	SAS Port 3	Green* = Healthy Amber = Issue
9, 10	SAS Port 4	Green* = Healthy Amber = Issue
*If there is anything connected to a connector, the corresponding green LED is on and blinks offwith activity. If there is nothing connected to a connector, both LEDs are off. The error LED is not currently being used and is always off.		

Figure 21 Fan LEDs



The two fan modules are physically identical, but their control is not. The Fault/health LED on FAN 1 is a single bi-color LED controlled by the EMU via the Health Monitor – it is either off, steady green, or flashing amber. The lens of the fan LED is colorless and looks grayish-white when off.

System Fan — Fan 1

Fan 1 LED is driven by the Health Monitor PSoC under direction of the EMP firmware. The fan microprocessor inside the Fan module cannot sense or control this LED. If the EMU fails, or if the connection between the EMU and the fan fails, the LED cannot be controlled and thus may not reflect actual state. Also, because Fan 1 LED has no power unless enclosure power is on, the EMP cannot indicate Fan status in standby mode.

Unlike the EMU health LED circuit, there is no autonomic hardware circuit controlling the FAN Fault LED. Assuming the LED is working, it flashes Amber by the EMU if one or two of the 3 fan rotors is not functioning, or if the microprocessor on the fan module is unresponsive, or if MFG NVRAM on the module is unreadable.

Drive Fan — Fan 2

The Fault/health LED on FAN 2 is not controlled at all by the EMU – but is controlled by one of the management processors inside the SAS IO Module. This LED cannot be lit without enclosure power ON, and its state depends upon signals from one of the SAS IO modules.

To troubleshoot a degraded fan, you can use the EMU CLI commands `SHOW ENCLOSURE STATUS` and `SHOW ENCLOSURE FAN ALL` described in "EMU reference" (page 153).

EMU CLI SHOW commands

Use the EMU CLI `SHOW` commands described in "EMU reference" (page 153) to obtain additional information about component status as indicated by the hardware LEDs described in "Component LEDs" (page 51). To access the CLI, log in to the EMU as Administrator.

The system is shipped with a single enabled user account: `Administrator`. The password of the Administrator account is unique, programmed at the factory, and printed on the tear-off label on the back of the unit and the label on top of the EMU. Logging in to the system requires the Secure Shell protocol (SSH). Windows systems can use ssh clients such as `PuTTy`, which can be freely downloaded.

To log in to the EMU:

1. Note the IP address of the EMU.
2. ssh to the EMU.
3. Log in as Administrator.

Following is a sample login session.

```
[user@host ~]$ ssh Administrator@10.0.0.10
--------------------------------------------------------------------------------
WARNING: This is a private system.  Do not attempt to login unless you are an
authorized user.  Any authorized or unauthorized access and use may be moni-
tored and can result in criminal or civil prosecution under applicable law.
--------------------------------------------------------------------------------
User: /src/bin/build@msaonyx
Script: ./parbuild
Directory: /src/quire/QUIRE-IDP-1-0/daily/2010110801/bld/QUIRE-IDP-1-0
FileTag: 110820102003
Date: 2010-11-08T20:03:55
Firmware Output: jsbach
Firmware Version: 0x0100
SVN Version: 2452

Administrator@10.0.0.10's password:

HP IDP System Enclosure Manager
(C) Copyright 2006-2009 Hewlett-Packard Development Company, L.P.
```

```
Type 'HELP' to display a list of valid commands.
Type 'HELP <command>' to display detailed information about a specific command.
Type 'HELP HELP' to display more detailed information about the help system.

EM 78E7D1020504>
```

After logging in, you can set the Administrator password by running the HP-provided tool, `C:\Program Files\HP\HP Configuration Wizard\HPEMConfig.exe`.

HP Support websites

Use the "Support and troubleshooting" task at the HP Support & Drivers website (http://www.hp.com/go/support) to troubleshoot problems with the messaging system. After entering the messaging system name and designation (for example, E5300 Messaging System) or component information (for example, SAS I/O module), use the following links for troubleshooting information:

- Download drivers and software—This area provides drivers and software for your operating system.
- Troubleshoot a problem—This area provides a listing of customer notices, advisories, and bulletins applicable for the product or component.
- Manuals—This area provides the latest user documentation applicable to the product or component. User guides can be a useful source for troubleshooting information. For most messaging system hardware platforms, the following ProLiant server manuals may be useful for troubleshooting assistance:
  - **HP ProLiant Server User Guide or HP ProLiant Server Maintenance and Service Guide**

    These guides contain specific troubleshooting information for the server.
  - **HP ProLiant Servers Troubleshooting Guide**

    The guide provides common procedures and solutions for many levels of troubleshooting with a ProLiant server. For E5000 guides, go to www.hp.com/support/manuals, select Solutions appliances in the solutions groups, and select an E5000 product.

IMPORTANT: Some troubleshooting procedures found in ProLiant server guides may not apply to the messaging system. If necessary, check with your HP Support representative for further assistance.

For software-related components and issues, online help or user guide documentation may offer troubleshooting assistance. The release notes for the messaging system product line is frequently updated. The document contains issues and workarounds to a number of categories for the messaging systems.

Known issues and workarounds for the messaging system products and the service release are addressed in release notes.

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to comple the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring, 24x7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, whichinitiates a fast and accurate resolution, based on the service level of your product. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- HP Insight Remote Support Standard: This software supports server and storage devices and is optimized for environments with 1 to 50 servers. Ideal for customers who can benefit from

pronotification, but do not need proservice delivery and integration with a management platform.

- HP Insight Remote Support Advanced: This software provides comprehensive remote monitoring and proservice support for nearly all HP servers, storage, network and SAN environments, plus selected non-HP servers than have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available at:

http://www.hp.com/go/insightremotesupport

To implement Insight Remote Support for E5000 systems, follow the instructions in release A.05.50 or later of the following guides:

- *HP Insight Remote Support Standard Hosting Device Configuration Guide* (for standard support)
- *HP Insight Remote Support Advanced CMS Configuration and Usage Guide* (for advanced support)

To obtain these guides:

1. Go to the Insight Remote Software website (previously cited).
2. From the Learn More menu, select either **Insight Remote Standard** or **Insight Remote Support Advanced software**.
3. Select **Support Documentation**.

Be aware of the following specifics for E5000 systems:

- The messaging system is a "managed system" as described in Insight Remote Support guides.
- The E5460sb is equivalent to a ProLiant server and meets all the requirements for a managed system.
- The messaging system hardware is preconfigured for Insight Remote Support and uses the WMI (WBEM) provider, not SNMP, to communicate with the CMS.
- Insight Remote Support Software is preinstalled on the E5000 systems.
- For Insight Remote Support Advanced, register the system using the E5000 part number and serial number (not the blade name).

  Confirm and overwrite any pre-populated values with the serial number of the messaging system. The part number and serial number are located on the pullout tab at the EMU on the back of the messaging system.

- You will need to register WBEM access credentials in HP SIM.

Microsoft Systems Center Operations Manager

Microsoft Systems Center Operations Manager (SCOM) provides comprehensive monitoring, performance management, and analysis tools to maintain Windows OS and application platforms. This solution allows you to monitor Microsoft Windows environments and HP storage products through a common OpsMgr console. To download HP management packs for Microsoft System Center Operations Manager, including installation, configuration, and usage documentation, visit the **HP StorageWorks Management Packs for Microsoft Systems Center** site at www.hp.com/go/storageworks/scom2007.

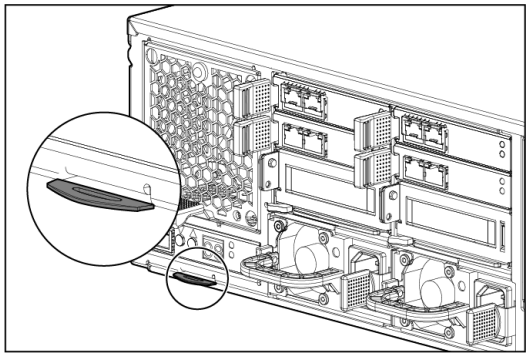
Obtaining the Service Agreement ID (SAID)

Obtain the SAID from your service contract agreement and keep it in a secure location. You must provide it when you contact HP Support.

Locating the messaging system warranty entitlement labels

You must locate and identify the serial number and part number for the messaging system components to obtain service under the warranty. The numbers are listed on the warranty entitlement label located on the pull-out tab that is positioned below the Enclosure Management module, in the lower left-hand corner of the back of the enclosure.

Figure 22 Location of warranty entitelment labels



6 Updating system software and firmware

This section explains how to update system software and firmware.

Powering off the messaging system

Follow these steps whenever you need to shut down a single server blade or to perform a system shutdown of the messaging system:

1. Go to the standard Windows path of **Start > Shut Down**.
2. Shut down blade 2.
3. Shut down blade 1.
4. Power off any disks in expansion enclosures by pressing and holding down the power button located on the back of each expansion disk.
5. Power off the messaging system enclosure by pressing and holding down the power button located on the back of the enclosure.
6. Disconnect the power cables (optional).

To power on the server blades and messaging system, reverse the shutdown procedure.

Determining the current messaging system software version

To determine the current software version running on a server blade, follow these steps:

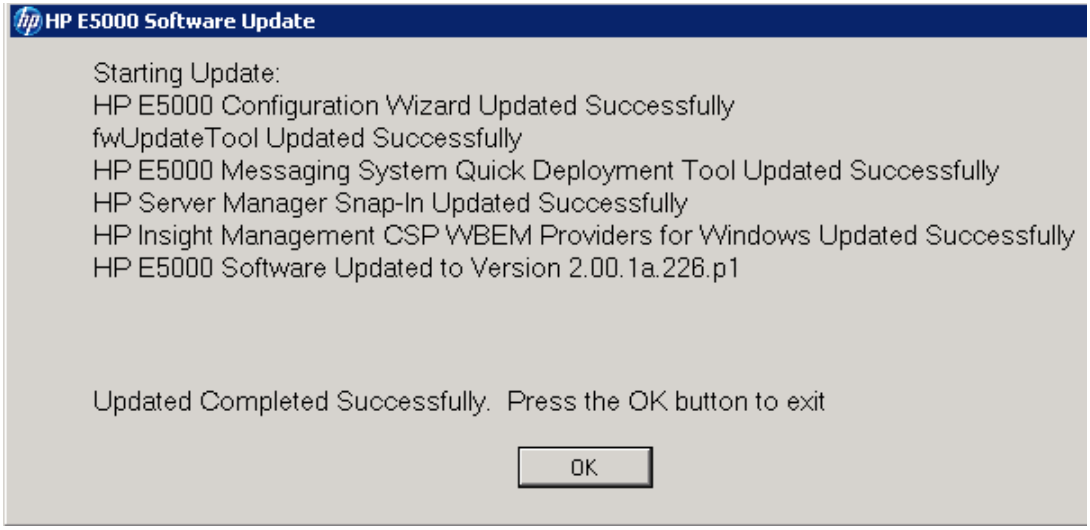
1. Log in to the server blade.
2. Open a command window.
3. Enter the `reg query` command as shown in the following example:

```
C:\> reg query HKLM\Software\Wow6432Node\Hewlett-Packard\StorageWorks\QuickRestore /s
HKEY_LOCAL_MACHINE\Software\Wow6432Node\Hewlett-Packard\StorageWorks\QuickRestore
    BASE    REG_SZ    2.0.1.21
    QRVersion    REG_SZ    2.00.1a.226
    Revision    REG_SZ    A
    ConfigXML    REG_SZ    2.0
```

Updating the messaging system software

HP recommends that you update the messaging system software as part of normal system maintenance. Regular updates are available at www.hp.com. Updates might also be necessary when replacing a server blade or other component. To update the software:

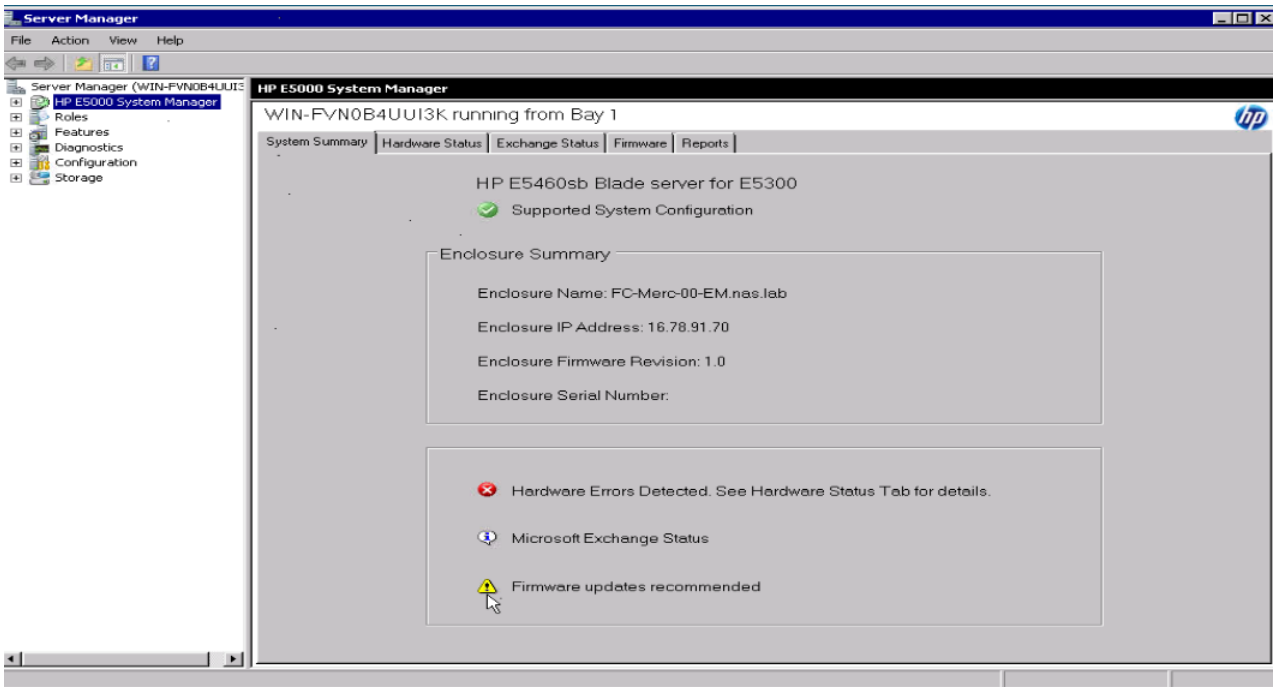
1. Go to www.hp.com.
2. Select **Support & Drivers**.
3. Select **Download drivers and software (and firmware)**.
4. Enter E5000 in the **for product** box and click the  button.
5. Go to the **Software→System Management** section and select the current version of the HP E5000 Update download.
6. Copy the file `HPE5000Update_x_y_z.exe` (where `x`, `y`, and `z` are the current version numbers) to Server 1 and double-click. Wait for a few seconds for the program to extract.
7. The E5000 Software Update user interface appears, directing you not to reboot during the update.
8. Press **OK** to start.
9. The update runs in the background and takes a few minutes to complete.
10. After the update completes, the user interface reports success and lists the installed programs:



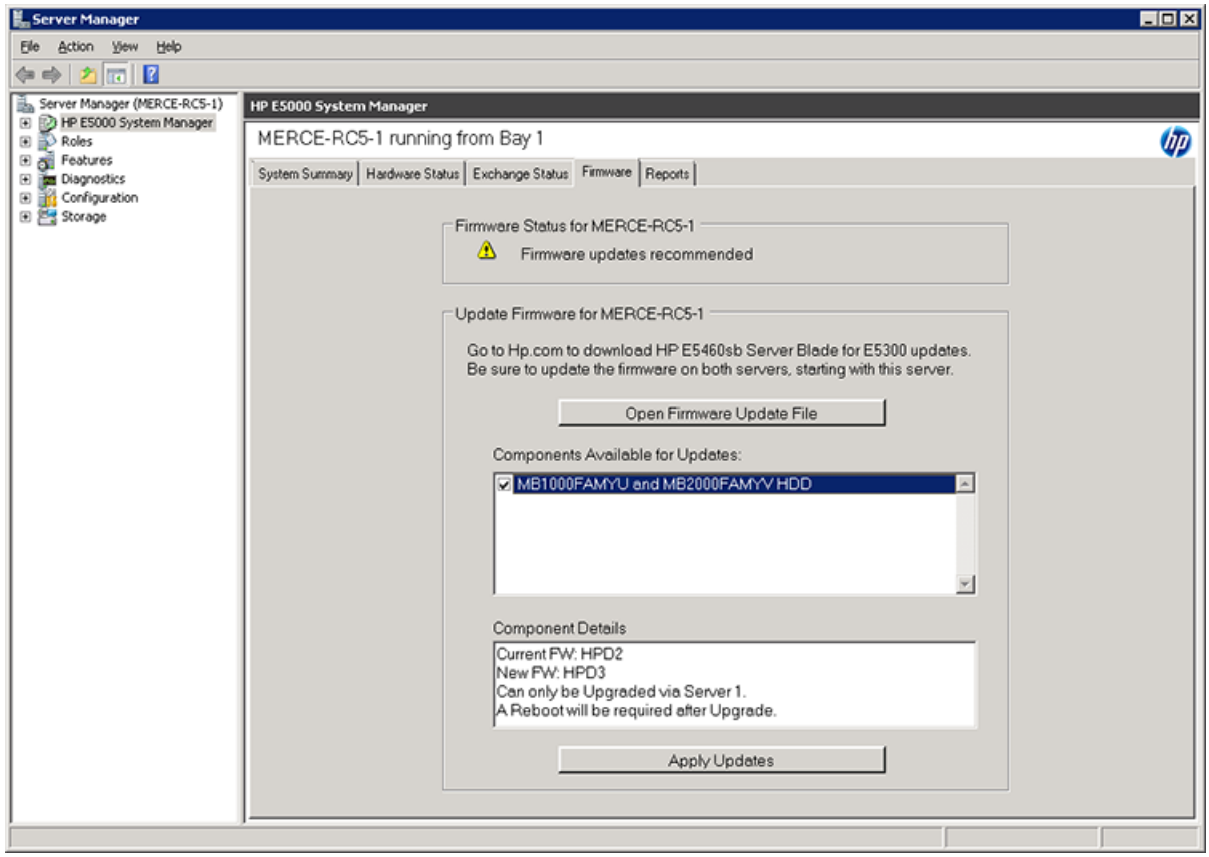
11. Press **OK** to exit.
12. After Server 1 has completed the update, copy the file `HPE5000Update_x_y_z.exe` to Server 2 and repeat the update procedure.

Upgrading a component's firmware version

To determine whether a component requires a firmware upgrade, select the E5000 System Manager in Microsoft Server Manager. Click the **System Summary** tab, and inspect the **Firmware update recommended** icon status. If the icon is green, no firmware update is needed. If the icon is yellow, a firmware update is required.



If a firmware update is needed, click the E5000 System Manager **Firmware** tab to view the Components Available for Updates window for a list of the components that can be upgraded.



IMPORTANT: You must check for firmware version upgrades on each server blade. Certain upgrades may only be performed on Server Blade 1, Bay 1, and other component firmware version upgrades may appear only on Server Blade 2, Bay 2.

IMPORTANT: Firmware upgrades may impact information availability on the server blades during the upgrade. For instance, you cannot access information on the drives while they are updating. You need to gracefully shut down the messaging system for availability during the upgrade. If a component requires an upgrade to multiple shared components, such as the hard drives, followed by a reboot, the data is unavailable for a longer period of time.

IMPORTANT: You must repeat the steps in this section for each server blade in the messaging system. Use Server 1, Bay 1 to update all components except for those in Server 2, Bay 2.

To check for component firmware version upgrades:

1. From the System Manager **Firmware** tab, follow the instructions under **Update firmware for [Server Blade Name]**:
   a. Go to www.hp.com and enter the product name (for example, E5300 Messaging System).
   b. Download the available firmware upgrades to your typical server download location.

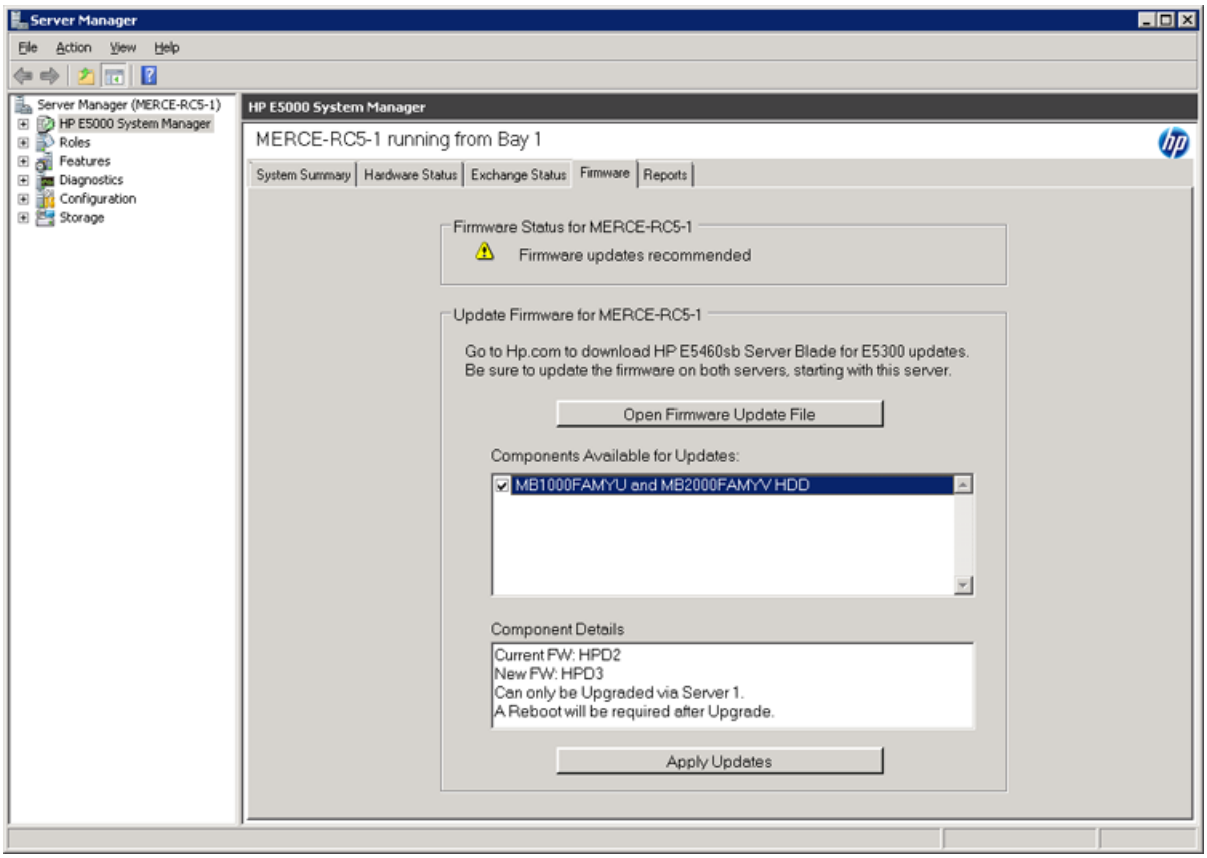
2. Click the **Open Firmware Update File** button.

   This action places the downloaded firmware bundle into the appropriate folder on the messaging system and then automatically refreshes the System Manager.

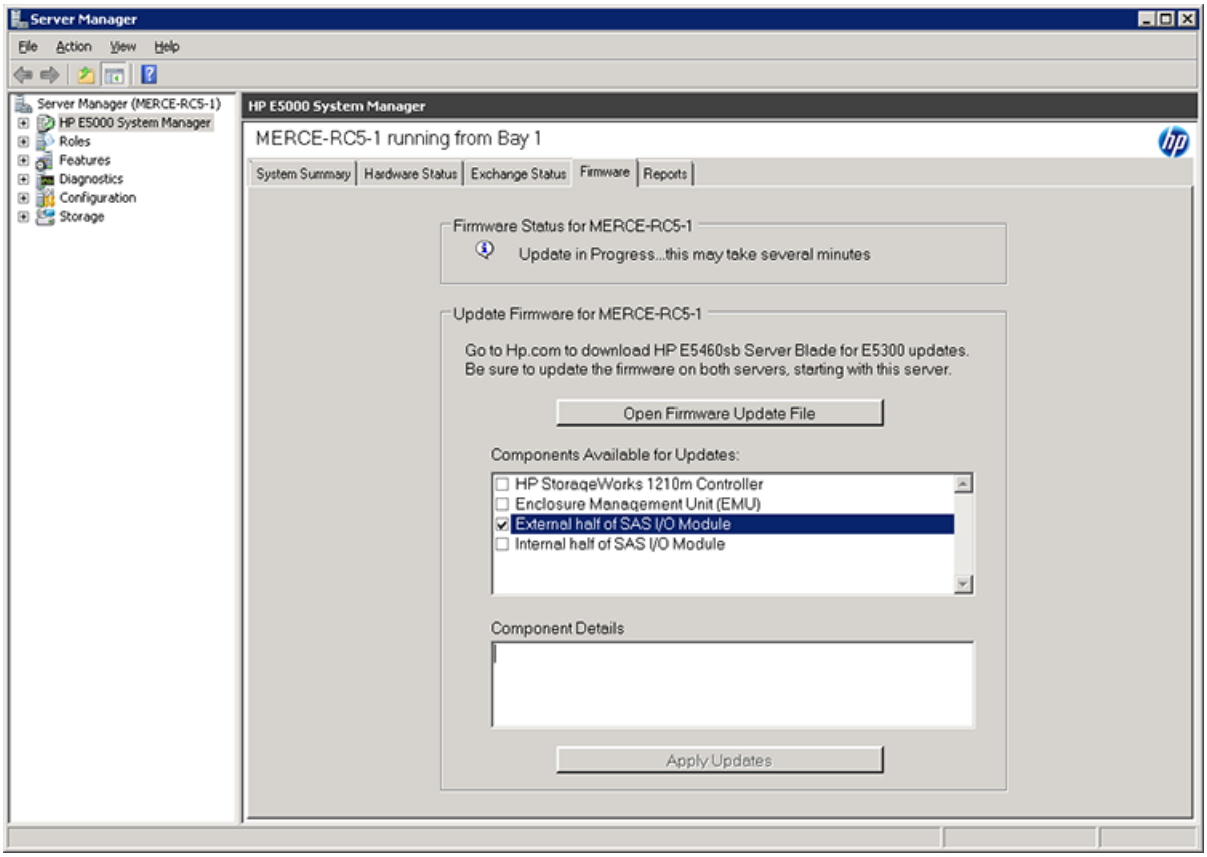
3. In the **Components Available for Upgrades** window, select the box next to each component to be upgraded. The **Component Details** box displays the firmware version that is currently running, and the available firmware version.

NOTE: HP recommends that you upgrade one component at a time to ensure each version updates successfully.

Carefully shut down Server 2, Bay 2 before using Server 1, Bay 1 to update the drives in the drawer.



4. After selecting the components for update, click **Apply Updates**. The status reports that an upgrade is in progress.



WARNING! When updating both controllers at the same time, you must update the firmware to sync it with the pared-down controller. This step takes the volumes offline because both pared-down servers must reboot. When the volumes go down, an auto-clone operation occurs, which means the firmware of the running controller is flashed onto the booting controller. This ensures that both controllers are running the same firmware version. If you have iSCSI, be sure to disconnect before beginning a firmware update.

NOTE: Each firmware upgrade takes a few minutes to complete. If you are upgrading multiple components, such as hard drives, the upgrade takes more time.

5. Reboot the server blade, if needed.

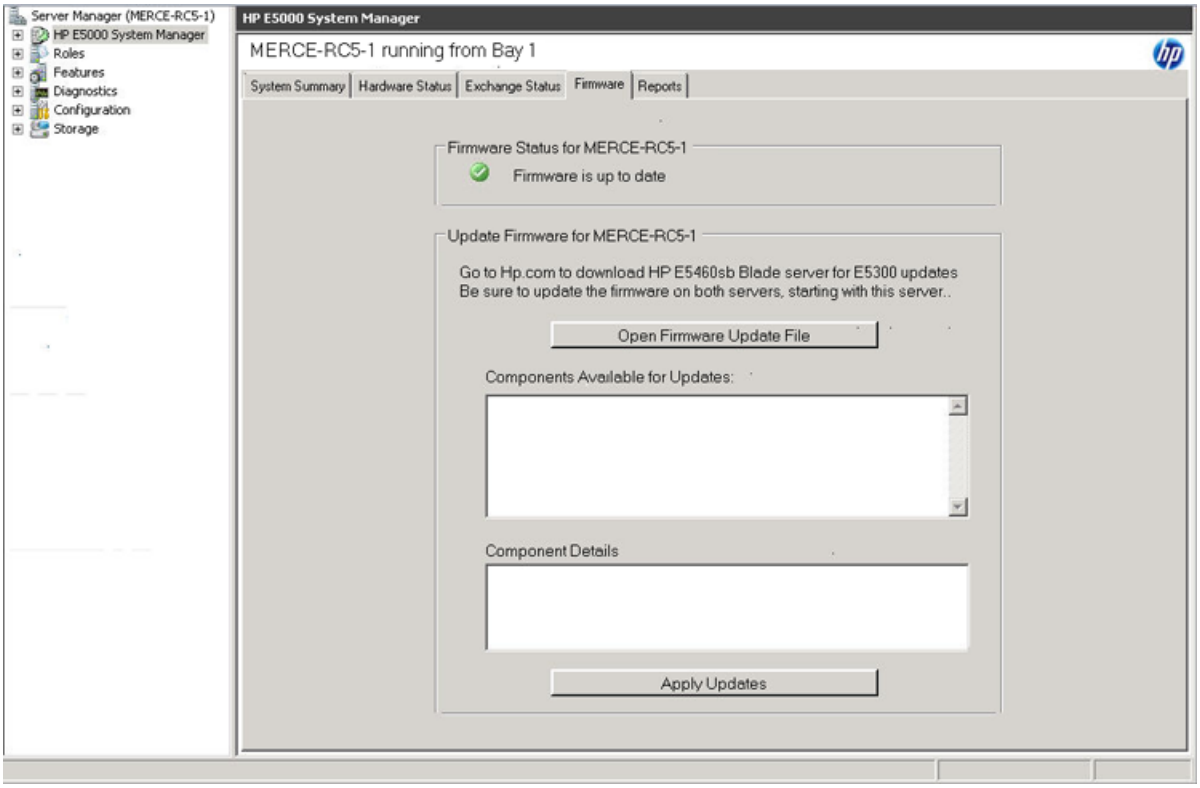
   A message appears in the **Component Details** window to alert you if a reboot is required after each component firmware upgrade. After the upgrade completes, the **Firmware Status** changes from "Firmware updates recommended" to "A reboot is required."

   NOTE: If a reboot is *not* required after the component firmware upgrade completes, the component name no longer appears in the **Components Available for Upgrades** box.

   If a reboot is required, follow these steps after the firmware upgrade completes:

   a. Click **Start**, click the power option flyout, and then select **restart**.
   b. Complete the Windows Shutdown Event Tracker.
   c. Click **OK**.

6. Verify the success of the firmware upgrade by viewing the **Firmware Status**. You can also confirm the firmware upgrade success by viewing the **System Summary**.



The System Manager automatically notifies you when a firmware upgrade is available for an component. If a replacement component is running an earlier firmware version, the System Manager alerts you on the **System Summary** and **Firmware** tabs. In this instance, you do *not* need to download a firmware upgrade.

NOTE: The firmware upgrade has failed if a component remains in the **Components Available for Updates** list after the firmware upgrade and reboot. To identify the next steps needed for successful firmware upgrade, go to the **Reports** tab (see "Reports" (page 47)) and run a report.

The possible components that can be identified in the **Components Available for Updates** include the following:

- Integrated Lights-Out (iLO)
- HP StorageWorks 1210m Controller
- Systems ROM (I24) for HP E5460sb Server Blade
- Power Management Controller Firmware (c-Class Blades)
- Smart Array P410i Blade HDD Controller
- Enclosure Manager Unit (EMU)
- External half of SAS I/O Module
- Internal half of SAS I/O Module
- HP E5000 expansion node I/O Module
- MBFAM1000YU and MBFAM2000YV HDD

7 Removing and replacing hardware components

This chapter describes procedures for removing and replacing hardware components.

Customer self repair

HP customer self repair (CSR) programs allow you to repair your StorageWorks product. If a CSR part needs replacing, HP ships the part directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your HP-authorized service provider determines whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider, or see the CSR website:

http://www.hp.com/go/selfrepair

Best practices for replacing components

The following sections provide information to help you successfully replace the hardware components on your messaging system.

⚠ **WARNING!** To reduce the risk of personal injury or damage to the equipment:

- Be sure that only one component is extended from a rack at a time. A rack may become unstable if more than one component is extended at the same time.
- Do not extend the hard drive drawers beyond the supporting surface when the unit is not installed in a rack.

⚠ **CAUTION:** Removing a component significantly changes the air flow within the enclosure. All components must be installed for the enclosure to cool properly. If a component fails, leave it in place in the enclosure until a new component is available for installation.

During replacement of the failed component

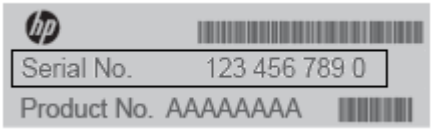
- HP recommends waiting until periods of low messaging system activity to replace a component.
- When replacing components at the rear of the rack, cabling may obstruct access to the component. Carefully move any cables out of the way to avoid loosening any connections. In particular, avoid cable damage that may be caused by:
  - Kinking or bending
  - Disconnecting cables without capping. If uncapped, cable performance may be impaired by contact with dust, metal, or other surfaces.
  - Placing removed cables on the floor or other surfaces where they may be walked on or otherwise compressed.

Accessing component replacement videos

HP produced videos of the procedures to assist you in replacing components. To view the videos, go to the HP Customer Self Repair Services Media Library website and navigate to your product: http://www.hp.com/go/sml

Identifying the spare part

Parts have a nine-character spare part number on their label. For some spare parts, the part number is available in the messaging system. Alternatively, the HP call center can assist in identifying the correct spare part number.



Replaceable parts

This product contains replaceable parts. To identify the replaceable parts, see the individual component guides listed in Table 14 (page 73).

Parts that are available for CSR are indicated as follows:

- Mandatory CSR — You order the part directly from HP and repair the product yourself. On-site or return-to-depot repair is not provided under warranty.
- Optional CSR — You can order the part directly from HP and repair the product yourself, or you can request that HP repair the product. If you request repair from HP, you may be charged for the repair depending on the product warranty.
- No CSR — The replaceable part is not available for self repair. For assistance, contact an HP-authorized service provider.

For more information about CSR — contact your local service provider. For North America, see the CSR website:

http://www.hp.com/go/selfrepair

To determine the warranty service provided for this product, see the warranty information website:

http://www.hp.com/go/storagewarranty

To order a replacement part, contact an HP-authorized service provider or see the HP Parts Store online:

http://www.hp.com/buy/parts

Figure 23 (page 71) shows an exploded view of the messaging system.

Figure 23 Exploded view of the messaging system

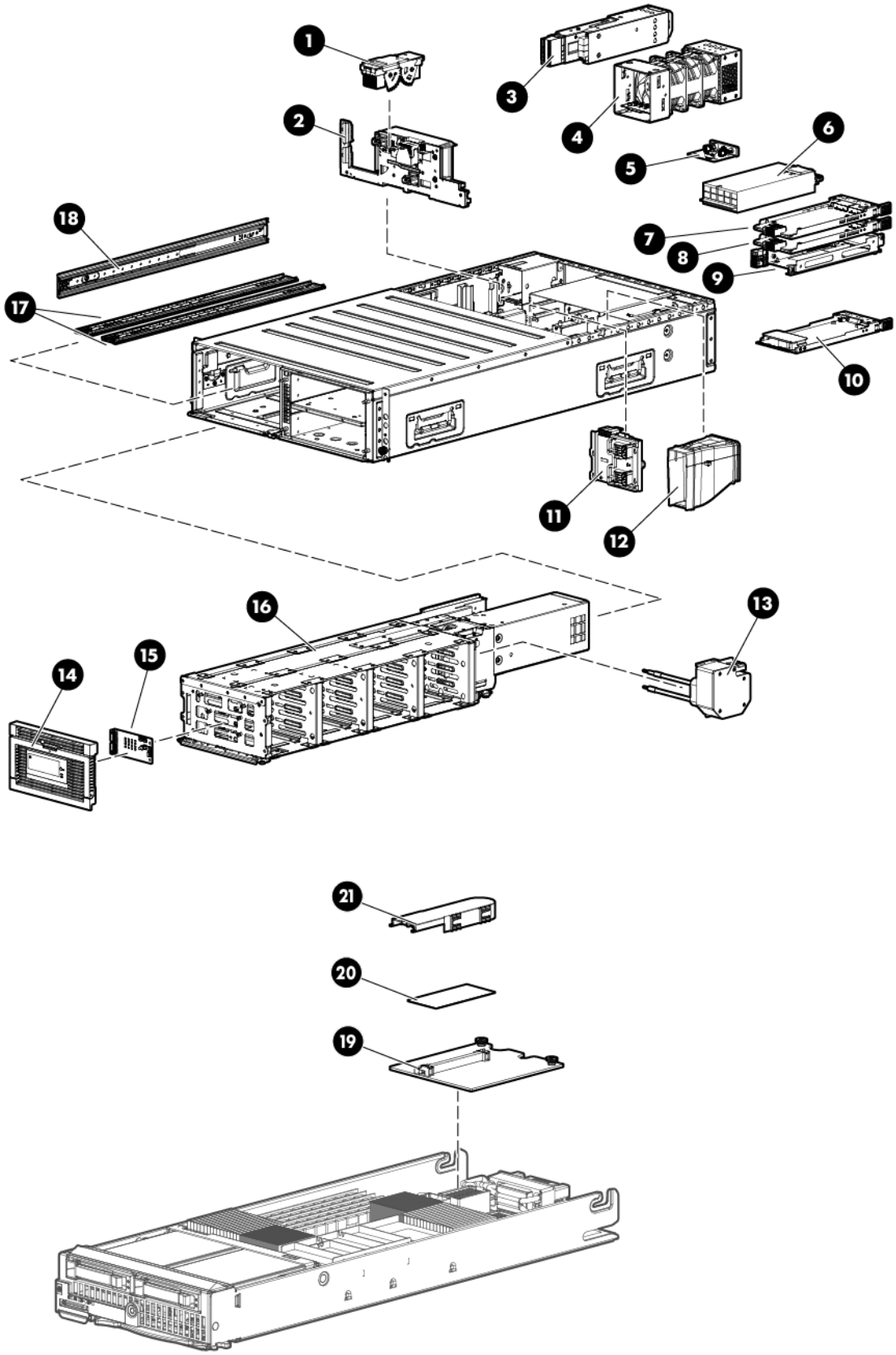


Table 13 (page 72) lists the CSR replaceable parts for the messaging system.

Table 13 Messaging system replaceable parts

Item	Replaceable unit (RU)	Part number	CSR availability	Replacement type (Cold, Warm, Hot)
1	Server interposer	631117-001	Optional	Cold
2	Midplane board	631115-001	Non	Cold
(Not shown)	.5 M mini SAS cable	408765-001	Mandatory	Hot
(Not shown)	Mini SAS cable 2 M	408767-001	Mandatory	Hot
(Not shown)	Mini SAS cable 4 M	408768-001	Mandatory	Hot
3	LFF SAS I/O module	631941-001	Mandatory	Hot
4	Fan modules	631109-001	Mandatory	Hot
5	Power UID button assembly	399054-001	Optional	Cold
6	Power supplies	631942-001	Mandatory	Hot
7	2-port 1 Gb Ethernet module	631110-001	Mandatory	Hot
8 (E5500/E5700)	2-port 1 Gb Ethernet module	631110-001	Mandatory	Hot
8 (E5300 only)	Mezzanine blank	631134-001	Mandatory	Hot
9	PCIe module	631942-001	Optional	Warm
10	Enclosure Manager module	631112-001	Mandatory	Hot
11	Server blade backplane	631116-001	Non	Cold
12	Server airflow baffle	631129-001	Non	Cold
13	Coil power assembly	631130-001	Non	Cold
14	Drive drawer bezel LFF	631118-001	Optional	Cold
15	LFF LED display board	631126-001	Optional	Cold
16	LFF drive drawer assembly	631128-001	Optional	Cold
(Not shown)	Hard drive drawer LFF blanks	389015-001	Mandatory	Hot
(Not shown)	1 TB Hard drive	508011-001	Mandatory	Hot
(Not shown)	2 TB Hard drive	508010-001	Mandatory	Hot
17	Drawer rails bottom	631131-001	Non	Cold
18	Drawer rails left	631132-001	Non	Cold
19	Mezzanine NIC	631133-001	Non	Cold
(Not shown)	Right ear bezel on chassis (3, one for each model)	629960-001, 629960-002, 629960-003	Optional	Hot
19	1210m controller	615360-001	Optional	Warm
20	Cache module	598414-001	Optional	Warm
21	Supercapacitor	587225-001	Mandatory	Warm
(Not shown)	Rail kit assembly	631133-001	Optional	Cold

For more information on removing and replacing components, see Table 14 (page 73) for a list of individual component documents.

Table 14 Related component documents

Component	Component name	Guide
Server blade	E5460sb blades	*BL460c maintenance and service guide*
Disks in expansion nodes	HP E5000 Messaging System 12 TB expansion ode and HP E5000 Messaging System 24 TB expansion node	*HP StorageWorks D2600/D2700 Disk Enclosure User Guide*

Hot, warm, and cold swap components

Hot or warm swapping a component means removing and replacing it while the main power is still on. Cold swapping means removing and replacing the component while the main power is off. Port (purple) colored handles on components like the fan module indicate the component is hot-swappable.

IMPORTANT: Remove and replace components quickly without interrupting the process.

Preventing electrostatic discharge

CAUTION: Components can be damaged by electrostatic discharge (ESD). Use proper anti-static protection.

- Always transport and store CSR replaceable parts in an ESD protective enclosure.
- Do not remove CSR replaceable parts from the ESD-protective enclosure until you are ready to install it.
- Always use ESD precautions, such as a wrist strap, heel straps on conductive flooring, and an ESD-protective smock when handling ESD sensitive equipment.
- Avoid touching all connector pins, leads, or circuitry.
- Do not place ESD-generating material such as paper or non anti-static (pink) plastic in an ESD protective enclosure with ESD sensitive equipment.

Verifying component failure

Use the following methods to verify component failure:

- Analyze any failure messages received. Fault monitoring software from HP provides a recommended action.
- Navigate to System Manager and check the **System Status** tab for the enclosure health status.
- Check the component status using the System Manager:
  1. Open the System Manager **Hardware Status** tab to identify a failed component. For more information, see "Hardware Status" (page 44).
  2. To identify the correct enclosure, start the System Management Homepage application as described in " Starting the System Management Homepage application" (page 49), select **Unit Identification Device** from the **Enclosure** pane, and then select the **On** radio button on the **Unit Identification Device** screen. This causes the blue UID indicator to blink on the controller enclosure.

Verifying proper operation

After replacing a messaging system component, check the following to verify that the component is operating properly:

- If applicable, verify that the green LED is lit continuously or blinking. If not, try reseating the component.
- From the System Manager, navigate to the **Hardware Status** and **System Summary** tabs to confirm the component failure alert no longer appears. The status should be (Good).

Wait times for hard disks

If the hard drive **is part of a volume**, the following wait times apply:

Removal

- Less than 3 seconds for the LED to turn off

Insert

- Less than 1 second for first disk activity
- Less than 15 seconds for the disk to be ready for REBUILD. The LED blinks at 1 Hz.

NOTE: The transition to solid green depends on how long the REBUILD takes (the LEDs indicate REBUILD).

If the hard drive is **not part of a volume**, the following wait times apply:

Removal

- No indication appears because the LED is already off

Insert

- Less than 1 second for the first disk activity to appear
- Less than 15 seconds for the disk to be ready to use

Removing and replacing the server interposer board

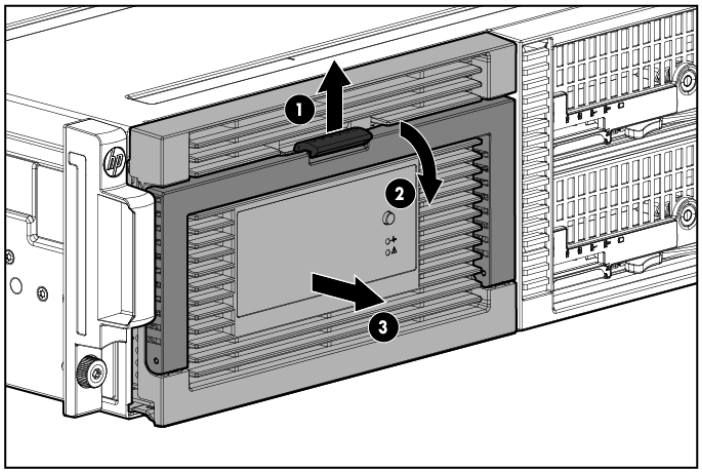
This section describes how to remove and replace the server interposer board in the messaging system.

Removing the server interposer board

To remove the server interposer board:

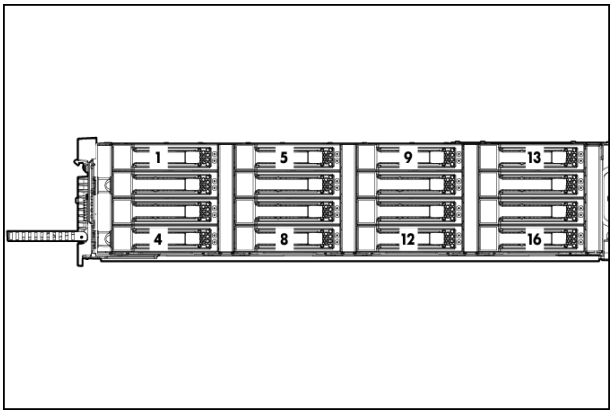
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component (see Table 4 (page 53)).
3. Power off the system:
    1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
    2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
    3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
    4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
    5. Disconnect the power cables.
4. Extend the hard drive drawer:

1. Press upward on the release button on the hard drive drawer (1).
2. Pull the drawer handle down 90 degrees (2).
3. Extend the hard drive drawer (3).



5. Label the hard drives.

IMPORTANT: Use the drive labels provided with the replacement server interposer board when removing the drives to ensure you replace the drives in the correct order.



6. Remove all hard drives.

WARNING! Carefully check the drive labels provided with the replacement board, and then install the hard drives in the same slots from which you removed them. If the drives are not installed in the correct slots, the system might fail.

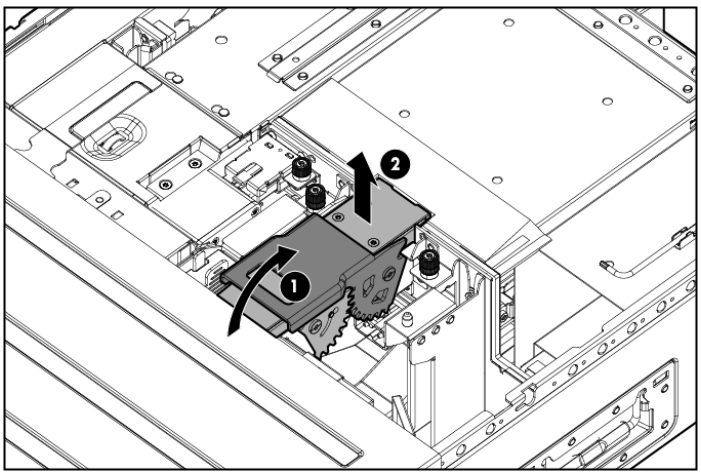
7. Push the hard drive drawer back into the messaging system enclosure.
8. Label each server blade and then remove both server blades.
9. Label the cables and then unplug all cables from the back of the messaging system enclosure.
10. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

11. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back panel off.

12. Open the release handle (1), and pull up to remove the server interposer board (2).

NOTE: You may need to use significant force to accomplish this task.

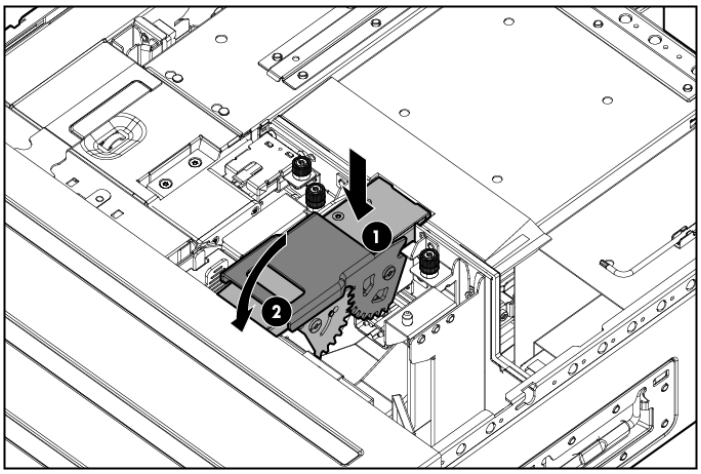


Replacing the server interposer board

To replace the server interposer board:

1. With the release handle open, align the server interposer board with the alignment pins (1), and then close the server interposer release mechanism (2).

NOTE: Remember to move the server backplane power cable out of the way of the alignment pins.

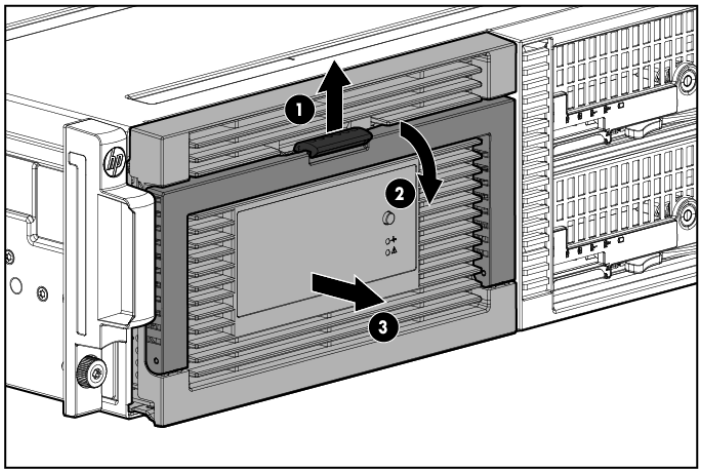


2. Reinstall the top back panel.
3. Place the enclosure into the rack, and secure the enclosure by tightening the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

4. Replace both server blades in their original bays.
5. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



6. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure you replace the drives in the correct order.

7. Push the hard drive drawer back into the messaging system enclosure.
8. Plug in all cables at the back of the messaging system enclosure, and ensure that all cables are returned to their original locations.
9. Power on the messaging system by pressing the power button **On**.
10. Confirm that the messaging system has resumed normal operations.

Removing and replacing the midplane board

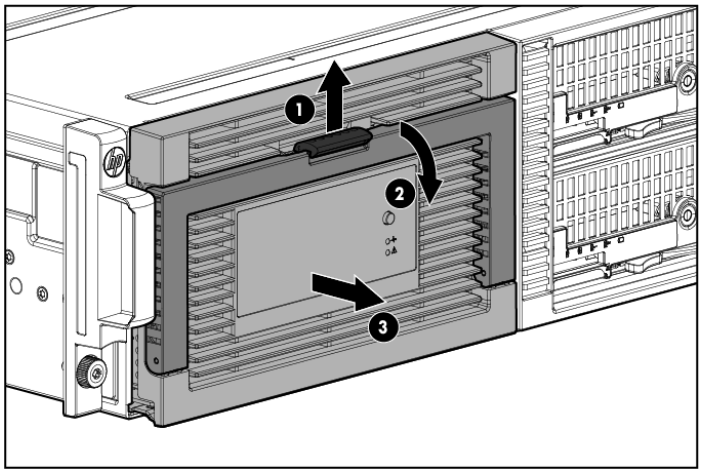
This section describes how to remove and replace the midplane board in the messaging system.

Removing the midplane board

To remove the midplane board:

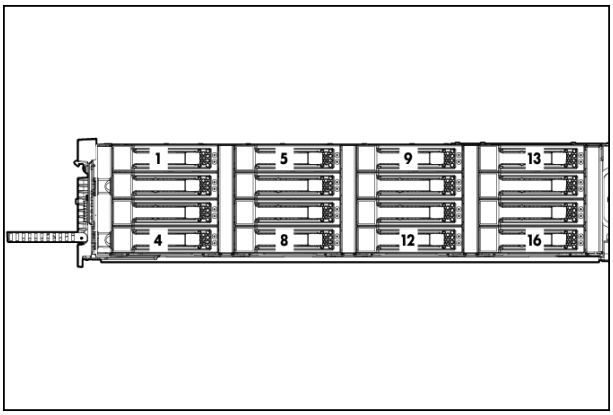
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Power off the system:
    1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
    2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
    3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
    4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
    5. Disconnect the power cables.
4. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



5. Label the hard drives.

NOTE: Use the drive labels provided with the replacement midplane board when removing the drives to ensure you replace the drives in the correct order.



6. Remove all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

7. Push the drive drawer back into the messaging system enclosure.
8. Label each server blade, and then remove both server blades.
9. Label the cables connected to the back of the enclosure so they can be returned to their original locations.
10. Unplug all cables from the back of the messaging system enclosure.
11. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

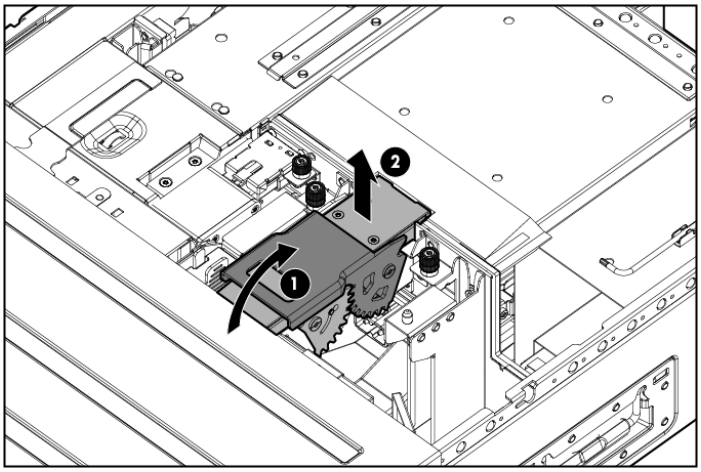
WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

12. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back panel off.
13. Remove all modules from the back of the enclosure.

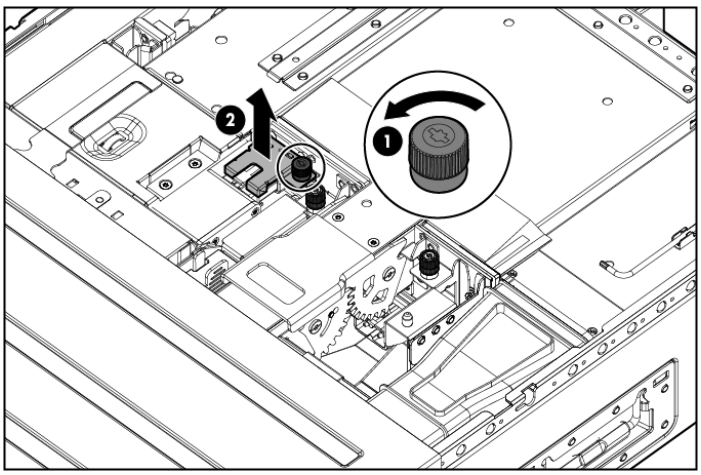
NOTE: Make a note of all module locations so they can be placed back into their original locations.

14. Open the release handle (1), and pull up to remove the server interposer board (2).

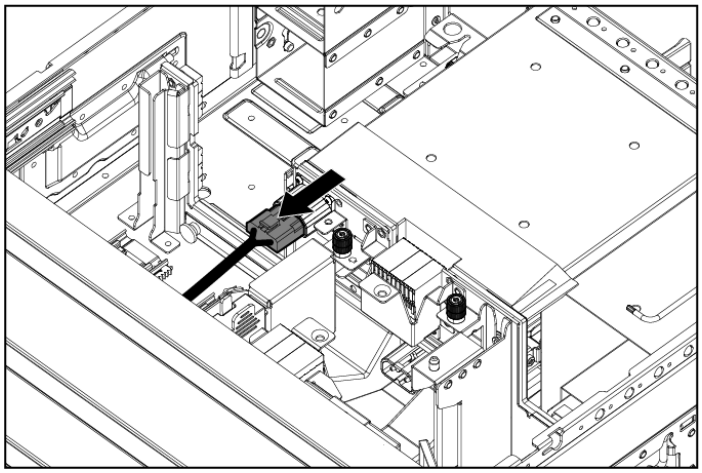
NOTE: This step may require significant force to accomplish.



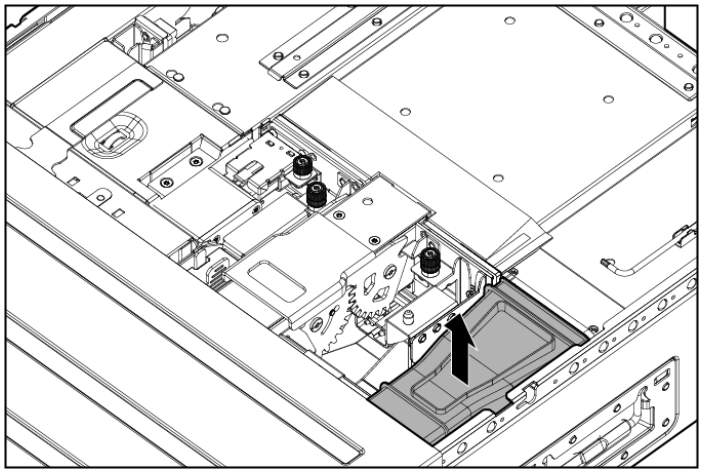
15. Pull the drawer handle down 90 degrees, and slide out the hard drive drawer.
16. Remove the plug bracket (2) from the coil power plug by removing the thumbscrew (1).



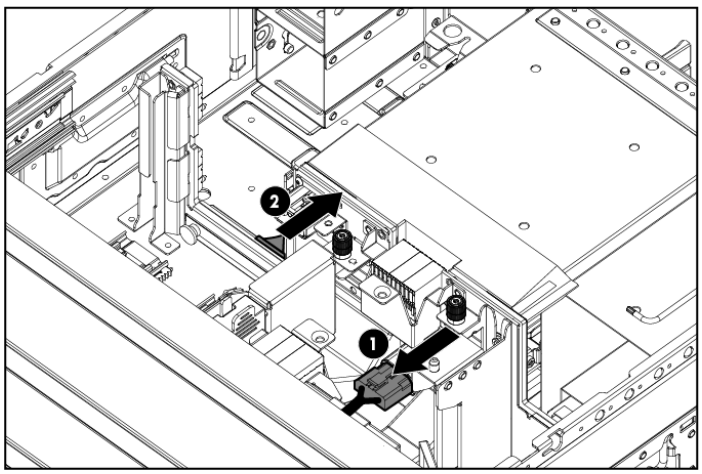
17. Unplug the coil power assembly from the midplane board.



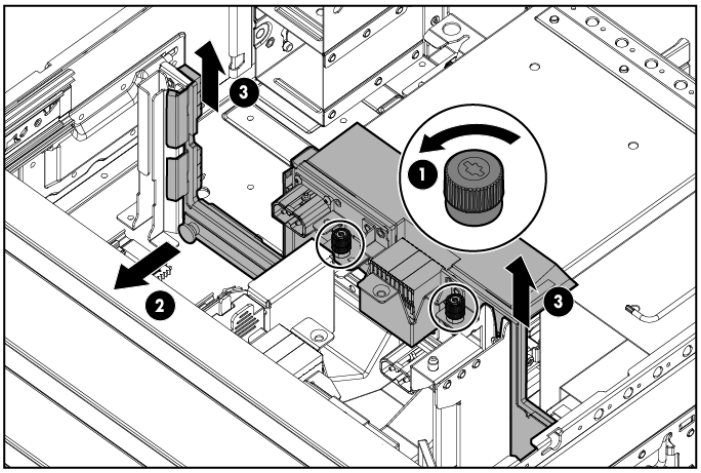
18. Extend the server blades.
19. Remove the server blade airflow baffle from inside the enclosure.



20. Unplug the power cable from the server blade midplane (1), and then unplug the rear UID PCA from the midplane board (2).



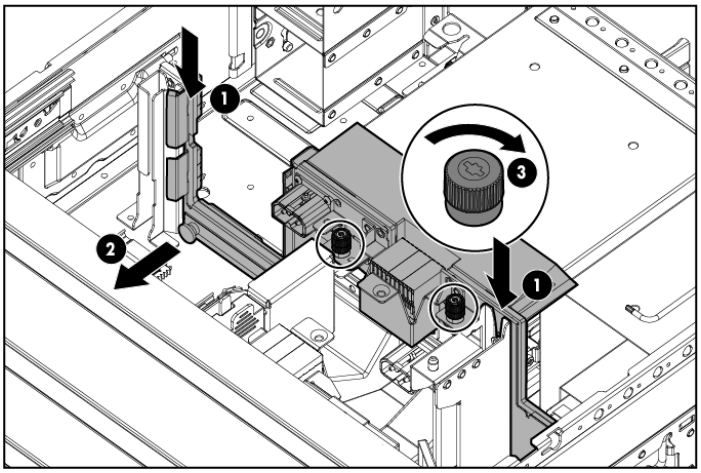
21. Loosen the two thumbscrews holding midplane board in place (1), pull the capacitive locking pin out of the midplane board (2), and then lift the midplane board out of the enclosure (3).



Replacing the midplane board

To replace the midplane board:

1. Pull the capacitive locking pin out while inserting the midplane board.
2. Install the replacement midplane board by placing the midplane board in the enclosure (1), push the capacitive locking pin into the midplane board (2), and then tighten the two thumbscrews holding the midplane board in place (3).

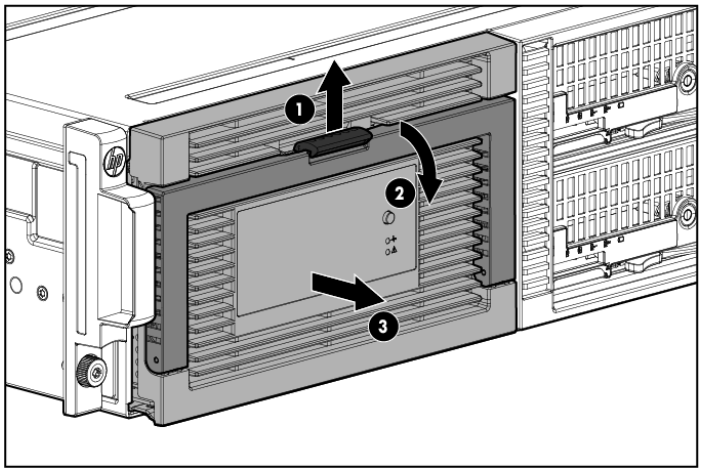


3. Plug the rear UID PCA into the midplane board.
4. Plug the power cable into the server blade midplane.
5. Partially insert the drive drawer.
6. Plug the coil power plug into the midplane board.
7. Reattach the coil power plug bracket.
8. Reinsert the server blade airflow baffles.
9. Reinstall the server interposer board.
10. Push the hard drive drawer back into the enclosure.
11. Replace the top back panel.
12. Reinsert all rear components in the enclosure.

13. Place the enclosure into the rack, and then tighten the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

14. Replace both server blades in their original bays.
15. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).
    3. Extend the hard drive drawer (3).



16. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

17. Push the hard drive drawer back into the messaging system enclosure.
18. Plug in all cables at the back of the messaging system enclosure, and ensure that all cables are returned to their original locations.
19. Power on the system by pressing the power button **On**.
20. Confirm the messaging system has resumed normal operations.

Removing and replacing a SAS cable

CAUTION: Remove only one cable at a time to prevent downtime.

IMPORTANT: Check the QuickSpecs for the device before you purchase and connect SAS cables to ensure that the cables do not exceed the maximum supported length. Only specific cable lengths were tested and approved for use with external expansion nodes.

IMPORTANT: Ensure that cabling in the back of the rack system does not interfere with system operation or maintenance. Bind cables loosely with cable ties and route the excess out of the way, along the side of the rack. When cables are tied together and routed down the side of the rack, system components and indicators are easily visible and accessible.

Removing the SAS cable

To remove the SAS cable:

1. Verify the failed component by checking for a LED status on the failed component.
2. Remove the SAS cable that connects the messaging system SAS I/O module to the switch.

Replacing the SAS cable

To replace the SAS cable:

1. Connect the SAS cable between the messaging system SAS I/O module and the switch.
2. Verify that the replacement SAS cable is working properly by checking the associated LED status.
3. Confirm that the messaging system has resumed normal operations.

Removing and replacing the SAS I/O module

IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the SAS I/O module in the messaging system.

Removing the SAS I/O module

To remove the SAS I/O module:

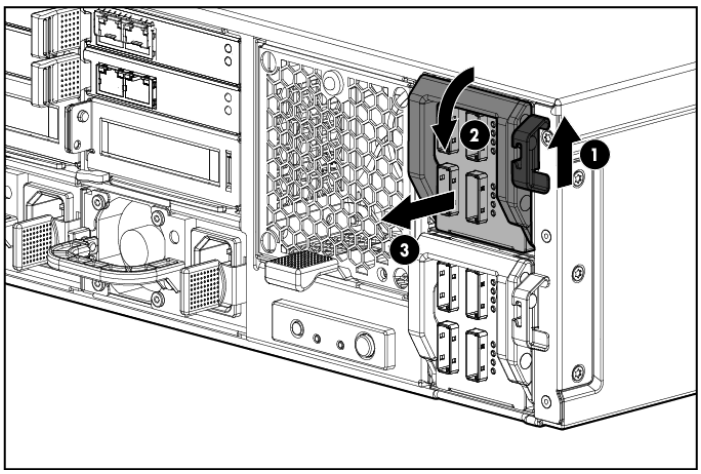
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a the blinking amber LED on the failed component.
3. Label the cables so they can be returned to their original locations.
4. Unplug all cables from the SAS I/O module.

IMPORTANT: The SAS I/O cables must be installed in the same slots from which they are removed or the system might fail.

5. Pull up on the SAS I/O Module release button.

NOTE: You may need to use significant force to accomplish this task.

6. Push down on the SAS I/O module lever (2), and then remove the failed SAS I/O module (1), (3).

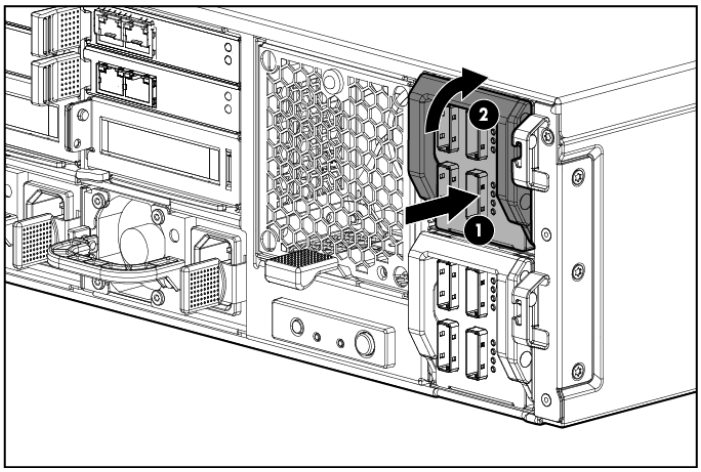


Replacing the SAS I/O module

To replace the SAS I/O module:

1. Insert the replacement SAS I/O module (1), and then push up on the SAS I/O module lever (2) until it locks into place.

NOTE: You may need to use significant force to accomplish this task.



2. Plug in all cables to the SAS I/O module.

IMPORTANT: You must install the SAS I/O cables in the same slots from which they are removed or the system might fail.

3. Verify that the replacement SAS I/O module is working properly by checking the associated LED status.
4. Confirm the firmware version.
5. Confirm the system has resumed normal operations.

NOTE: The green LED should turn on within 5 seconds after the new module is inserted in the system, which reflects the necessary time to boot the firmware.

Removing and replacing the drive fan module

IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

CAUTION: **You must replace the server fan module within 3 minutes or you might lose data.** The total time allowance is 3 minutes for replacing the driver module, which includes the removal of the original server fan module and installation of the replacement fan.

CAUTION: Removing a fan module significantly changes the air flow within the enclosure. Both fan modules must be installed for the enclosure to cool properly. The fan modules are not redundant to each other, and each module cools a different half of the enclosure. If a single fan module fails, leave it in place in the enclosure until a new fan is available to install. The fan modules have some built-in redundancy to keep operating until a replacement can be made. The remaining fan module speeds up and allows operation for a limited time, based on operating and environmental conditions. If a temperature threshold is exceeded, the enclosure automatically shuts down.

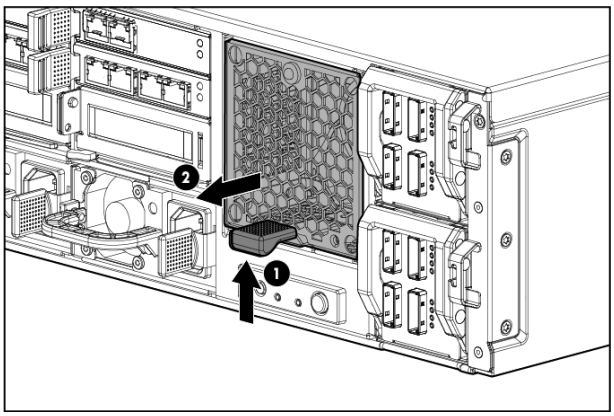
NOTE: There are two fan modules in the messaging system: one server fan module and one hard drive fan module.

This section describes how to remove and replace the drive fan module in the messaging system.

Removing the drive fan module

To remove the drive fan module:

1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Press upward on the drive fan module release lever (1).

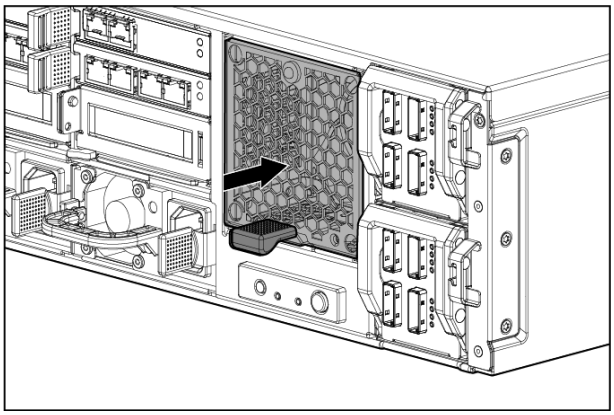


4. Remove the drive fan module (2).

Replacing the drive fan module

To replace the drive fan module:

1. Insert the replacement fan module.



2. Verify that the replacement component is working properly by checking the associated LED status.

3. Confirm that the messaging system has resumed normal operations.

NOTE: It should take approximately 15 seconds for the LED status to appear.

Removing and replacing the server fan module

CAUTION: **You must replace the server fan module within 3 minutes or you might lose data.** The total time allowance is 3 minutes for replacing the driver module, which includes the removal of the original server fan module and installation of the replacement fan.

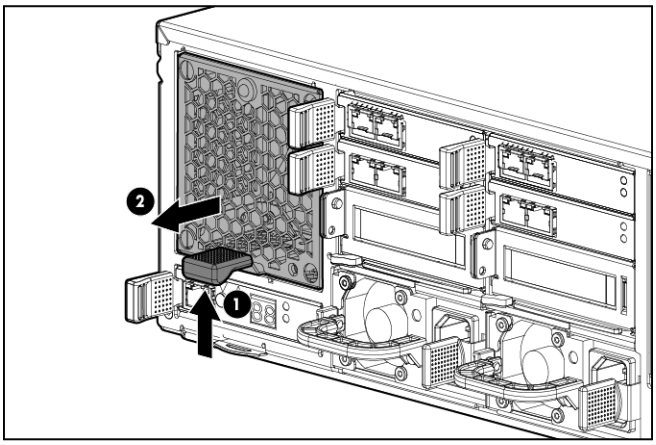
IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the server fan module in the messaging system.

Removing the server fan module

To remove the server fan module:

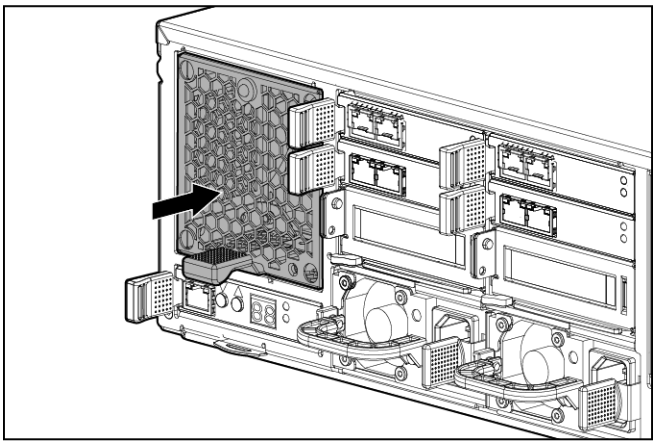
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Press the server fan module release lever up (1), and then remove the server fan module (2).



Replacing the server fan module

To replace the server fan module:

1. Insert the replacement fan module.



2. Verify that the replacement fan module is working properly by checking the associated LED status.
3. Confirm that the messaging system has resumed normal operations.

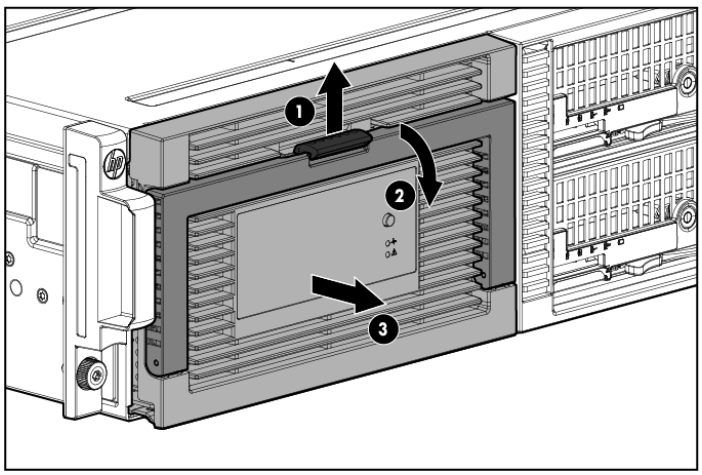
Removing and replacing the power UID button assembly

This section describes how to remove and replace the power UID button assembly in the messaging system.

Removing the power UID button assembly

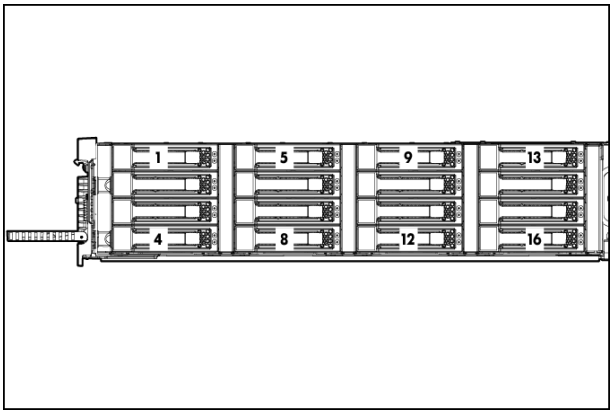
To remove the power UID button assembly:

1. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).



3. Label the hard drives.

NOTE: Use the drive labels provided with the replacement rear power UID button assembly when removing the drives to ensure you replace the drives in the correct order.



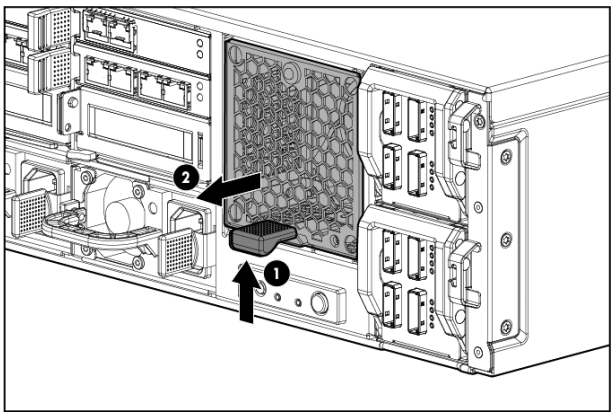
4. Remove all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

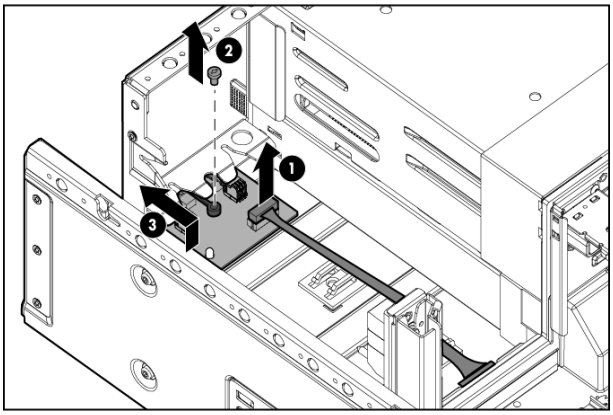
5. Push the drive drawer back into the messaging system enclosure.
6. Label each blade and then remove both server blades.
7. Label the cables and then unplug all cables from the back of the messaging system enclosure.
8. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

9. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back panel off.
10. Remove the hard drive fan module.



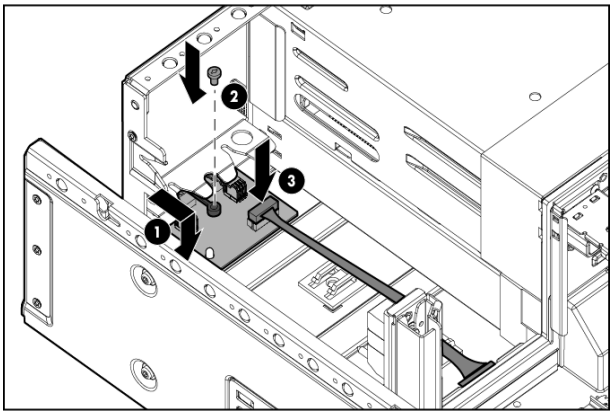
11. Unplug the cable from the power UID button assembly (1) and remove the screw from the power UID button assembly (2). Then remove the faulty power UID button assembly (3).



Replacing the power UID button assembly

To replace the power UID button assembly:

1. Install the replacement power UID button assembly (1) and replace the screw in the power UID button assembly (2). Then plug the cable into the power UID button assembly (3).

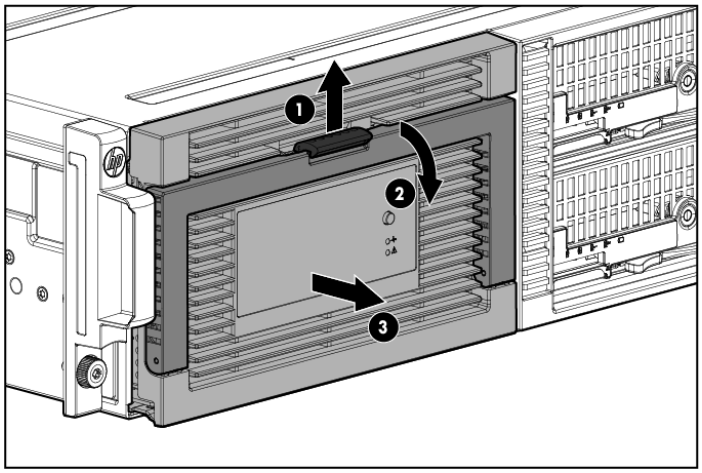


2. Push the hard drive drawer back in the messaging system enclosure.
3. Replace the hard drive fan module.
4. Replace the top back panel.
5. Place the messaging system into the rack and tighten the two retaining screws.

⚠ **WARNING!** The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

6. Replace the server blades in their original bays.
7. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



8. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

9. Push the drive drawer back into the messaging system enclosure.
10. Plug in all cables at the back of the messaging system enclosure into their original locations.
11. Power on the messaging system.
12. Confirm that the messaging system has resumed normal operations.

Removing and replacing the power supply

This section describes how to remove and replace the power supply in the messaging system.

Removing the power supply

To remove the power supply:

1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Remove the power cord from the power supply.
4. Press the power supply release lever to the left.
5. Remove the failed power supply.

Replacing the power supply

To replace the power supply:

1. Insert the replacement power supply.
2. Plug the power cord into the power supply.
3. Verify that the replacement component is working properly by checking the associated LED status.
4. Confirm that the messaging system has resumed normal operations.

Removing and replacing the HP StorageWorks Ethernet I/O module

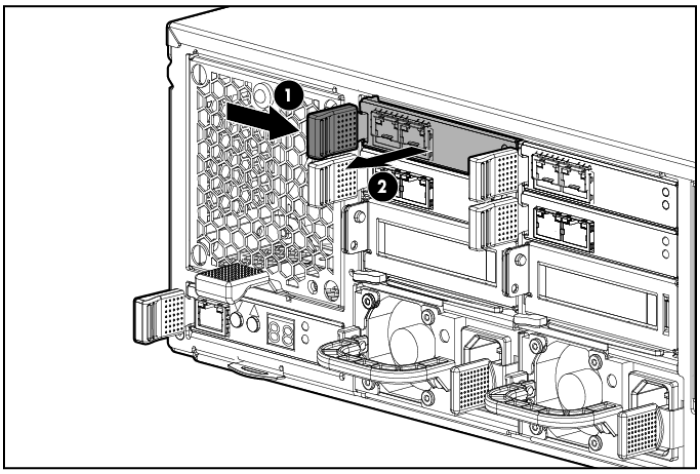
IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the HP StorageWorks Ethernet I/O module in the network or Mezz slots of the system enclosure.

Removing the HP StorageWorks Ethernet I/O module

To remove the HP StorgeWorks Ethernet I/O module in the network or Mezz slots of the system enclosure:

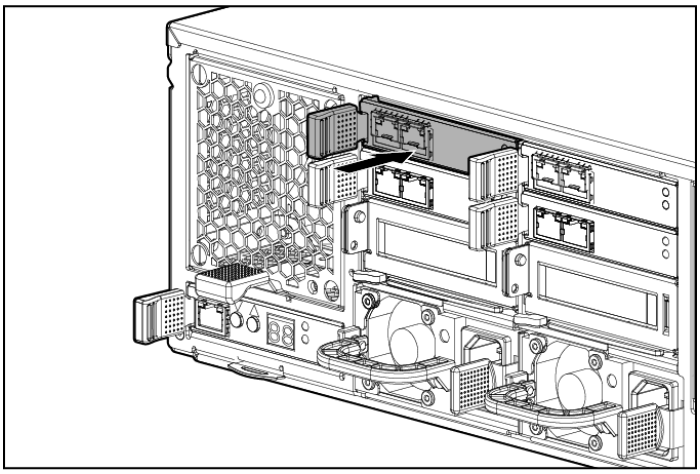
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Label the cables, and then unplug all cables from the HP StorageWorks Ethernet I/O module.
4. Press the module release mechanism to the right (1), and then remove the failed module (2).



Replacing the HP StorageWorks Ethernet I/O module

To replace the HP StorgeWorks Ethernet I/O module in the network or Mezz slots of the system enclosure:

1. Insert the replacement HP StorageWorks Ethernet I/O module.



2. Plug in all cables to the replacement module to their original locations.
3. Verify that the replacement component is working properly by checking the associated LED status.
4. Confirm the firmware version.

5. Confirm that the messaging system has resumed normal operations.

NOTE: It should take approximately 15 seconds for the LED status to display.

Removing and replacing the Mezzanine NIC

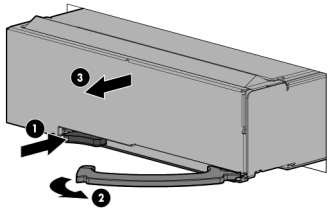
Removing the Mezzanine NIC

Optional Mezzanine cards enable network connectivity or provide Fibre Channel support.

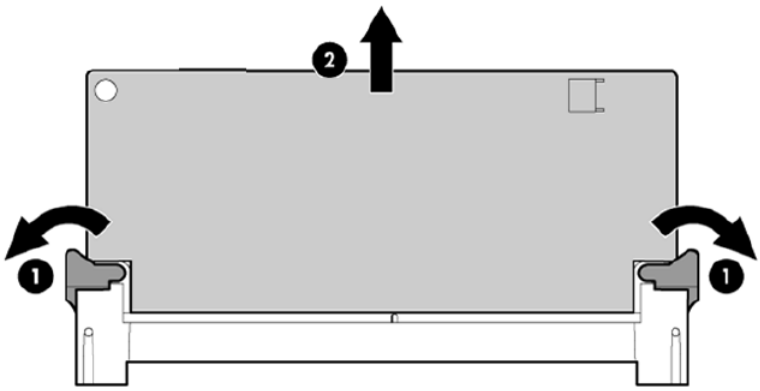
The Mezzanine NIC might have captive screws that are required to secure it to the server blade. When installing a Mezzanine NIC in this server blade, only two captive screws are required.

To remove the Mezzanine NIC:

1. Back up all data.
2. Close all applications.
3. Power off the server blade by pressing and releasing the blade power button. Verify the server blade is shut down before continuing.
4. Power off the external expansion nodes by pressing and holding the power button at the back, and then power off the enclosure by pressing and holding the power button at the back of the enclosure.
5. Push the button to release the handle (1), pull the handle toward you (2), and then remove the server blade from the enclosure (3).



6. Press the release button on the access panel and slide the access panel to the left to remove the access panel. The Mezzanine NIC is under the controller card.
7. Since the original cache module is connected to a capacitor pack, observe the cache module LEDs ()Figure 14 (page 55).
   - If the amber LED is solid, data transfer to the flash device on the cache module is in progress. Do not remove the cache module until the amber LED is off, and then continue with the next step.

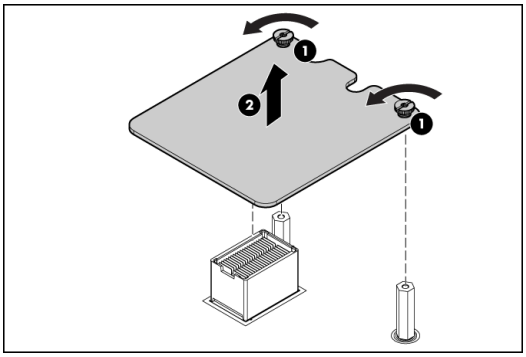


   - If the amber LED is not lit, proceed to the next step.

8. Open the ejector latches (1) on each side of the cache module slot.

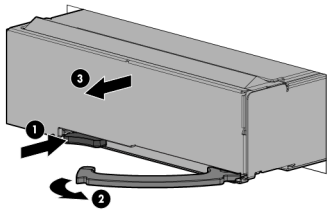
   Typically, opening the ejector latches ejects the cache module automatically. If the module does not eject automatically after you open the ejector latches, remove the cache module (2) by grasping only the edges.

9. Remove the cache module and the capacitor from the blade.

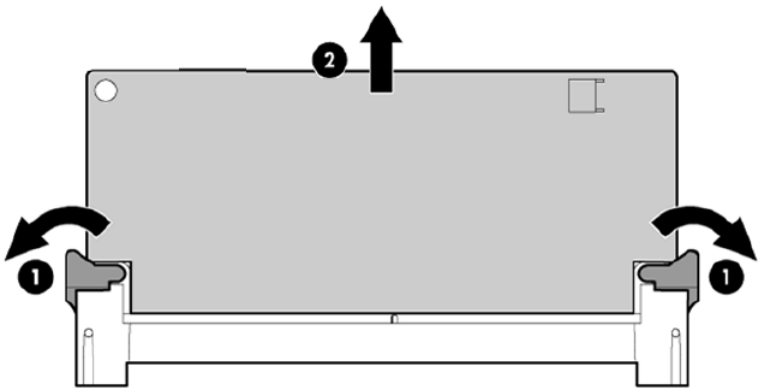


10. The Mezzanine NIC is underneath the controller card. Remove the controller card by loosening the captive screws (1), and then remove the Mezzanine NIC (2).

1. Back up all data.
2. Close all applications.
3. Power off the server blade by pressing and releasing the blade power button. Verify the server blade is shut down before continuing.
4. Power off the external expansion nodes by pressing and holding the power button at the back, and then power off the enclosure by pressing and holding the power button at the back of the enclosure.
5. Push the button to release the handle (1), pull the handle toward you (2), and then remove the server blade from the enclosure (3).



6. Press the release button on the access panel and slide the access panel to the left to remove the access panel. The Mezzanine NIC is under the controller card.
7. Since the original cache module is connected to a capacitor pack, observe the cache module LEDs ()Figure 14 (page 55).
   - If the amber LED is solid, data transfer to the flash device on the cache module is in progress. Do not remove the cache module until the amber LED is off, and then continue with the next step.

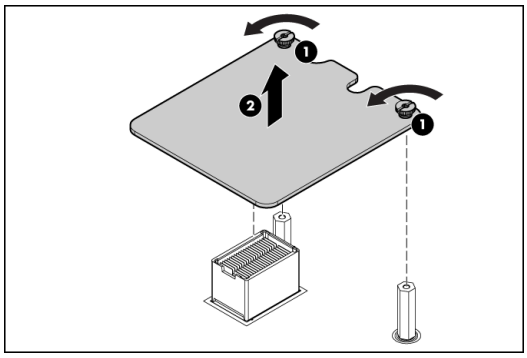


- If the amber LED is not lit, proceed to the next step.

8. Open the ejector latches (1) on each side of the cache module slot.

   Typically, opening the ejector latches ejects the cache module automatically. If the module does not eject automatically after you open the ejector latches, remove the cache module (2) by grasping only the edges.

9. Remove the cache module and the capacitor from the blade.

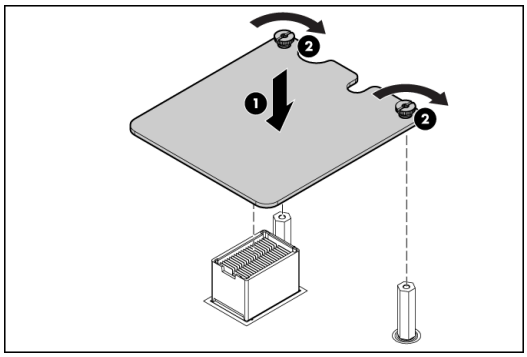


10. The Mezzanine NIC is underneath the controller card. Remove the controller card by loosening the captive screws (1), and then remove the Mezzanine NIC (2).

Replacing the Mezzanine NIC

To replace the Mezzanine NIC:

1. Install the Mezzanine NIC , press down on the connector to seat the board (1), and then tighten the captive screws (2).



2. Reinstall the controller card, and then Install the access panel.
3. Install the server blade in the enclosure.

4. Confirm the firmware version.

NOTE: You must reboot the storage solution after updating Mezzanine NIC and server blade firmware.

Removing and replacing the PCIe module (with card)

IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the PCIe module (with card) in the messaging system.

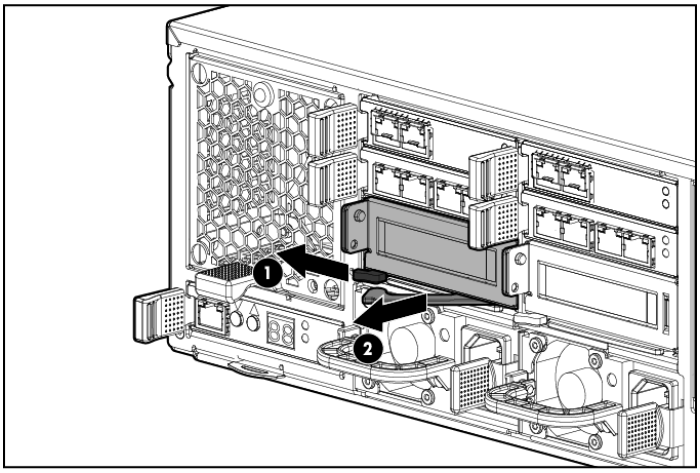
Removing the PCIe module

To remove the PCIe module:

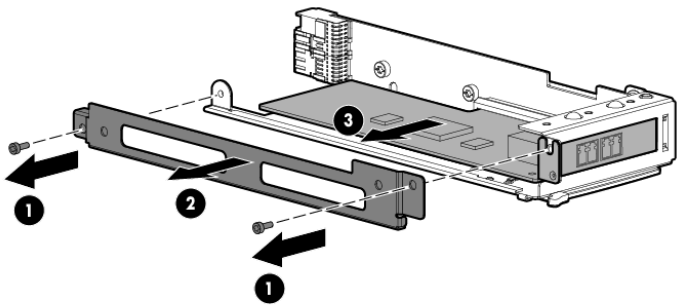
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Power off the appropriate server blade associated with the PCIe module that is being removed.

CAUTION: Be sure to power off the server **before** removing the PCIe module.

4. Label the cables so they can be returned to their original locations.
5. Unplug all cables from the PCIe module.
6. Press the PCIe module release mechanism to release the handle (1), and then pull the handle to remove the PCIe module from the system (2).



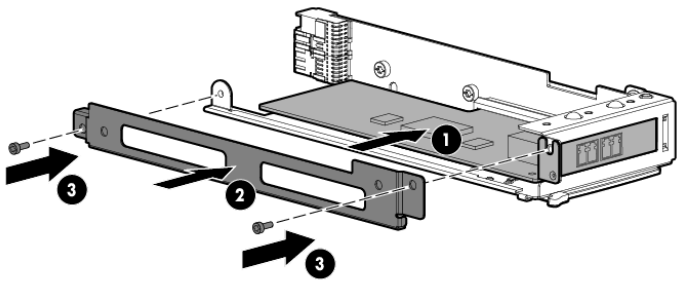
7. Remove the two screws from the bracket of the failed PCIe module (1), remove the bracket (2), and then remove the PCIe card from the failed module (3).



Replacing the PCIe module

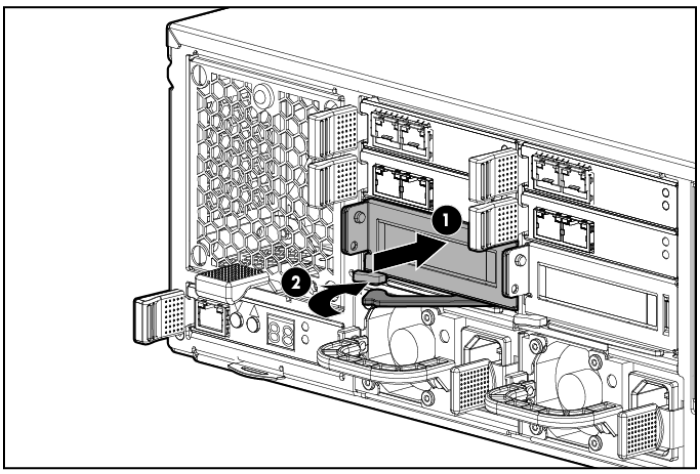
To replace the PCIe module:

1. Install the PCIe card in the replacement module (1), replace the bracket (2), and then reinsert the two screws into the bracket of the replacement module (3).



2. Insert the replacement PCIe module into the system (1), and lock the release lever (2).

NOTE: The PCIe module should be inserted with the lever in the open position.



3. Plug in all cables to the PCIe module in their original locations.
4. Power on the server blade by pressing the power button **On**.

5. Verify that the replacement component is working properly by checking the associated LED status.
6. Confirm the system has resumed normal operations.

Removing and replacing the Enclosure Manager Unit

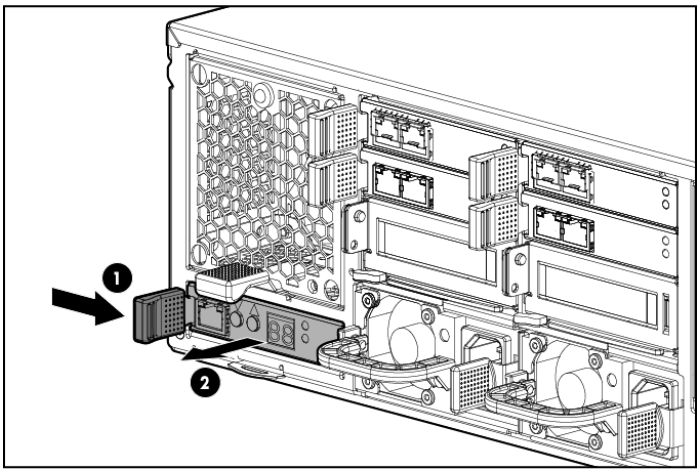
IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the Enclosure Manager Unit in the messaging system.

Removing the Enclosure Manager Unit module

To remove the Enclosure Manager Unit module:

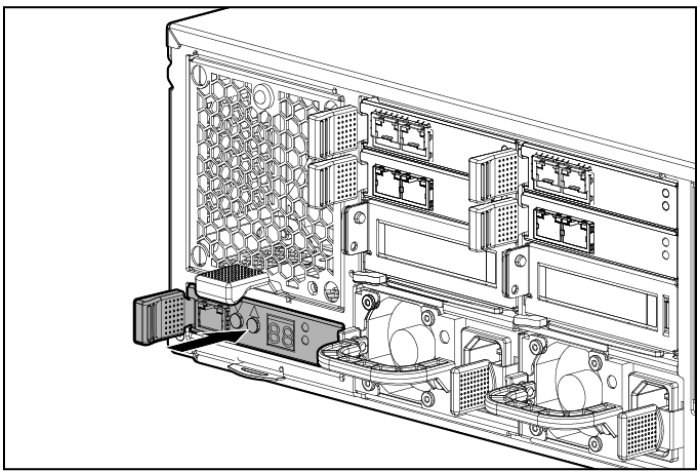
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Unplug any cables from the Enclosure Manager Unit module.
4. Press the Enclosure Manager Unit module release lever to the right (1), and then remove the Enclosure Manager Unit module (2).



Replacing the Enclosure Manager Unit module

To replace the Enclosure Manager Unit module:

1. Insert the replacement Enclosure Manager Unit module and ensure the release lever locks in place for module installation.



2. Plug the cables back into the Enclosure Manager Unit module.
3. Verify that the new component is working properly by checking the associated LED status.
4. Confirm the firmware version.
5. Obtain an IP address.

IMPORTANT: Some of the configuration information is automatically repopulated, but you must reconfigure the network settings and password.

6. Confirm the system has resumed normal operations.

NOTE: This may take approximately 1 minute, or the time it takes for the Enclosure Manager to boot.

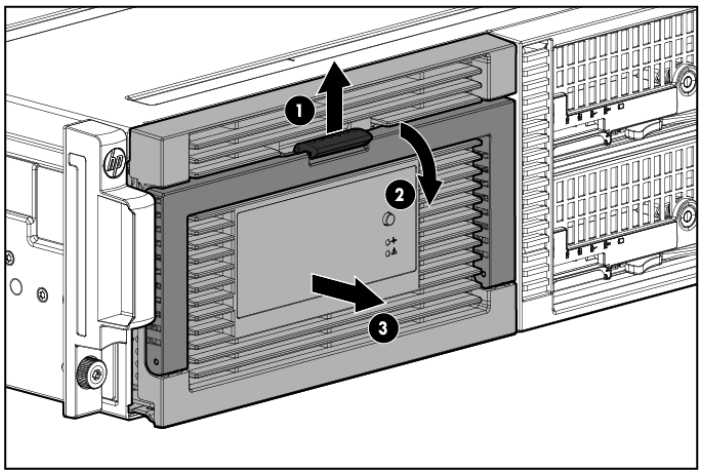
Removing and replacing the server blade backplane

This section describes how to remove and replace the server blade backplane in the messaging system.

Removing the server blade backplane

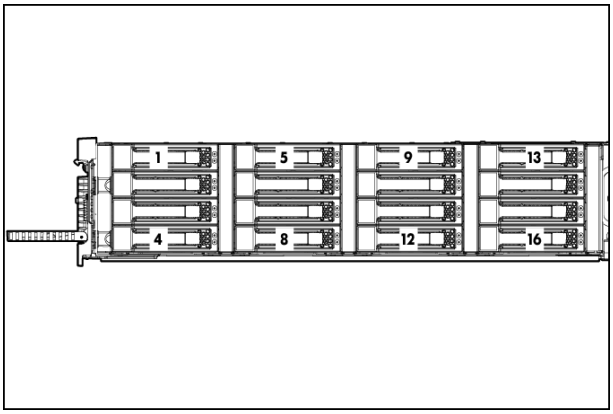
To remove the server blade backplane:

1. Use System Manager to identify the failed component.
2. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
3. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).



4. Label the hard drives.

NOTE: Use the drive labels provided with the replacement server blade backplane when removing the drives to ensure you replace the drives in the correct order.



5. Remove all hard drives.

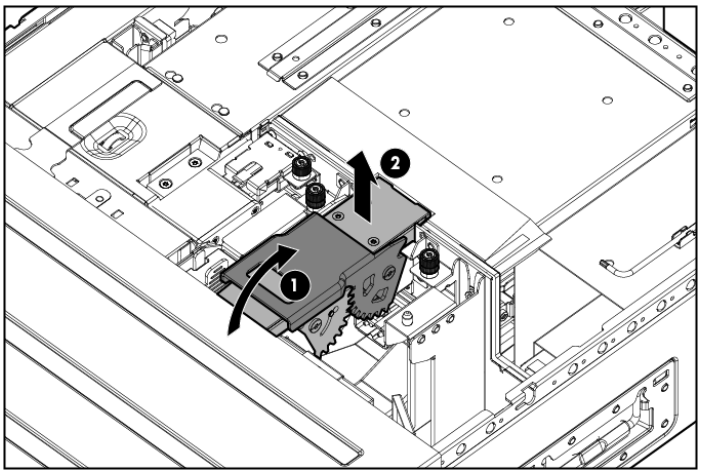
IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

6. Push the drive drawer back into messaging system enclosure.
7. Label each server blade, and then remove both server blades.
8. Label the cables on the back of the messaging system enclosure so they can be returned to their original locations.
9. Unplug all cables from the back of the messaging system enclosure.
10. Unscrew the retaining screws from the bezel ears and then remove the enclosure from the rack.

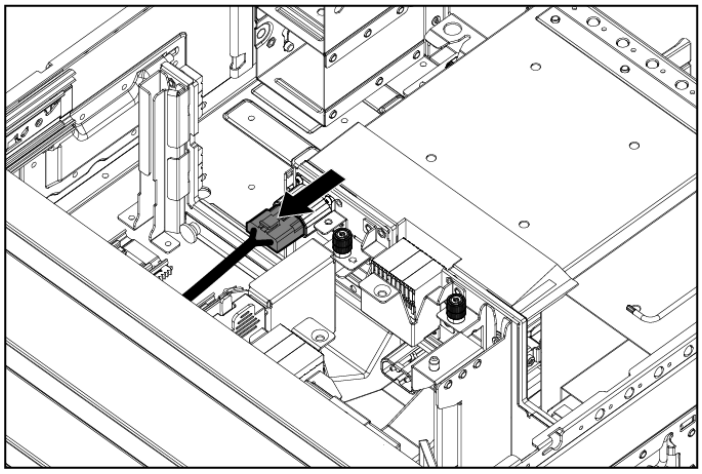
WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

11. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back panel off.
12. Remove all modules from the back of the enclosure.
13. Open the release handle (1), and pull up to remove the server interposer board (2).

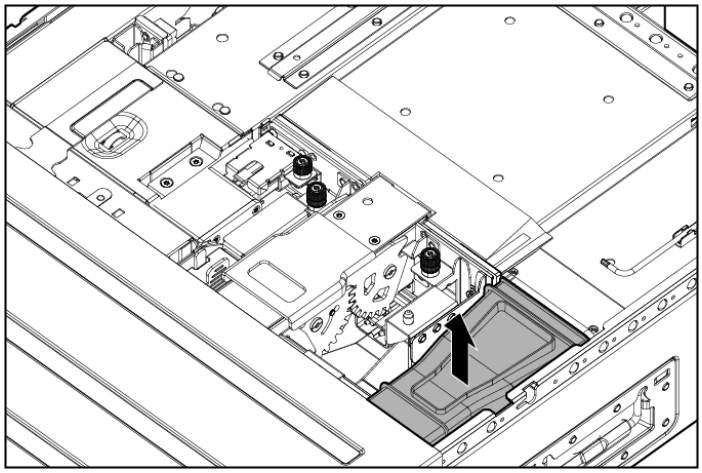
NOTE: This step may require significant force to accomplish.



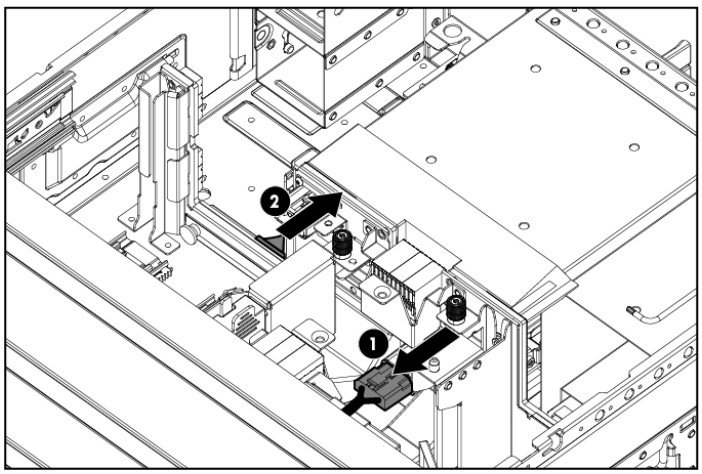
14. Pull the drawer handle down 90 degrees, and slide out the hard driver drawer.
15. Remove the plug bracket (2) from the coil power plug by removing the thumbscrew (1).
16. Unplug the coil power assembly from the midplane board.



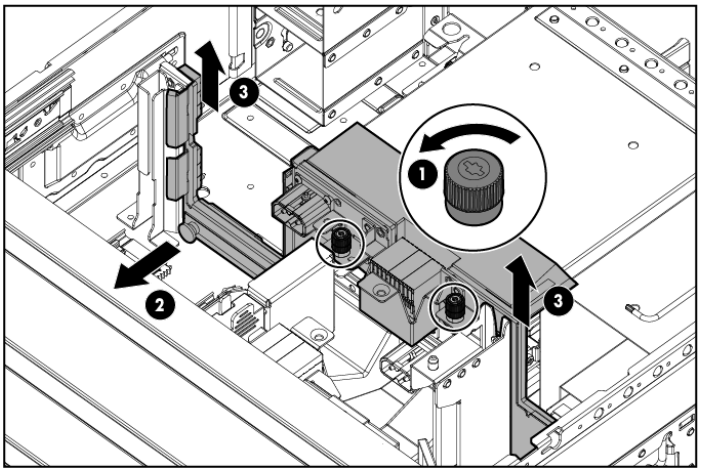
17. Extend the server blades.
18. Remove the server blade airflow baffle from inside the enclosure.



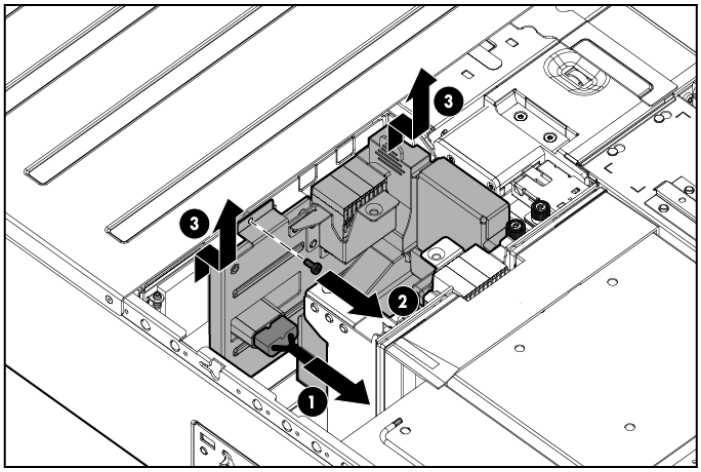
19. Unplug the power cable from the server blade midplane (1), and then unplug the rear UID PCA from the midplane board (2).



20. Loosen the two thumbscrews holding the midplane board in place (1), pull the capacitive locking pin out of the midplane board (2), and then lift the midplane board out of the enclosure (3).



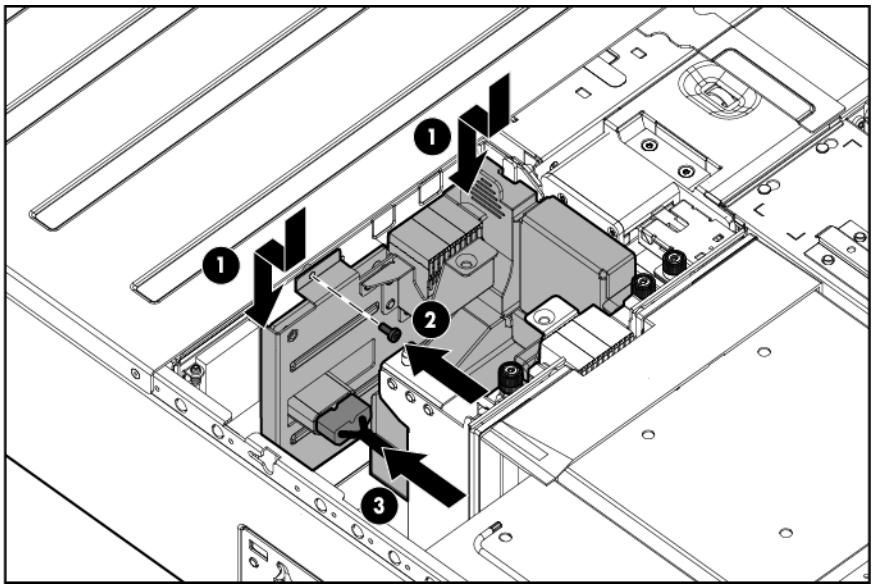
21. Remove the small baffle from beside the server blade backplane by pinching the tabs and lifting the small baffle out of the enclosure.
22. Remove the large baffle from the bottom of the enclosure.
23. Unplug the power cable from the server backplane by pinching the plug release mechanism (1), remove the screw (2), and then remove the server blade backplane from the enclosure (3).



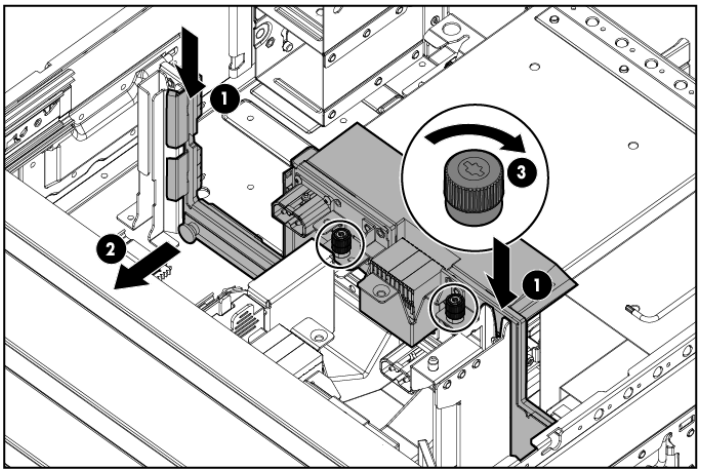
Replacing the server blade backplane

To replace the server blade backplane:

1. Install the replacement server blade backplane (1), replace the screw (2), and then plug in the power cable (3).



2. Replace the large baffle on the bottom of the enclosure.
3. Replace the small baffle beside the server blade backplane.
4. Pull the capacitive locking pin out while inserting the midplane board.
5. Install the replacement midplane board by placing the midplane board enclosure (1), push the capacitive locking pin into the midplane board (2), and then tighten the two thumbscrews holding the midplane board in place (3).

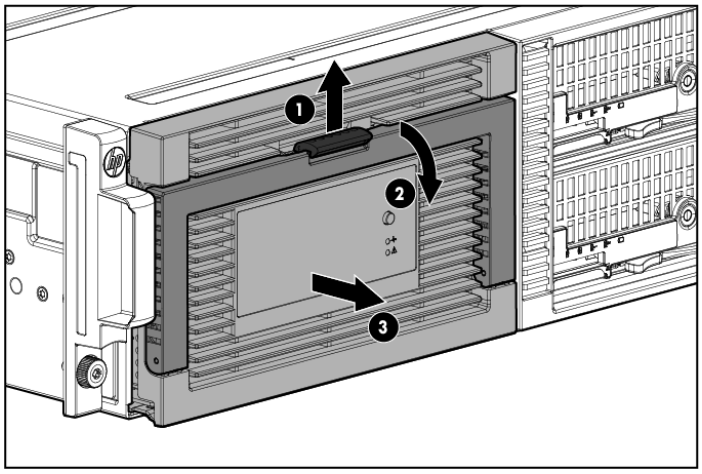


6. Plug the rear UID PCA into the midplane board.
7. Plug the power cable into the server blade backplane.
8. Partially insert the drive drawer.
9. Plug the coil power plug into the midplane board.
10. Reattach the coil power plug bracket.
11. Reinsert the server blade airflow baffles.
12. Reinstall the server interposer board.
13. Push the drive drawer back into the enclosure.
14. Replace the top back panel.
15. Reinsert all rear components.

16. Place the enclosure into the rack, and then secure the enclosure by tightening the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system from the rack.

17. Replace both server blades in their original bays.
18. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).
    3. Extend the hard drive drawer (3).



19. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

20. Push the drive drawer back into the messaging system enclosure.
21. Plug in all cables at the back of the messaging system enclosure, and ensure that all cables are returned to their original locations.
22. Power on the system by pressing the power button **On**.
23. Confirm the messaging system has resumed normal operations.

Removing and replacing the server airflow baffle

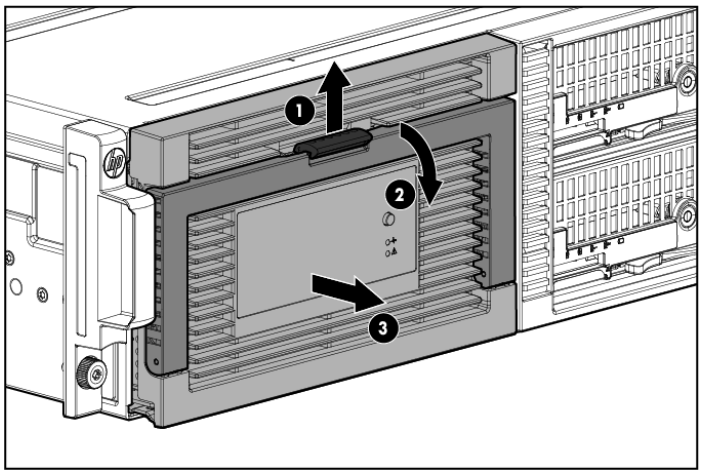
IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

This section describes how to remove and replace the server airflow baffle in the messaging system.

Removing the server airflow baffle

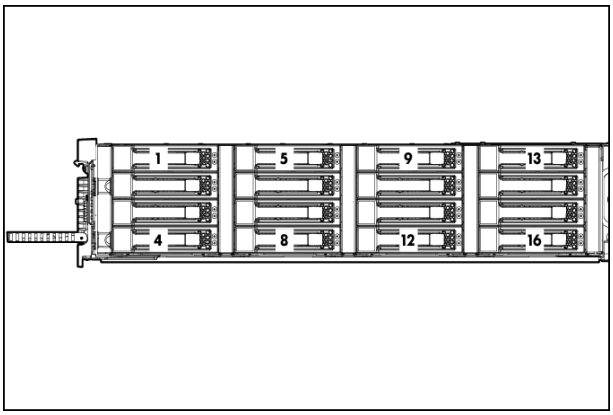
To remove the server airflow baffle:

1. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).



3. Label the hard drives.

NOTE: Use the drive labels provided with the replacement server airflow baffle when removing the drives to ensure you replace the drives in the correct order.



4. Remove all hard drives.

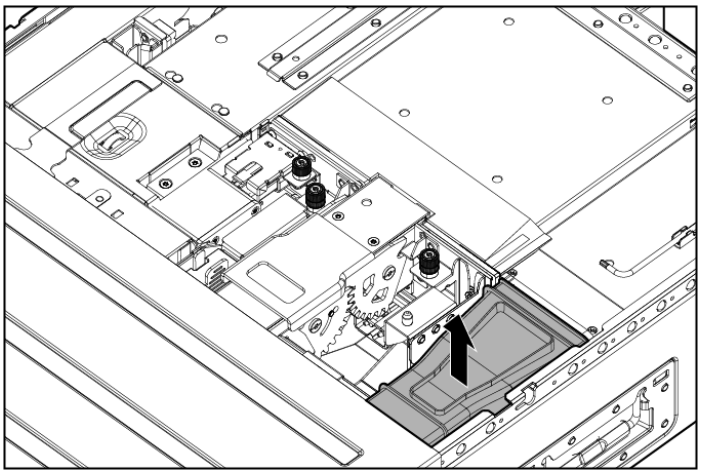
IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

5. Push the drive drawer back into the messaging system enclosure.

6. Label each server blade, and then remove both server blades.
7. Label and then unplug all cables from the back of the messaging system enclosure.
8. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

⚠ **WARNING!** The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

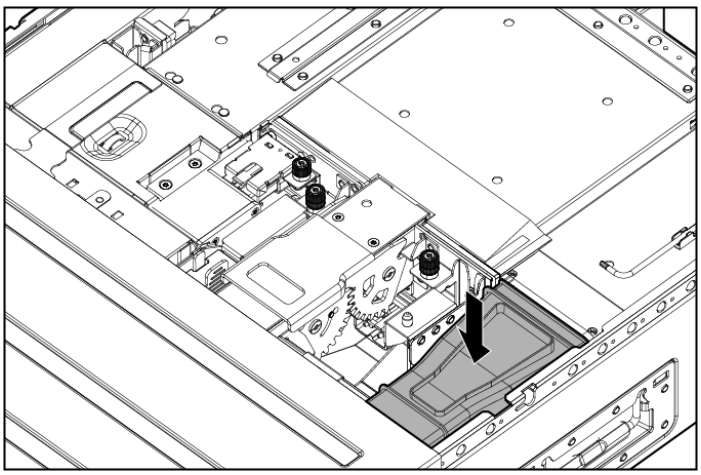
9. Remove the top back panel by pressing the release button and lifting the latch to slide the top back panel off.
10. Remove the server blade airflow baffle from inside the enclosure.



Replacing the server airflow baffle

To replace the server airflow baffle:

1. Install the replacement server blade airflow baffle.

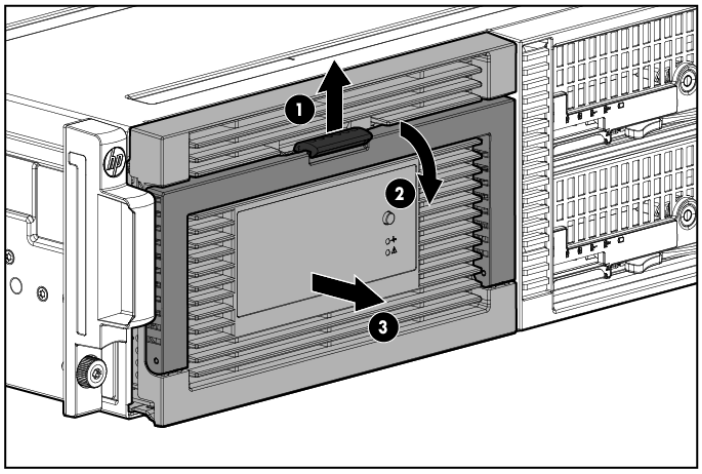


2. Reinstall the top back panel.
3. Place the enclosure back in the rack, and tighten the two retaining screws.

⚠ **WARNING!** The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

4. Replace the server blades into their original bays.
5. Extend the hard drive drawer:

1. Press upward on the release button on the hard drive drawer (1).
2. Pull the drawer handle down 90 degrees (2).
3. Extend the hard drive drawer (3).



6. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

7. Push the drive drawer back into the messaging system enclosure.
8. Plug in all cables at the back of the messaging system enclosure, and ensure that all cables are returned to their original locations.
9. Power on the messaging system.
10. Confirm the messaging system has resumed normal operations.

Removing and replacing the front bezel (standard)

This section describes how to remove and replace the front bezel in the messaging system.

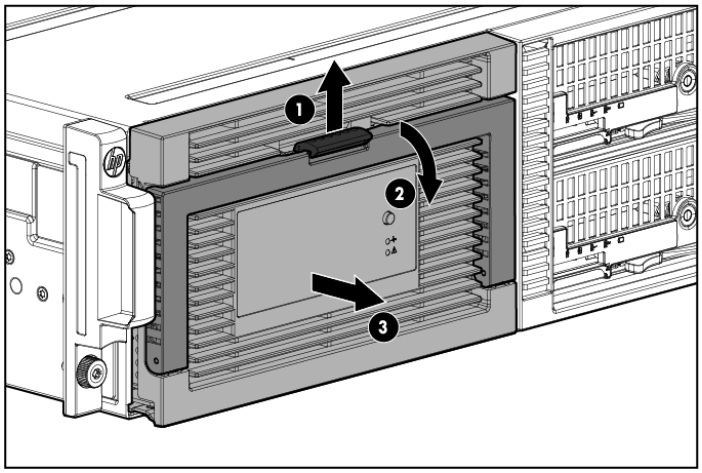
NOTE: Use the full procedure if you are not able to reach all of the screws due to rack positioning.

Removing the front bezel

To remove the front bezel in the rack:

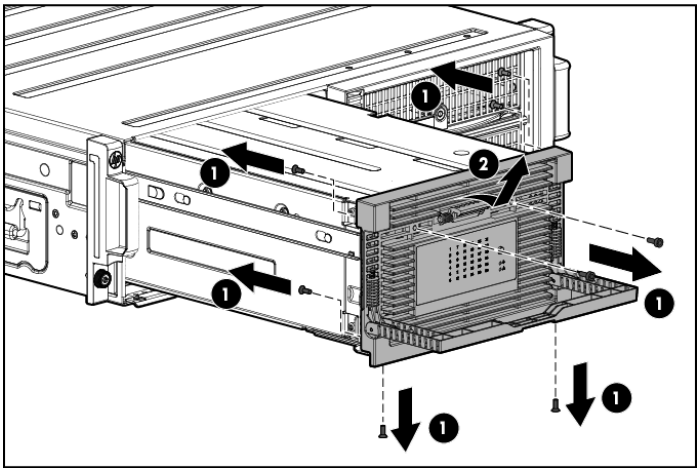
1. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Unplug all cables from back of the messaging system.
3. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



4. Remove all eight screws from the front bezel (1), and then lift the front bezel up and out to remove the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.

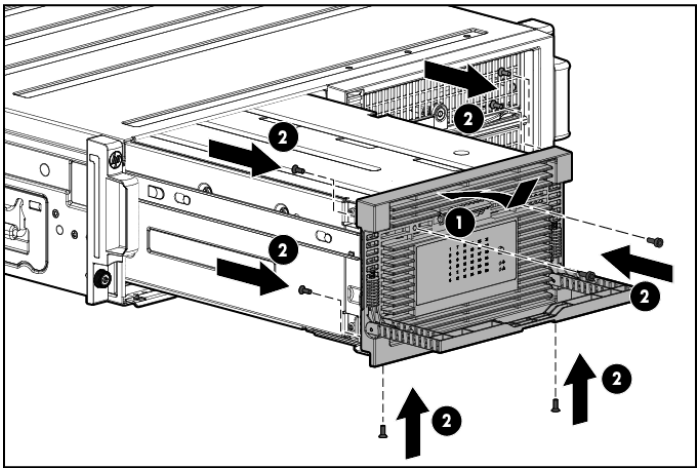


Replacing the front bezel

To replace the front bezel in the rack:

1. Install the replacement front bezel with the handle at a 90 degree angle making sure the bottom pins are aligned with the bottom holes (1), and replace the screws into the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.



2. Push the drive drawer back into the messaging system enclosure.
3. Power on the messaging system.
4. Verify that the replacement component is working properly by checking the associated LED status.
5. Confirm the system has resumed normal operations.

Removing and replacing the front bezel (full)

NOTE: This full procedure is only required if all screws are not accessible due to the position of the messaging system in the rack.

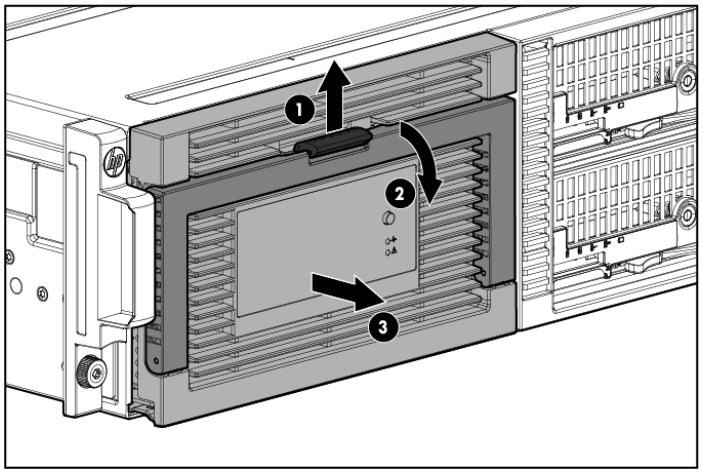
This section describes how to fully remove and replace the front bezel in the messaging system.

Removing the front bezel (full)

To remove the front bezel:

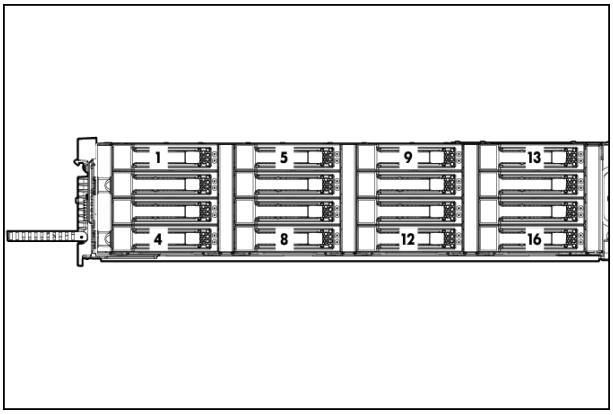
1. To power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



3. Label the hard drives.

NOTE: Use the drive labels provided with the replacement front bezel (full) to label the hard drives to ensure you replace the drives in the correct order.



4. Remove all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

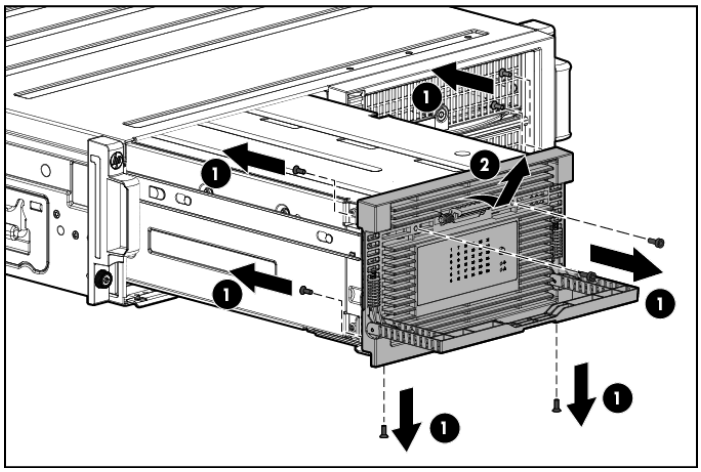
5. Push the drive drawer back into the messaging system enclosure.
6. Label each server blade and then remove both server blades.
7. Unplug all cables from the back of the messaging system enclosure.

8. Remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

9. Remove all eight screws from the front bezel and pull the handle down 90 degrees (1). Then lift the front bezel up and out to remove the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.

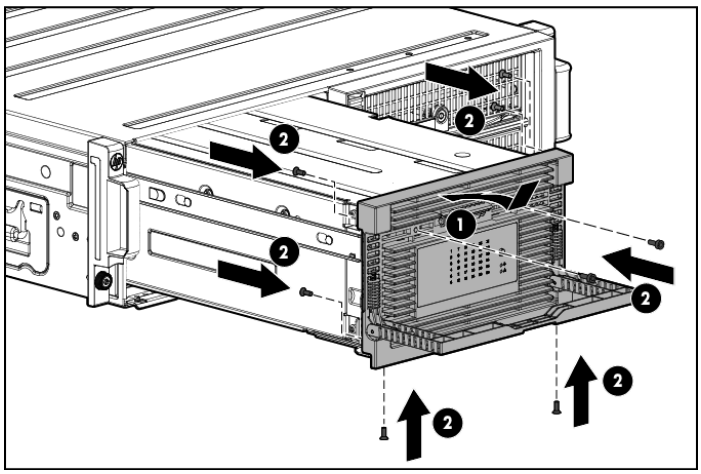


Replacing the front bezel (full)

To replace the front bezel:

1. Install the replacement front bezel with the handle at a 90 degree angle, making sure the bottom pins are aligned with the bottom holes (1), and replace the screws in the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.

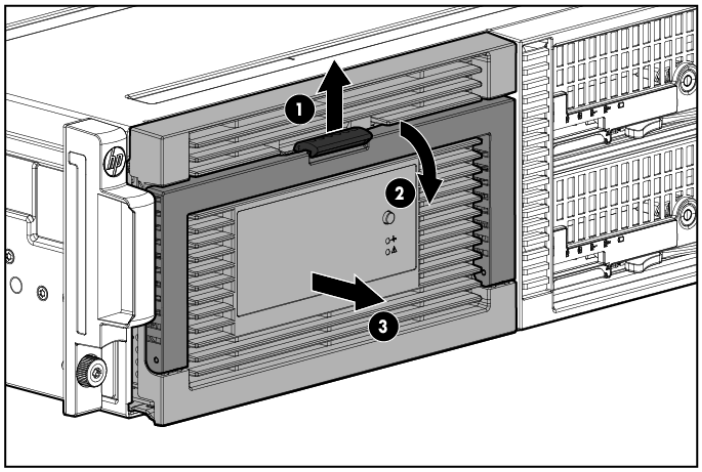


2. Close the drive handle.
3. Push the drive drawer back into the messaging system enclosure.

4. Place the enclosure into the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

5. Replace the server blades.
6. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).



7. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure you replace the drives in the correct order.

8. Push the drive drawer back into the messaging system enclosure.
9. Plug the cables into the back of the messaging system enclosure, ensuring that all cables are returned to their original locations.
10. Power on the messaging system.
11. Confirm the messaging system has resumed normal operations.

Removing and replacing the front LED display board in the rack (standard)

NOTE: If you are not able to access all of the screws due to the enclosure position in the rack, use the full procedure instructions.

This section describes how to remove and replace the front LED display board in the rack on the messaging system.

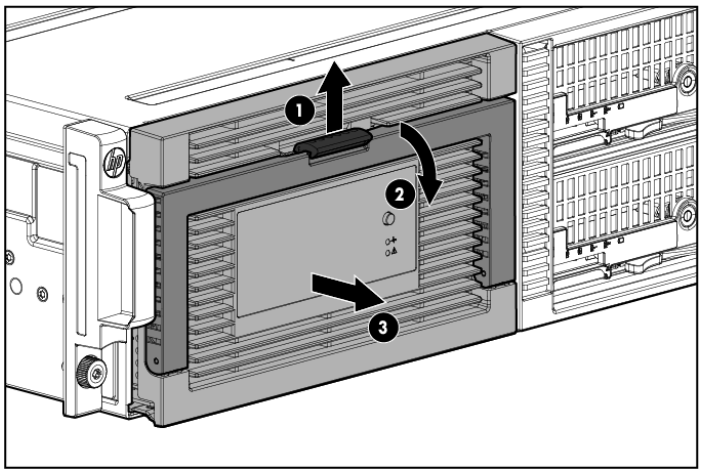
Removing the front LED display board in the rack

To remove the front LED display board in the rack:

1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.

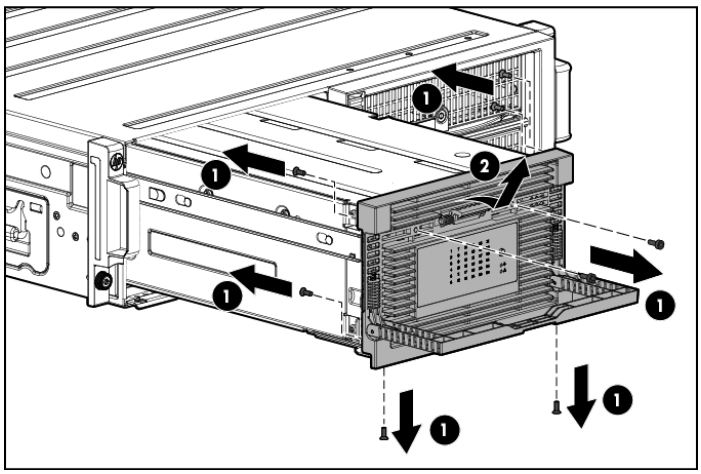
2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
5. Disconnect the power cables.

4. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).

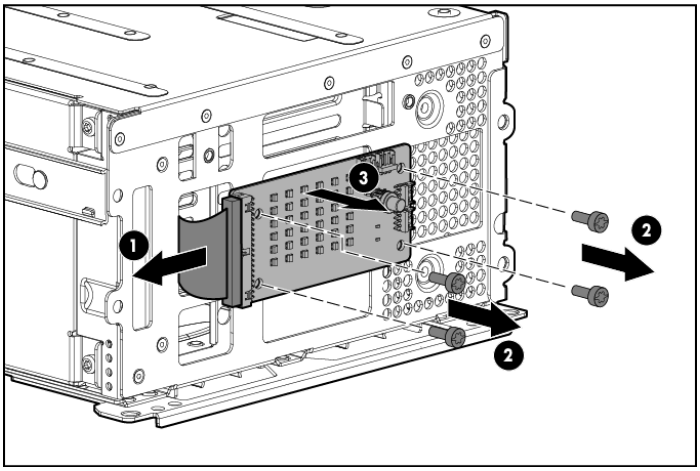


5. Remove all eight screws from the front bezel (1). Then lift the front bezel up and out to remove the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.



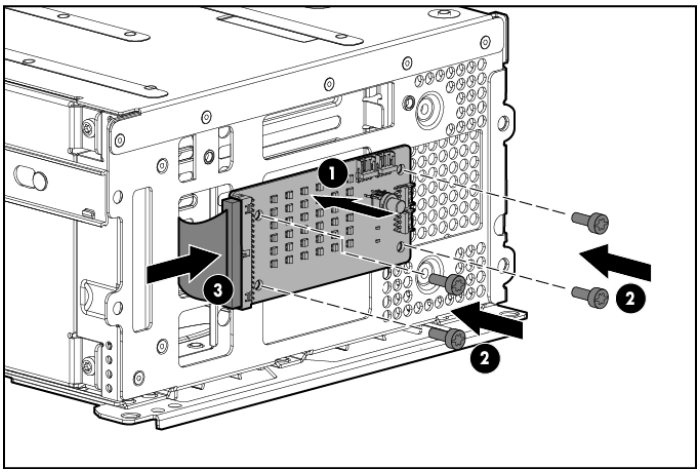
6. Disconnect the LED display board from the drive backplane by pinching the ends of the LED display board together (1). Remove the four screws from the LED display board (2). Then, remove the LED display board from the drive drawer (3).



Replacing the front LED display board in the rack

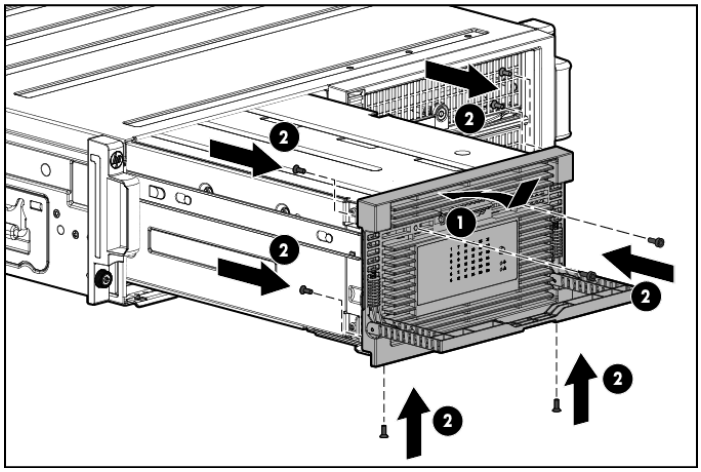
To replace the front LED display board in the rack on the messaging system:

1. Install the replacement LED display board (1), replace the four LED display board screws (2), and then reconnect the LED display board to the drive drawer (3).



2. Replace the front bezel with the handle at a 90 degree angle, making sure the bottom pins are aligned with the bottom holes (1). Then, replace the front bezel screws (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.



3. Close the drive handle.
4. Push the drive drawer back into the messaging system enclosure.
5. Power on the messaging system by pressing the power button **On**.
6. Verify that the replacement component is working properly by checking the associated LED status.
7. Confirm that the messaging system has resumed normal operations.

Removing and replacing the front LED display board (full)

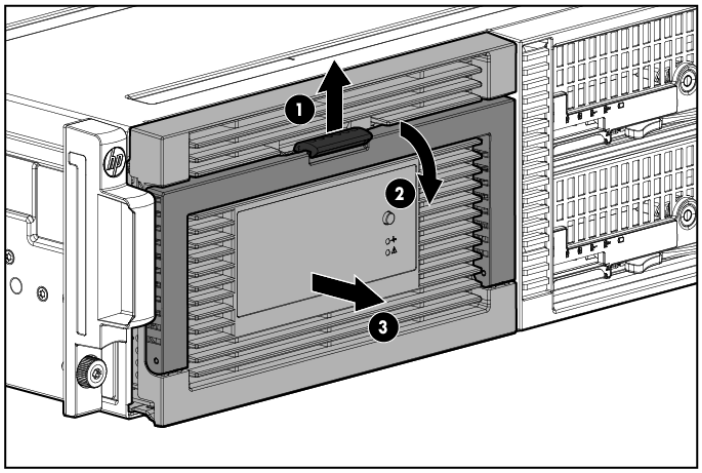
This section describes how to remove and replace the front LED display board (full) in the messaging system.

Removing the front LED display board (full)

To remove the front LED display board (full):

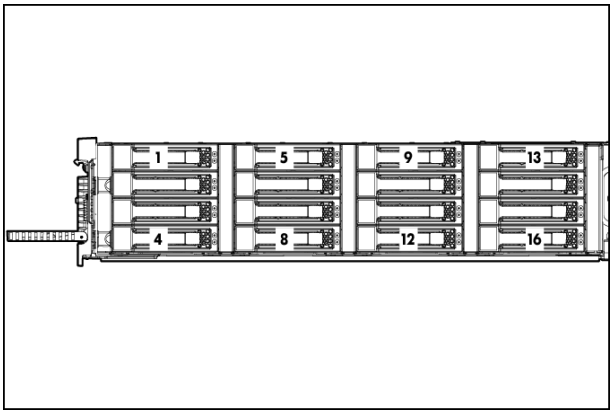
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Power off the system:
    1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
    2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
    3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
    4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
    5. Disconnect the power cables.
4. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



5. Label the hard drives.

NOTE: Use the drive labels provided with the replacement LED display board (full) to label the hard drives to ensure you replace the drives in the correct order.



6. Remove all hard drives.

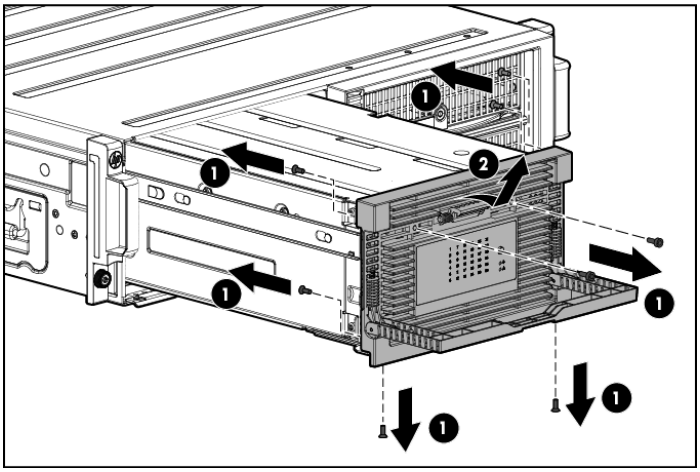
IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels provided with the messaging system when removing the drives to ensure you replace them in the correct order.

7. Push the hard drive drawer back into the messaging system enclosure.
8. Label each server blade and then remove both server blades.
9. Label the cables and then unplug all cables from the back of the messaging system enclosure.
10. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

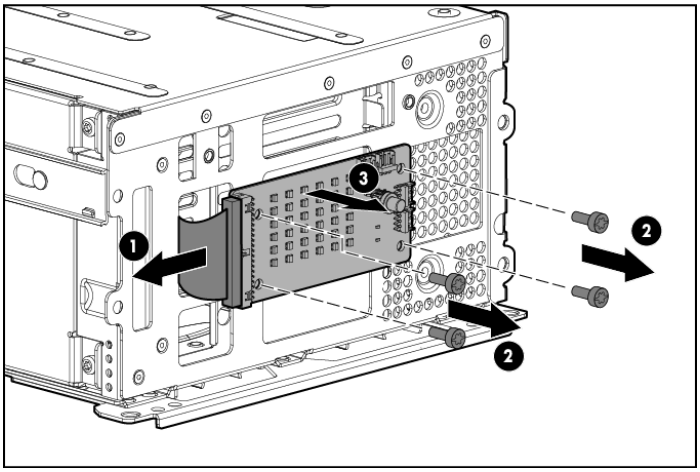
WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

11. Pull the hard drive drawer handle down 90 degrees, and slide out the hard drive drawer.
12. Remove all eight screws from front bezel (1). Then, lift the front bezel up and out to remove the front bezel (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.



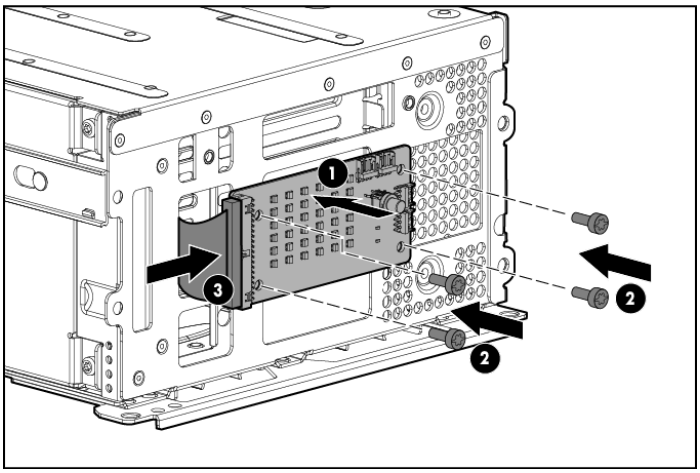
13. Disconnect the LED display board from the drive backplane by pinching the ends of the LED display board together (1). Remove the four screws from the LED display board (2). Then, remove the LED display board from the drive drawer (3).



Replacing the front LED display board (full)

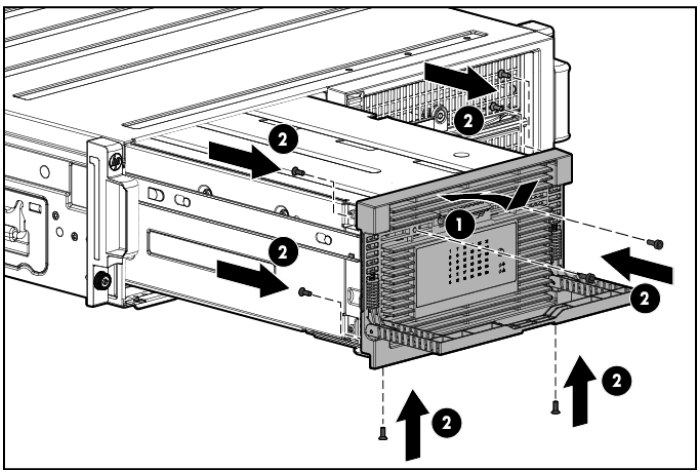
To replace the front LED display board (full):

1. Install the replacement LED display board (1), replace the four LED display board screws (2), and then reconnect the LED display board to the drive drawer (3).



2. Replace the front bezel with the handle at a 90 degree angle making sure the bottom pins are aligned with the bottom holes (1), and replace the front bezel screws (2).

NOTE: There are two screws on the bottom, four screws on the sides (two on each side), and two screws hidden behind the handle.

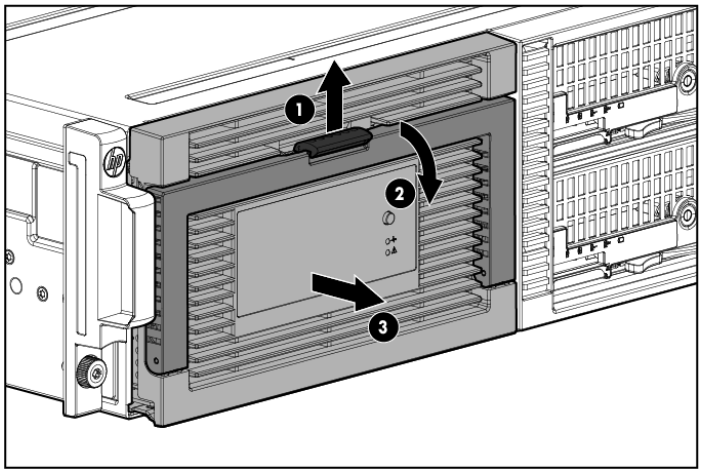


3. Close the drawer handle.
4. Place the enclosure in the rack, and tighten the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

5. Replace the server blades into their original bays.
6. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



7. Replace all hard drives.

WARNING! Carefully check the drive labels provided with the replacement drives, and then install the hard drives in the same slots from which you removed them. If the drives are not installed in the correct slots, the system might fail.

8. Push the drive drawer back into the messaging system enclosure.
9. Plug the cables into the back of the messaging system enclosure into their original locations.
10. Power on the system messaging system by pressing the power button **On**.
11. Verify that the replacement component is working properly by checking the associated LED statusTable 4 (page 53).
12. Confirm that the messaging system has resumed normal operations.

Removing and replacing a drive drawer

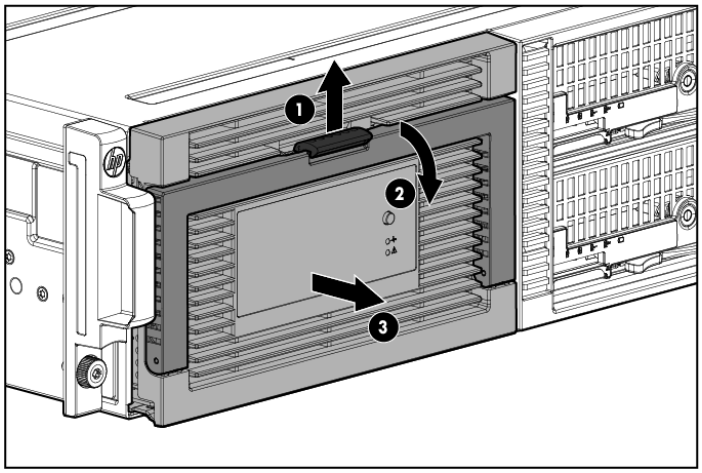
This section describes how to remove and replace the drive drawer in the messaging system.

Removing the drive drawer

To remove the drive drawer:

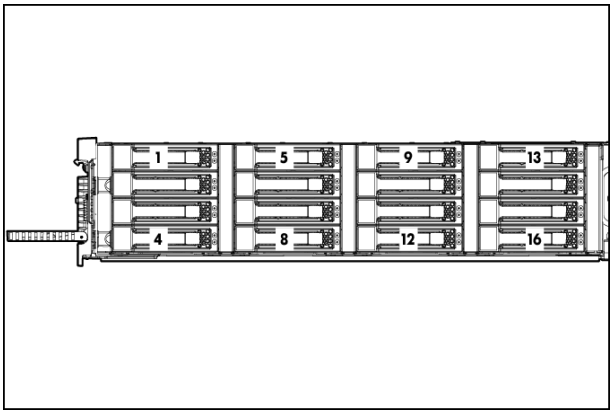
1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component Table 4 (page 53).
3. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
4. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



5. Label the hard drives.

NOTE: Use the drive labels provided with the replacement drive drawer when removing the drives to ensure you replace the drives in the correct order.



6. Remove all hard drives.

IMPORTANT: You must install the hard drives into the same slots from which they were removed, or the system might fail.

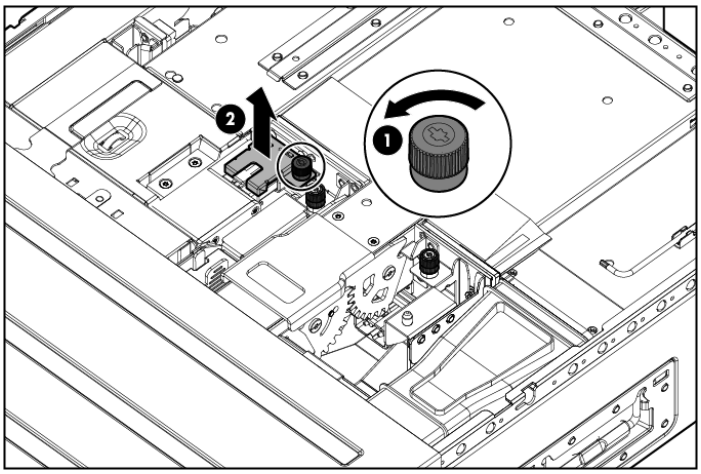
7. Push the drive drawer back into the messaging system enclosure.
8. Label each server blade, and the remove both server blades.
9. Label the cables, and then unplug all cables from the back of the messaging system enclosure.
10. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

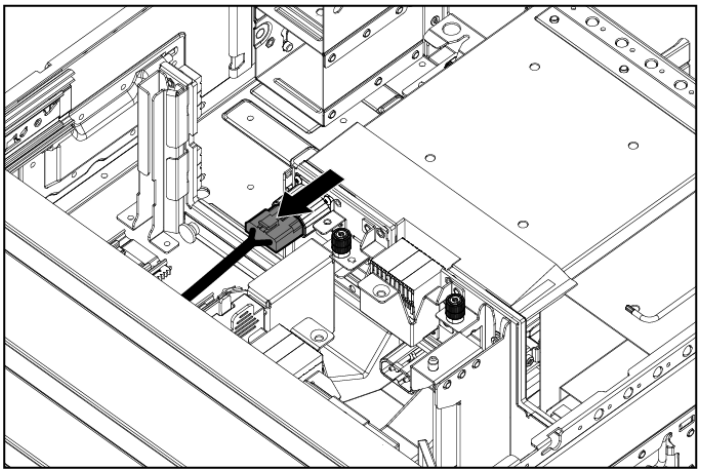
11. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back panel off.
12. Lift up on the drive fan release mechanism and remove the fan.
13. Push up on the SAS I/O module release button.
14. Push down on the SAS I/O module lever (1), and then remove the SAS I/O module (2).

NOTE: You must repeat Steps 14 and 15 for the remaining SAS I/O module.

15. Press the hard drive drawer release button, and then pull the drawer handle down 90 degrees.
16. Extend the drive drawer.
17. Remove the plug bracket (2) from the coil power plug by removing the thumbscrew (1).

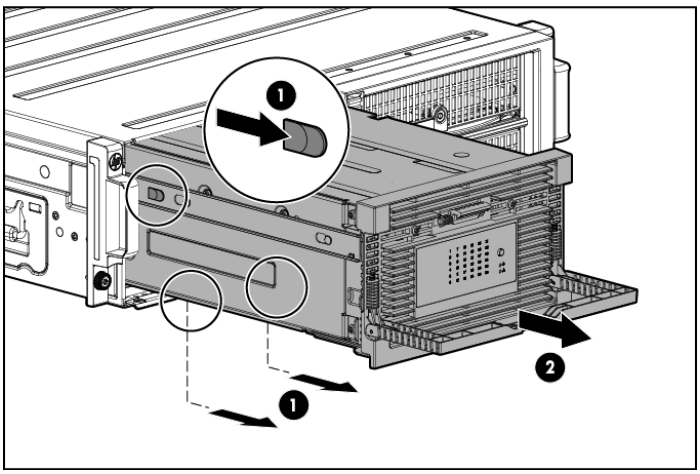


18. Unplug the coil power assembly from the midplane board.



19. Press the release mechanism on the side rail (1), and then pull the hard drive drawer fully out of the enclosure (2).

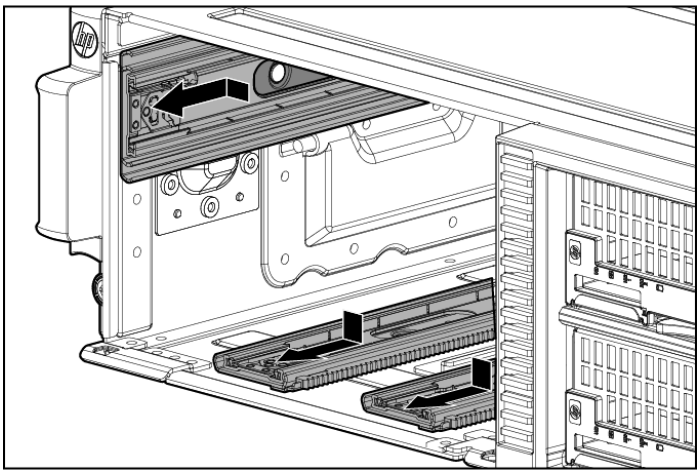
△ **CAUTION:** The hard drive drawer is heavy, even after removing the hard drives. Make sure the drawer is fully supported as you remove it from the enclosure.



Replacing the drive drawer

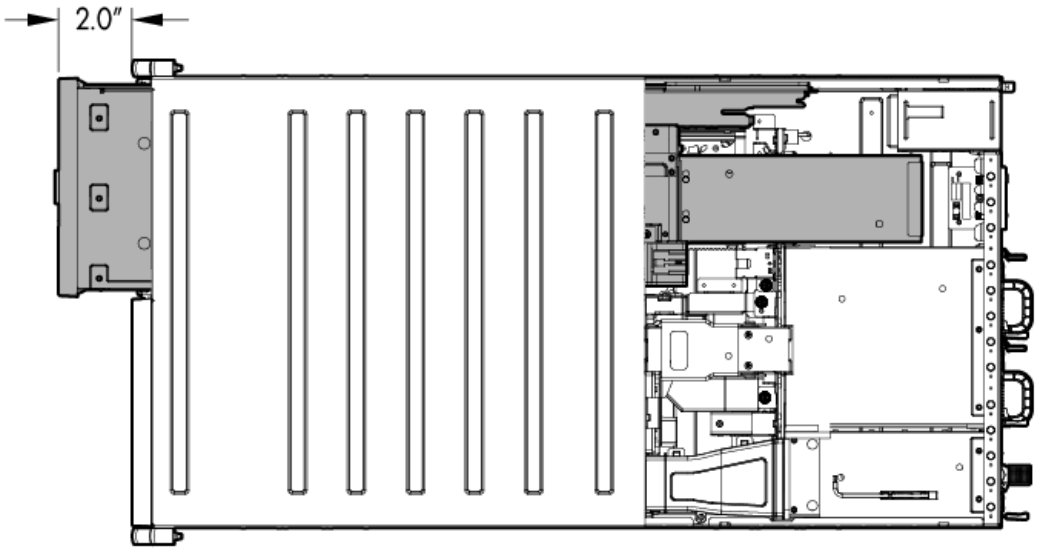
To replace the drive drawer:

1. Unlock the side enclosure rail and push it into the back enclosure.
2. Align the bottom replacement drive drawer rails with the bottom enclosure rails.

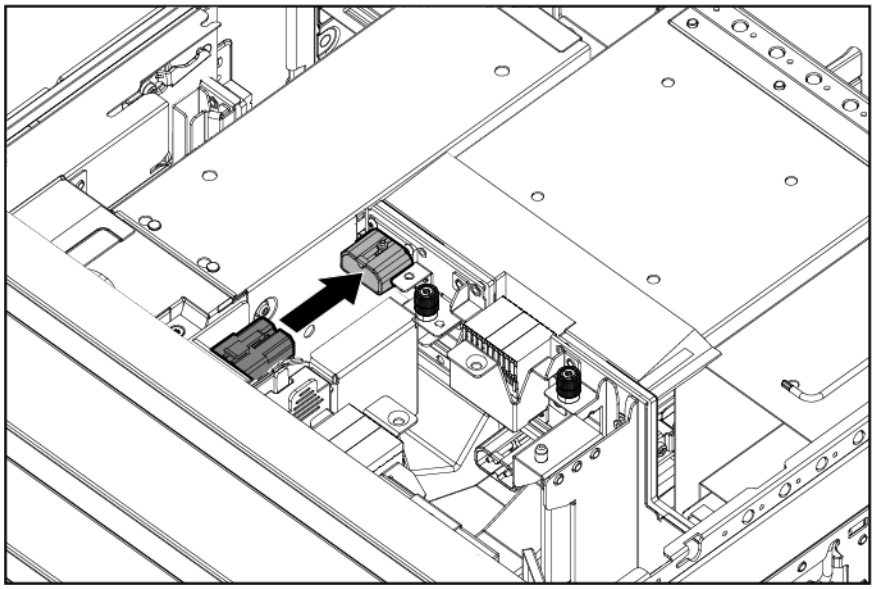


3. Align the side rails and then push the replacement drive drawer partially back into the messaging system enclosure until approximately 2 inches of the drawer is still out of the enclosure.

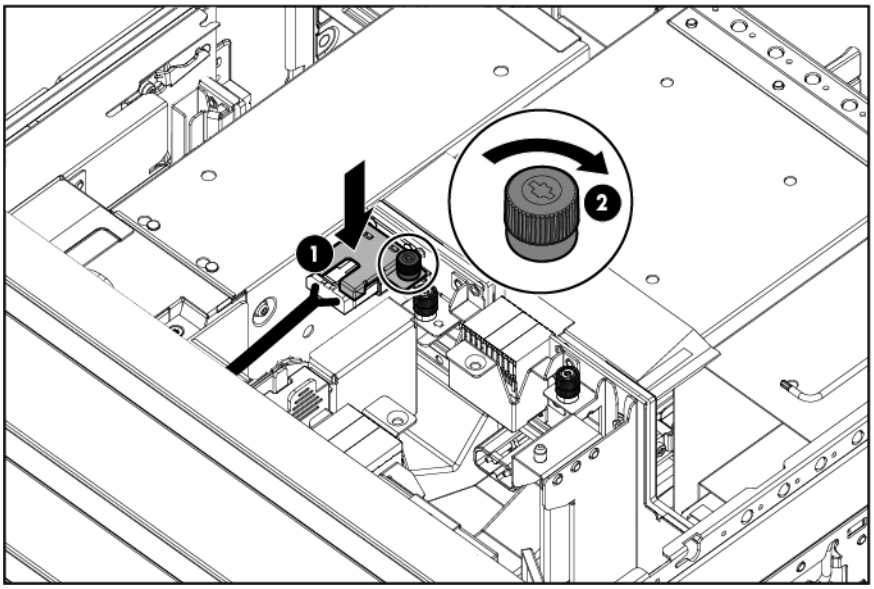
CAUTION: Do not push the drive drawer completely into the enclosure. You must first connect the power coil assembly to prevent damaging the power coil assembly.



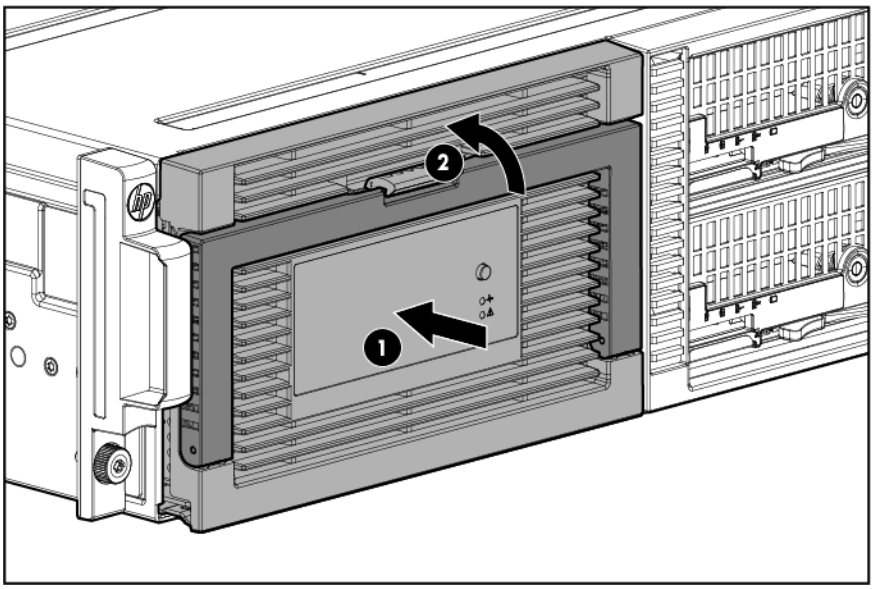
4. Pull the cable slightly out of the coil power plug and connect it to the midplane board.



5. Reattach the coil power plug sheet metal bracket (1) and tighten the thumbscrew (2).



6. Push the drive drawer fully back into the messaging system enclosure (1) and the handle back into place (2).

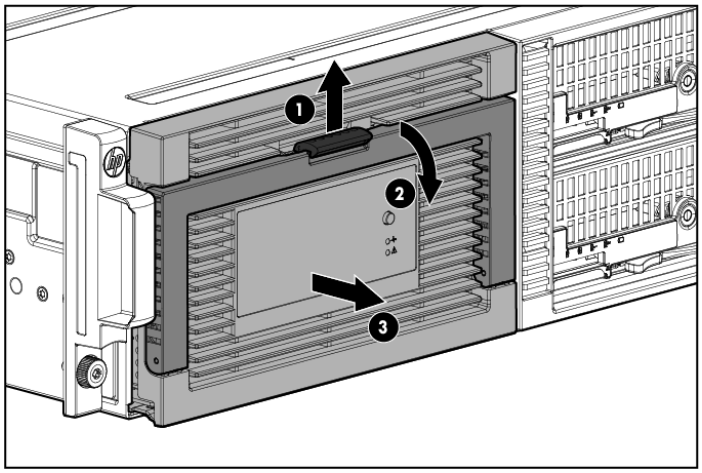


7. Replace the top back panel.
8. Replace the drive fan.
9. Replace both SAS I/O modules.
10. Place the enclosure into the rack, and secure the enclosure by tightening the two retaining screws.

⚠ **WARNING!** The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

11. Replace both server blades and ensure they are placed into their original bays.
12. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



13. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

14. Push the drive drawer back into the messaging system enclosure.
15. Plug in all cables to the back of the messaging system enclosure and ensure that all cables are returned to their original locations.
16. Power on the messaging system.
17. Verify and confirm that the replacement component is working properly by checking the component LED status.

Removing and replacing the drive drawer hard drive

CAUTION: Do not replace the hard drive with an SATA drive. Be sure to replace the hard drive only with an approved SAS drive.

CAUTION: Do not replace the drive drawer hard drive during peak data transfer times. Make sure the hard drive LED is off before you remove the hard drive.

IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

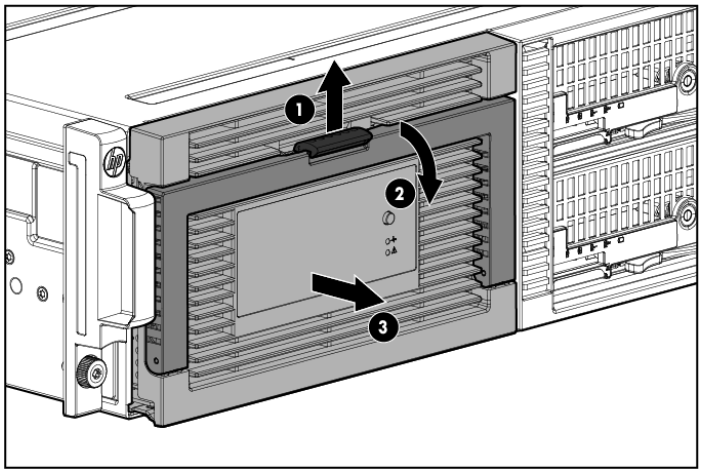
This section describes how to remove and replace the hard drive in the messaging system. After replacing the hard drives, the approximate wait times for viewable disk LED activity vary.

Removing the drive drawer hard drive

To remove the drive drawer hard drive:

1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

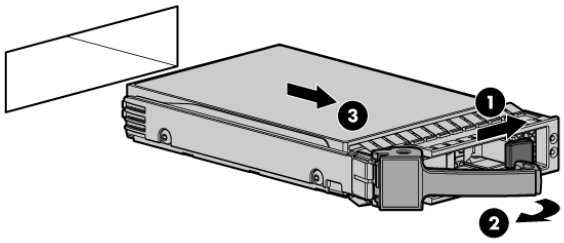
3. Extend the hard drive drawer (3).



4. Locate the failed hard drive.

NOTE: The initial indicator LED on the failed drive is amber. Use the hard drive bay labels to help identify the failed drive.

5. To remove the failed hard drive:
   1. Press the release button (1).
   2. Pull the release lever (2).
   3. Remove the hard drive (3).

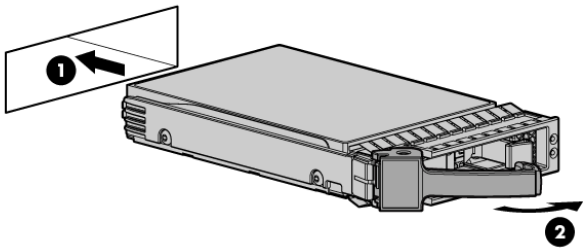


Replacing the drive drawer hard drive

IMPORTANT: You must be prepared to reboot the storage solution after completing this procedure.

To replace the drive drawer hard drive:

1. Install the hard drive:
   1. Insert the replacement hard drive with the lever in the open position (1).
   2. Push the release lever into place (2).



2. Push the drive drawer back into the messaging system enclosure.
3. Verify that the replacement component is working properly by checking the associated LED status.

NOTE: This may require a wait time of less than 15 seconds for the LED status to appear.

4. Confirm the messaging system has resumed normal operations.
5. Confirm the hard drive firmware version.

IMPORTANT: You must reboot the storage solution after updating the drive drawer hard drive firmware.

Removing and replacing the drive drawer rails (side or bottom)

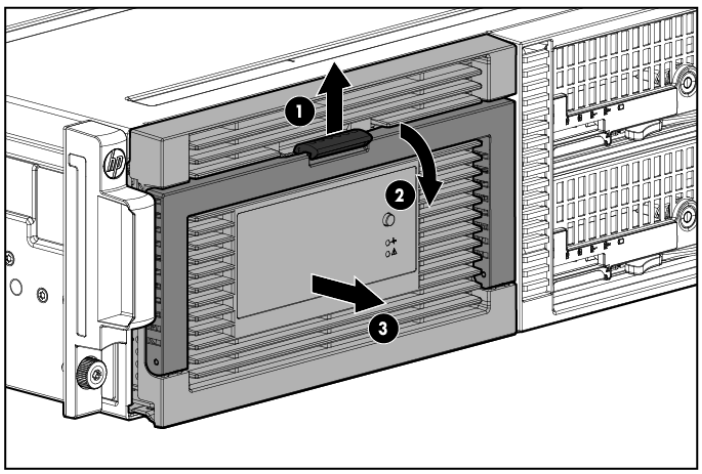
This section describes how to remove and replace the drive drawer rails in the messaging system.

NOTE: Spare rail kits consist of rail pairs, one enclosure bay rail, and one drive drawer rail. See "Removing and replacing the enclosure rails" (page 132) for enclosure rail instructions.

Removing the drive drawer rails

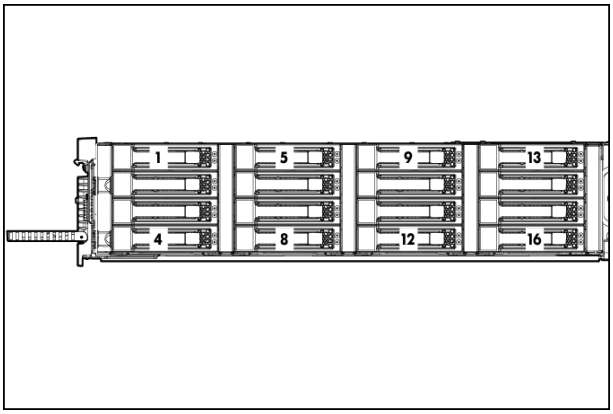
To remove the drive drawer rails:

1. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).
   3. Extend the hard drive drawer (3).



3. Label the hard drives.

NOTE: Use the drive labels provided with the replacement drive drawer rails to label the hard drives to ensure you replace the drives in the correct order.



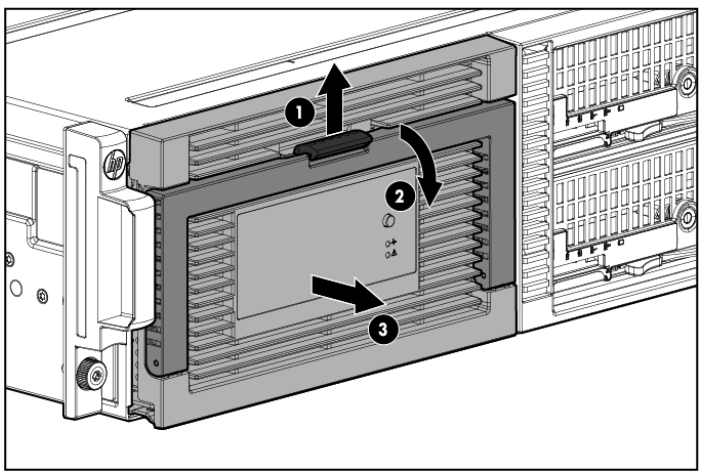
4. Remove all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

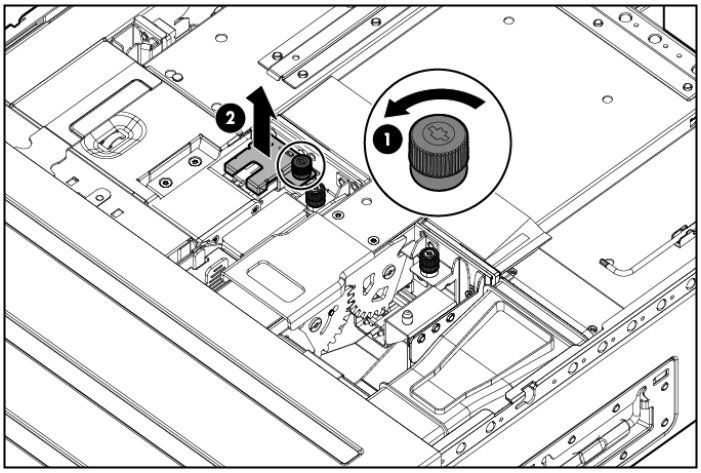
5. Push the drive drawer back into the messaging system enclosure.
6. Label each server blade, and then remove both server blades.
7. Label the cables connected to the back of the enclosure so they can be returned to their original locations.
8. Unplug all cables from the back of the messaging system enclosure.
9. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

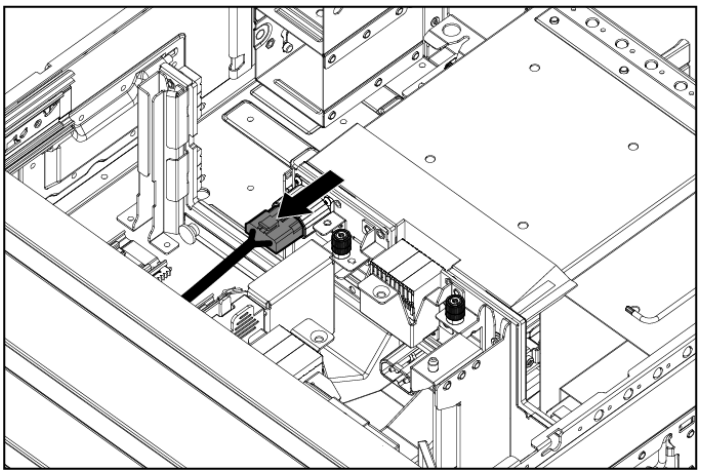
10. Remove the top back panel by pressing the panel release button and lifting the latch to slide the top back off.
11. Extend the hard drive drawer:
    1. Press upward on the release button on the hard drive drawer (1).
    2. Pull the drawer handle down 90 degrees (2).
    3. Extend the hard drive drawer (3).



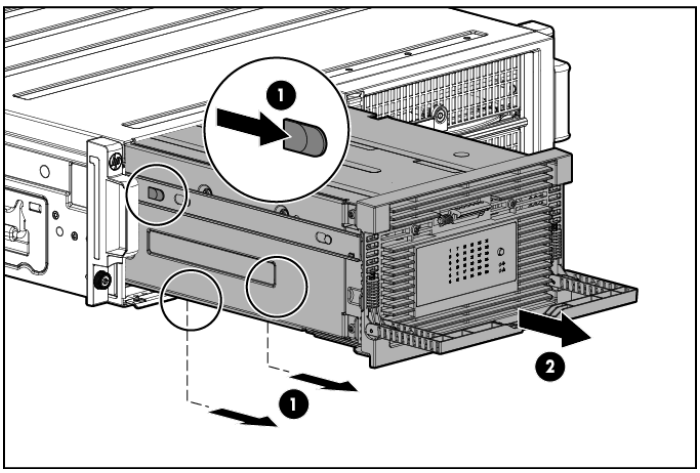
12. Remove the plug bracket (2) from the coil power plug by removing the thumbscrew (1).



13. Unplug the coil power assembly from the midplane board.

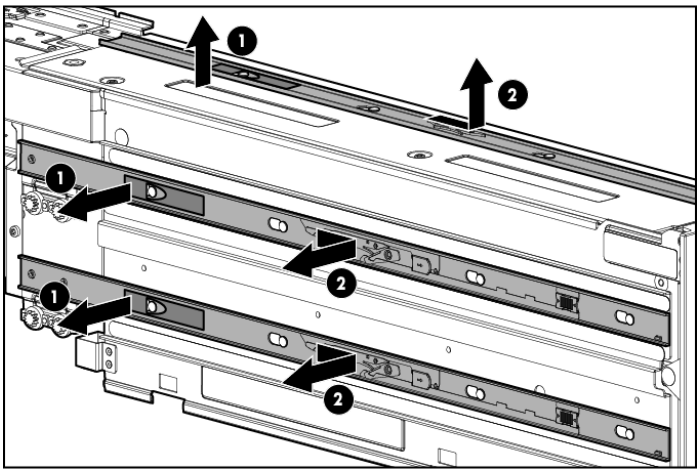


14. Press the release mechanism on the side rail (1), and then pull the hard drive drawer fully out of the enclosure (2).



15. Lift the release tab on the side or bottom rail (1), and then slide the rail toward the front of the drive drawer to remove (2) the rail.

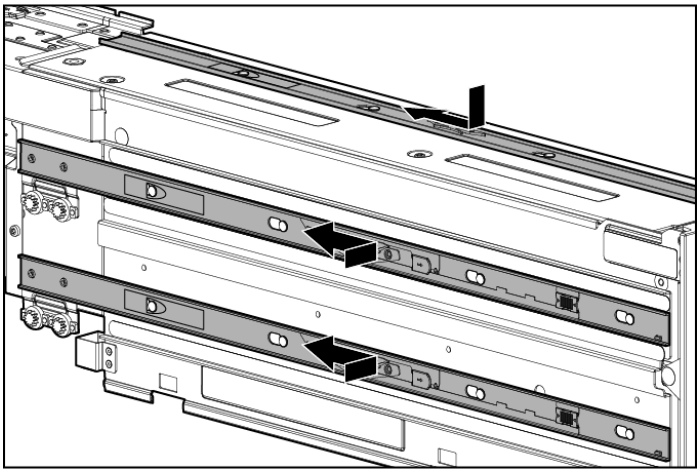
NOTE: Repeat this step for all rails.



Replacing the drive drawer rails

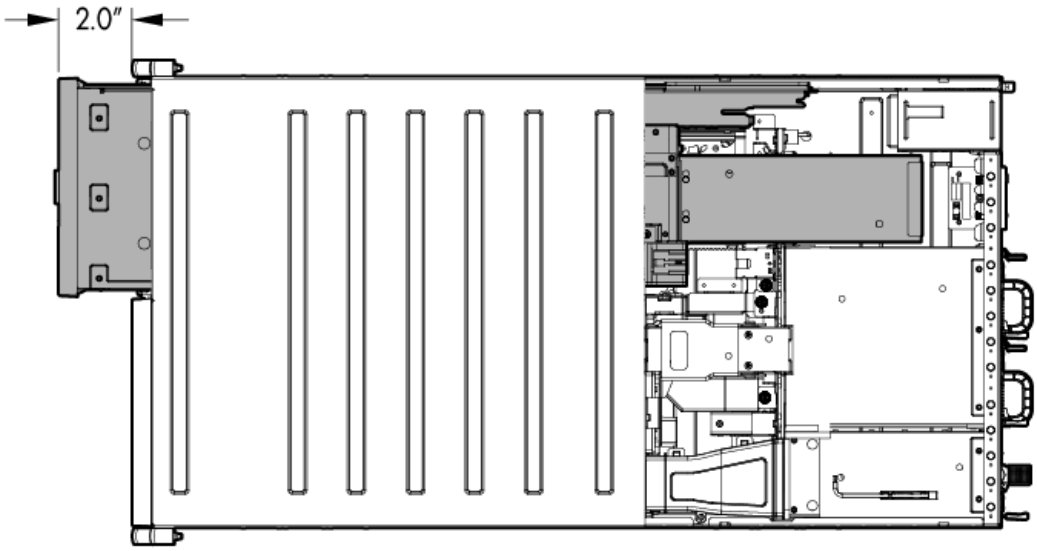
To replace the drive drawer rails:

1. Align the replacement rail with the tabs, and slide it toward the back of the drive drawer until the rail locks into place.

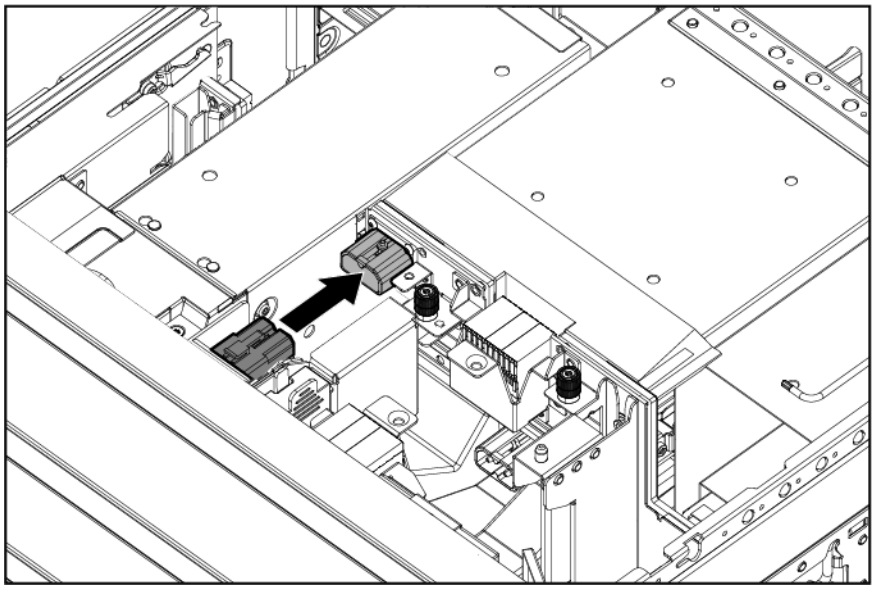


2. Align the replacement drive drawer rail with the three enclosure rails and then push the drive drawer partially back into the messaging system enclosure so that approximately 2 inches of the drawer is still out of the enclosure.

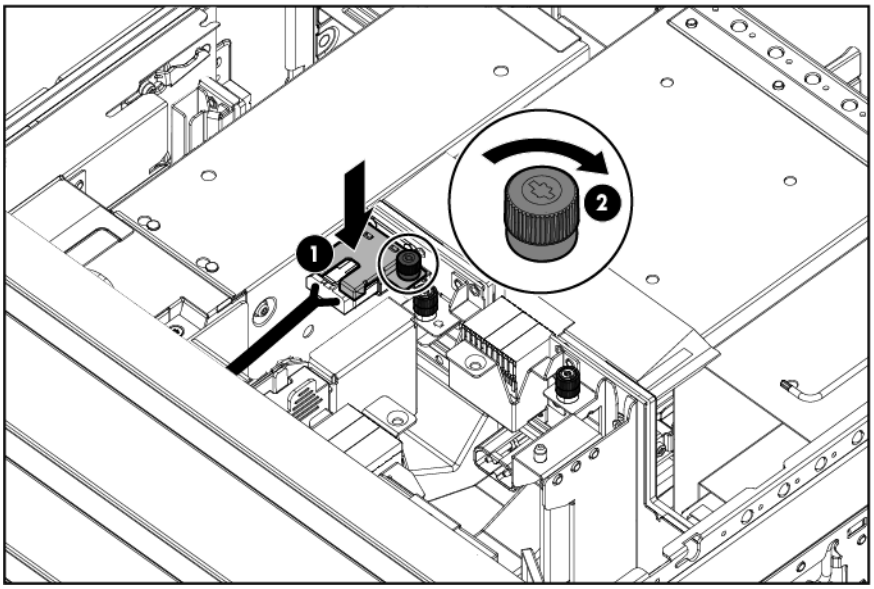
CAUTION: Do not push the drive drawer completely into the enclosure. You must first connect the power coil assembly to prevent damaging the power coil assembly.



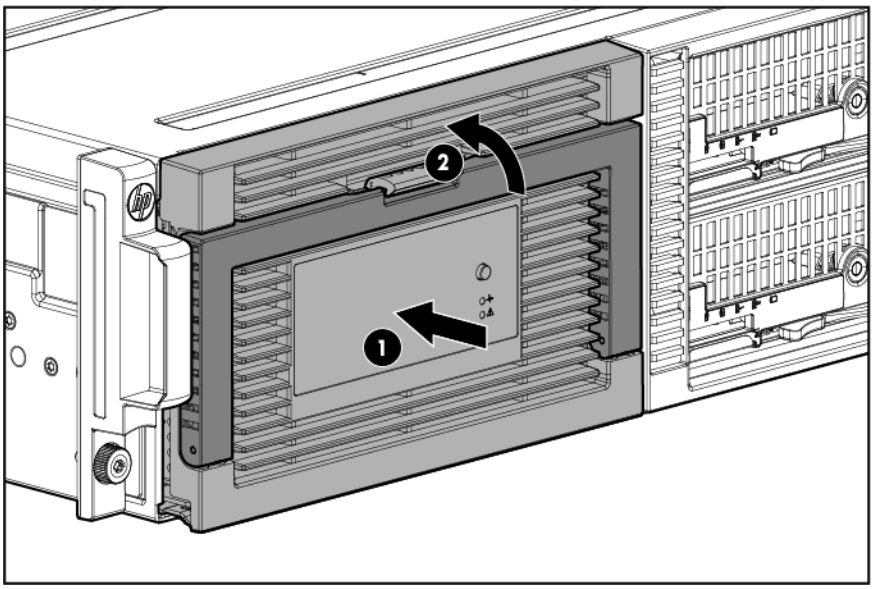
3. Pull the cable slightly out of the coil power plug and connect it to the midplane board.



4. Reattach the coil power plug bracket (1) and tighten the thumbscrew (2).



5. Push the drive drawer fully back into the messaging system enclosure (1) and the handle back into place (2).

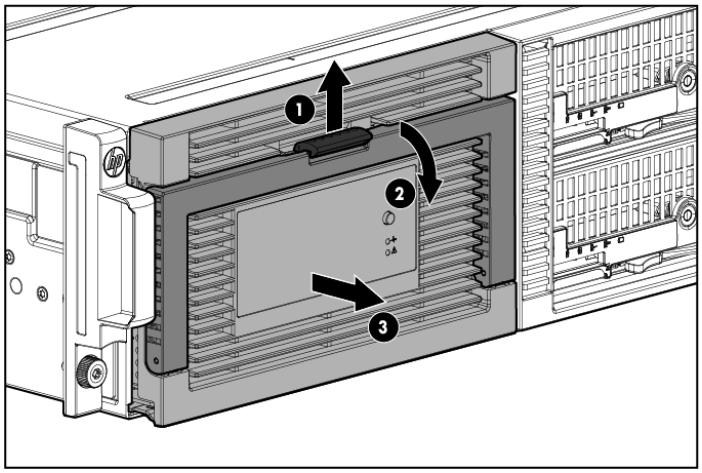


6. Replace the top back panel.
7. Place the enclosure in the rack, and tighten the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

8. Replace both server blades in their original bays.
9. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



10. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

11. Push the drive drawer back into the messaging system enclosure.
12. Plug in all cables at the back of the messaging system enclosure to their original locations.
13. Power on the system by pressing the power button **On**.
14. Confirm the messaging system has resumed normal operations.

Removing and replacing the enclosure rails

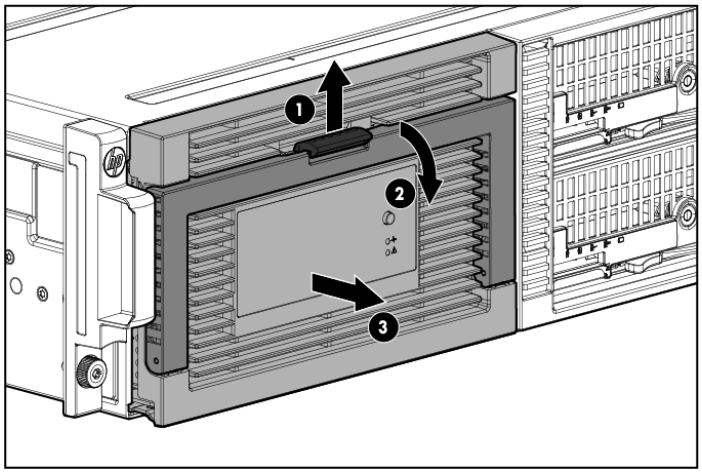
This section describes how to remove and replace the enclosure rails in the messaging system.

Removing the enclosure rails

To remove the enclosure rails:

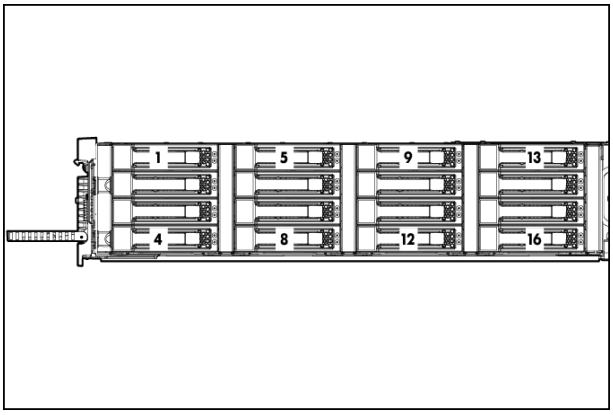
1. Power off the system:
   1. Shut down blade 2 by clicking on **Start** and then **Shut Down** while you are connected to blade 1.
   2. Shut down blade 1 by clicking on **Start** and then **Shut Down** while you are connected to blade 2.
   3. Power off the expansion nodes, if present, by pressing and holding the power button at the back.
   4. Power off the storage solution by pressing and holding the power button at the back of the enclosure.
   5. Disconnect the power cables.
2. Extend the hard drive drawer:
   1. Press upward on the release button on the hard drive drawer (1).
   2. Pull the drawer handle down 90 degrees (2).

3. Extend the hard drive drawer (3).



3. Label the hard drives.

NOTE: Use the drive labels provided with the replacement rack rails to label the hard drives to ensure you replace the drives in the correct order.



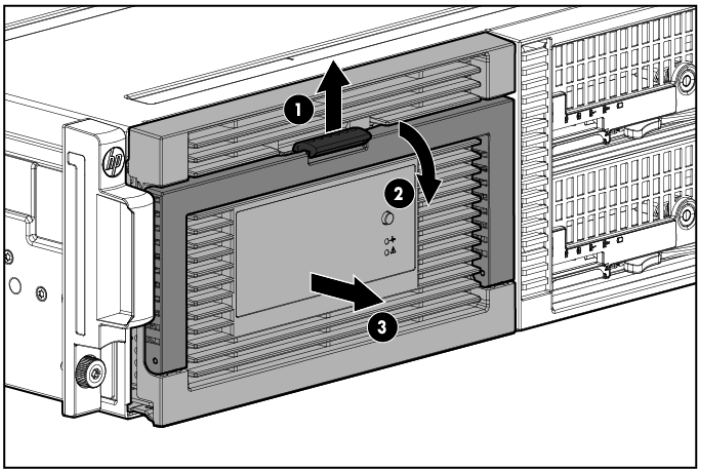
4. Remove all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail.

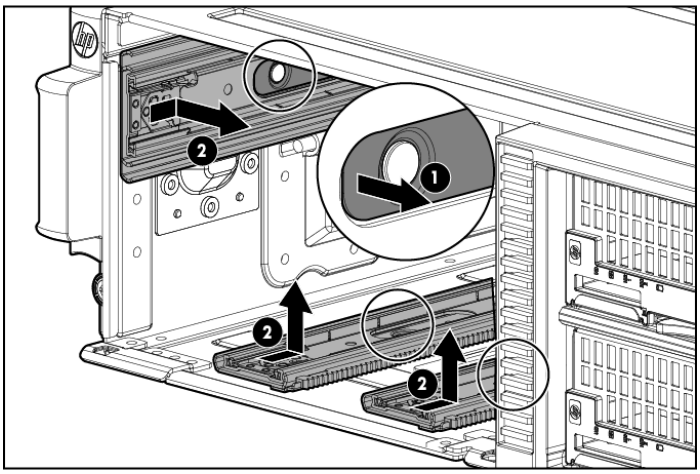
5. Push the drive drawer back into the messaging system enclosure.
6. Label each server blade, and then remove both server blades.
7. Label the cables connected to the back of the enclosure, and then unplug all cables from the back of the messaging system enclosure.
8. Unscrew the retaining screws from the bezel ears, and then remove the enclosure from the rack.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to remove the messaging system from the rack.

9. Extend the hard drive drawer:



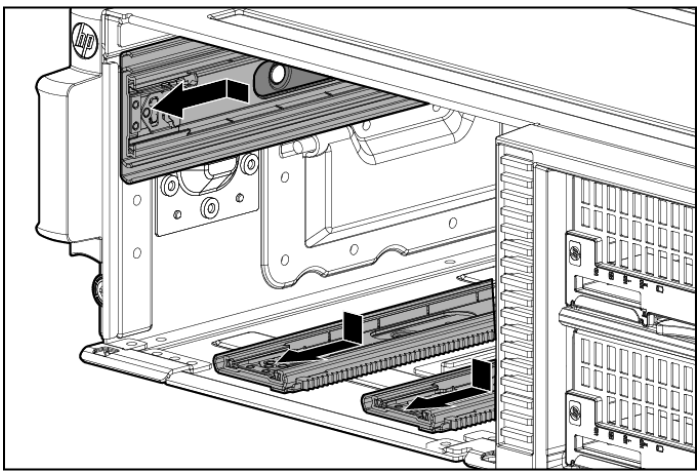
10. Remove the hard drive drawer from the messaging system enclosure.
11. Lift the release mechanism on the rail (side or bottom) (1), and then push the rail back and up to release and remove the rail (2).



Replacing the enclosure rails

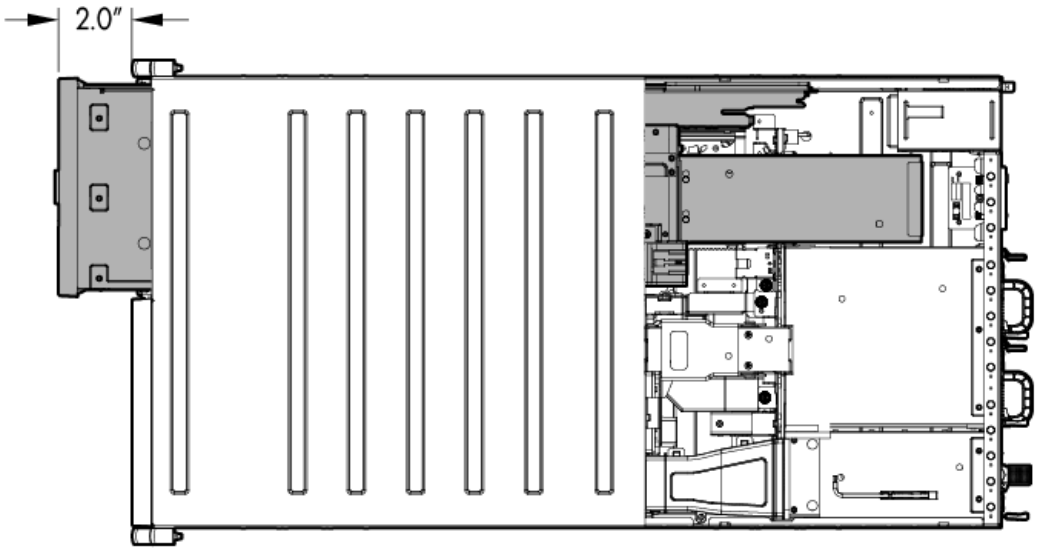
To replace the enclosure rails:

1. Align the replacement rail, and then attach it by sliding the rail toward the front of the enclosure.

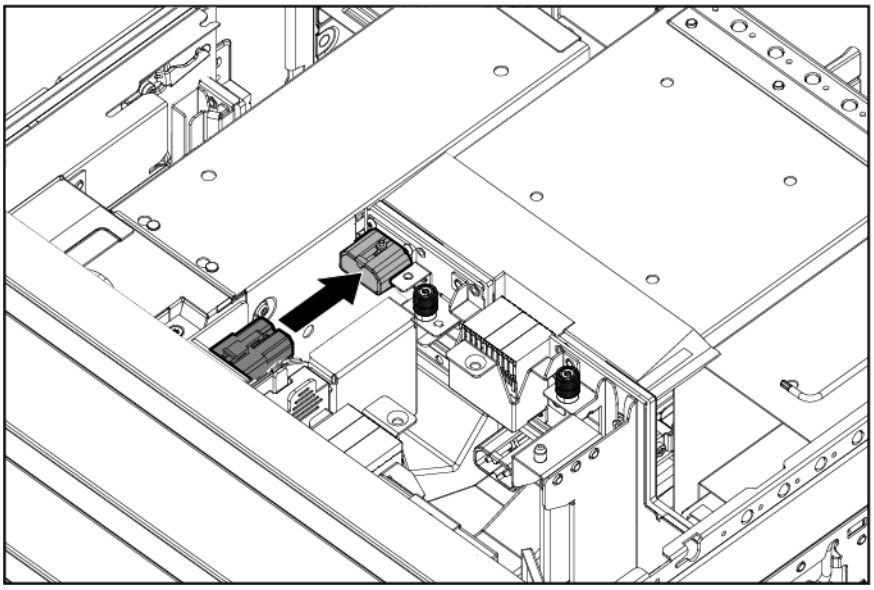


2. Align the replacement drive drawer rail with the three enclosure rails and then push the drive drawer partially back into the messaging system enclosure so that approximately 2 inches of the drawer is still out of the enclosure.

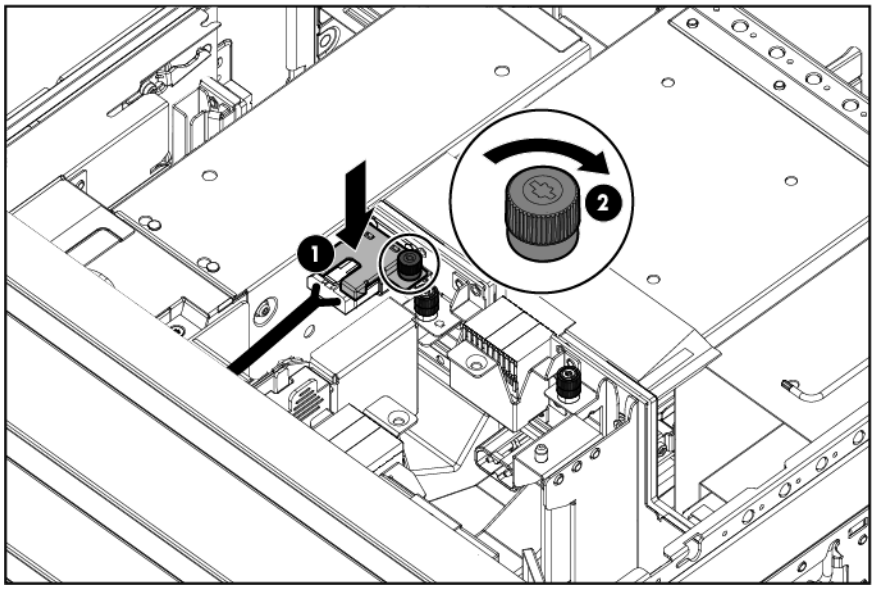
△ **CAUTION:** Do not push the drive drawer completely into the enclosure. You must first connect the power coil assembly to prevent damaging the power coil assembly.



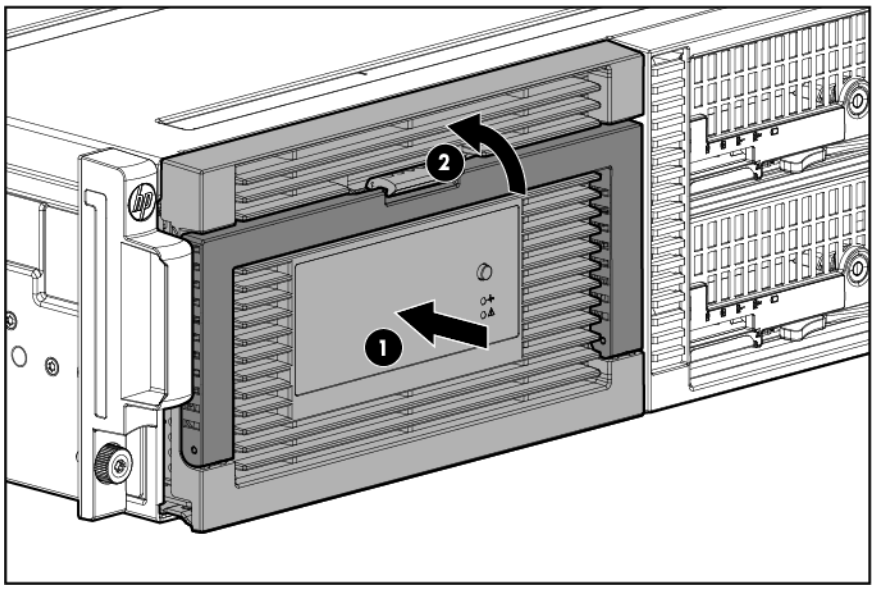
3. Pull the cable slightly out of the coil power plug and connect it to the midplane board.



4. Reattach the coil power plug bracket (1) and tighten the thumbscrew (2).



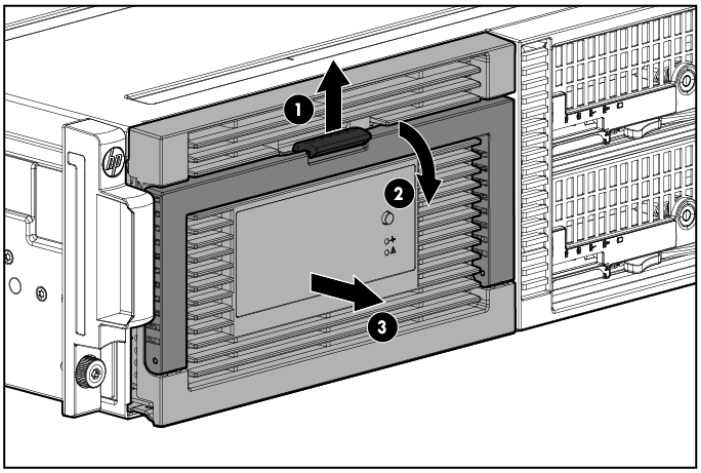
5. Push the drive drawer fully back into the messaging system enclosure (1) and the handle back into place (2).



6. Place the messaging system back in the rack, and tighten the two retaining screws.

WARNING! The messaging system enclosure is heavy, even after removing the hard drives. Always use at least two people to replace the messaging system in the rack.

7. Replace both server blades into their original bays.
8. Extend the hard drive drawer:



9. Replace all hard drives.

IMPORTANT: Install the hard drives in the same slots from which you removed them or the system might fail. Use the drive labels to ensure they are replaced in the correct order.

10. Push the drive drawer back into the messaging system enclosure.
11. Plug in all cables at the back of the messaging system enclosure into their original locations.
12. Power on the system by pressing the power button **On**.
13. Confirm that the messaging system has resumed normal operations.

Removing and replacing the rack rails

For detailed instructions on installing the rack rails, see the *HP StorageWorks 3U messaging system Rail Kit Installation Instructions*.

Removing and replacing server blade(s)

IMPORTANT: Be sure to unpack the replacement part before you remove the existing component.

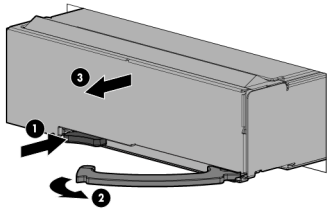
This section describes how to remove and replace the server blades and blade components in the messaging system.

Removing the server blade

CAUTION: Do not use the server blade release lever to lift or carry the server blade. Always support the weight of the server blade by handling the chassis directly. Improper use can damage the release lever and the server blade.

To remove the server blade:

1. Use the Storage Manager to identify the failed component.
2. Verify the failure by checking for a blinking amber LED on the failed component.
3. Power off the appropriate server blade by clicking on **Start** and then **Shut Down**.
4. Push the button to release the handle (1), pull the handle toward you (2), and then remove the server blade (3).



5. Place the server blade on a flat, level work surface.

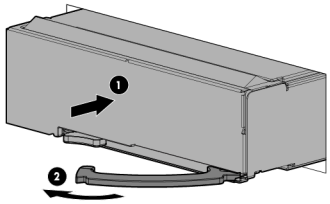
WARNING! To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION: To prevent damage to electrical components, properly ground the server blade before beginning any installation procedure. Improper grounding can cause ESD damage.

Replacing the server blade

To replace the server blade:

1. Install the server blade (1), and then push the handle into place with the handle open (2).



2. Power on the server blade.
3. Confirm the system has resumed normal operations.

Removing and replacing the server blade hard drive

IMPORTANT: You must install a supported optional controller for hot-plug capability and drive LED support.

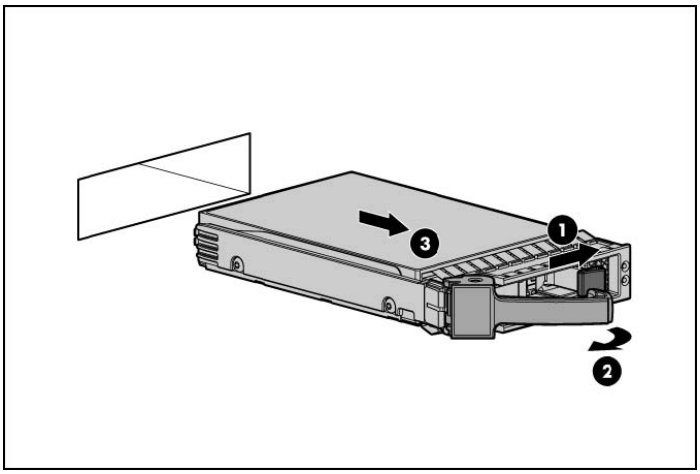
This section describes how to remove and replace the server blade hard drive in the messaging system.

Removing the server blade hard drive

To remove the server blade hard drive:

1. Use System Manager to identify the failed component.
2. Verify the failed component by checking for a blinking amber LED on the failed component.
3. Back up all data on the hard drive.

4. Push the button to release the handle (1), pull the handle toward you (2), and then remove the hard drive from the server blade (3).



CAUTION: To prevent improper cooling and thermal damage, replace the drive quickly. Do not operate the server unless all bays are populated.

Replacing the server blade hard drive

To replace the server blade hard drive:

1. Install the replacement server blade hard drive with the latch open and then push the latch closed to secure it.
2. Verify that the server blade hard drive is working properly by checking the associated LED status.

NOTE: This may require a wait time of less than 15 seconds for the LED status to appear.

3. Confirm that the messaging system has resumed normal operations.
4. Confirm the firmware version.

NOTE: You must reboot the storage solution after updating a server blade hard drive.

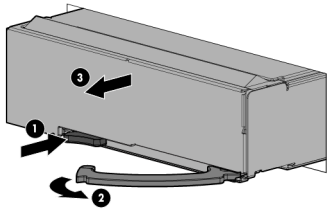
Removing and replacing the controller and controller server blade components

This section describes how to remove and replace the controller and controller components in the messaging system.

Removing the controller card

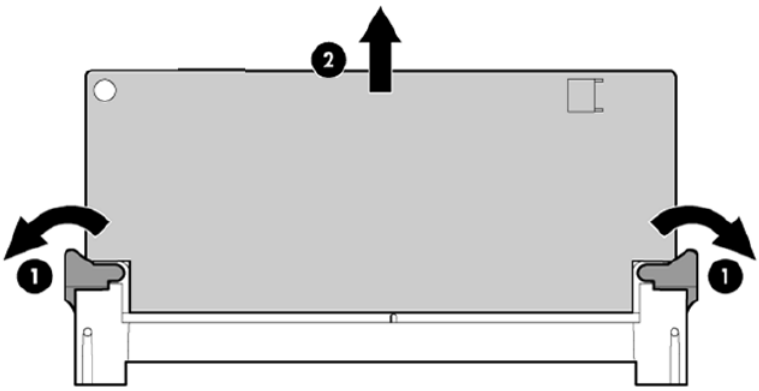
To remove the controller card:

1. Use System Manager to identify the failed component.
2. Back up all data.
3. Close all applications.
4. To power off the server blade, click **Start** and then select **Shut down**.
5. Push the button to release the handle (1), pull the handle toward you (2), and then remove the server blade from the enclosure (3).

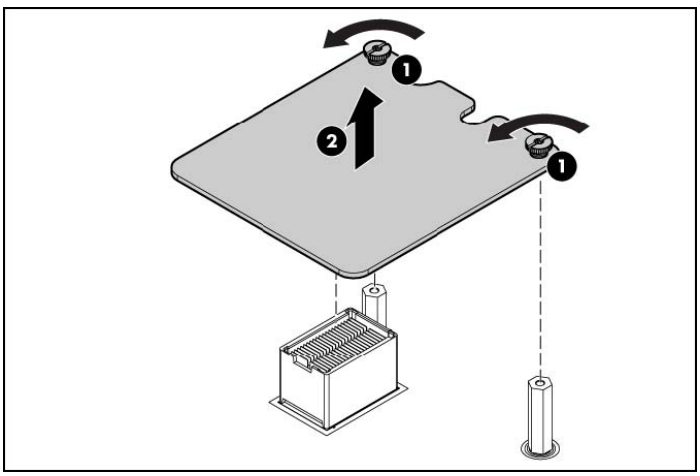


6. Press the release button on the access panel and slide the access panel to the left to remove the access panel.
7. The original cache module is connected to a capacitor pack, so observe the cache module LEDs.
   - If the amber LED is solid, data transfer to the flash device on the cache module is in progress. Do not remove the cache module until the amber LED is off, and then continue with the next step.
   - If the amber LED is not lit, proceed to the next step.
8. Open the ejector latches (1) on each side of the cache module slot.

   Typically, opening the ejector latches ejects the cache module automatically. If the module does not eject automatically after you open the ejector latches, remove the cache module (2) by grasping only the edges.



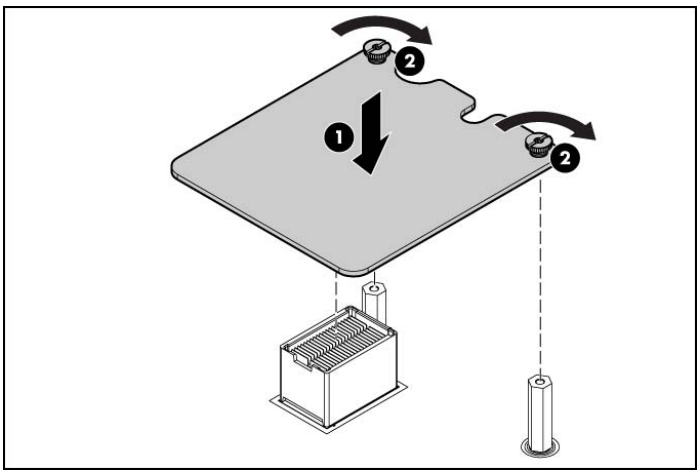
9. Remove the cache module and the capacitor from the blade.
10. Loosen two captive screws and remove the controller card.



Replacing the controller card

To replace the controller card:

1. Install the cache module and capacitor in the cache module slot of the replacement controller.
2. Close the ejector latches on the cache module slot.
3. Install the replacement controller card (1). Press down on the connector to seat the card (2).



4. Tighten the captive screws.
5. Replace the capacitor in its cradle.
6. Install the access panel.
7. Install the server blade in the enclosure.
8. Confirm that the replacement to P1210m controller is running current firwmare (see"Upgrading a component's firmware version" (page 64)).

NOTE: You must reboot the storage solution after updating firmware on the server blade.

Removing and replacing the P1210m cache module

This section describes how to remove and replace the P1210m cache module in the messaging system.

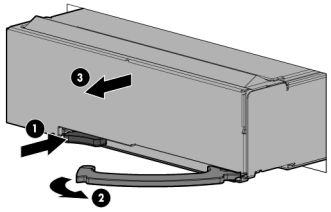
Removing the P1210m cache module

CAUTION: Do not use this controller with P1210m cache modules designed for other controller models because the controller can malfunction and you can lose data.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before performing this procedure.

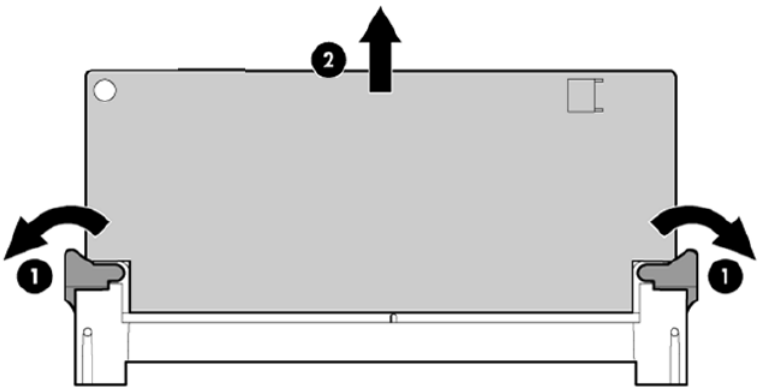
To remove the P1210m cache module:

1. Back up all data.
2. Close all applications.
3. Power off the server blade.
4. Remove the server blade from the enclosure by pushing the button to release the handle (1), pulling the handle toward you (2), and then removing the server blade from the enclosure (3).



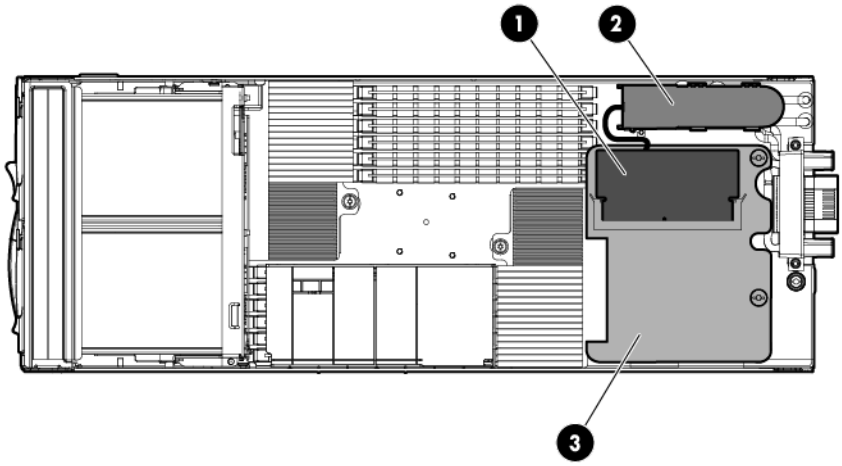
5. Press the release button on the access panel and slide the access panel to the left to remove it.
6. Since the original P1210m cache module is connected to a capacitor pack, observe the cache module LEDs.
   - If the amber P1210m cache LED is solid, data transfer to the flash device on the cache is in progress. Do not remove the P1210m cache until the amber LED is off, and then continue with the next step.
   - If the amber P1210m cache LED is not lit proceed to the next step.
7. Open the ejector latches on each side of the P1210m cache module slot.

   Typically, opening the ejector latches ejects the cache module automatically. If the module does not eject automatically after you open the ejector latches, remove the cache module (2) by grasping only the edges.

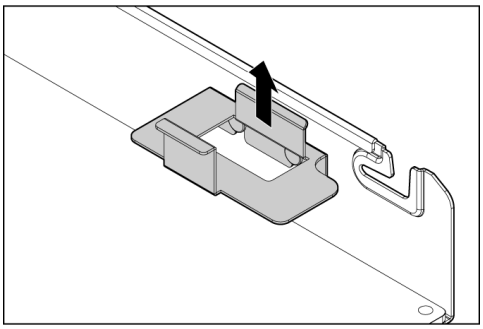


8. Remove the capacitor pack (2).
   The P1210m cache module is shown as (1), and the controller card is (3).

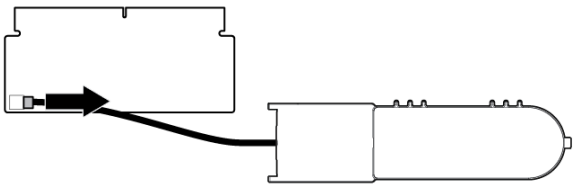
CAUTION: Wear gloves or use care when removing the capacitor to avoid physical injury.



NOTE: Be sure to first remove the capacitor pack bracket.



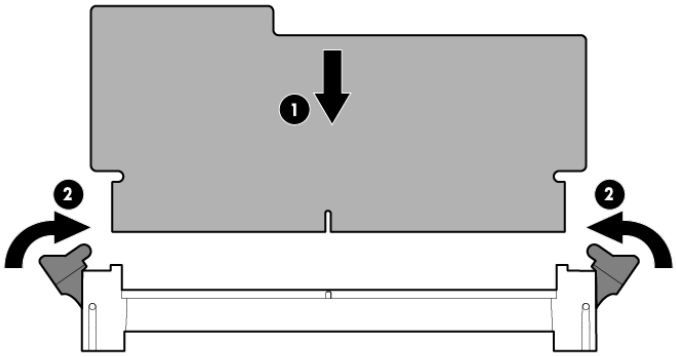
9. Disconnect the capacitor pack cable from the connector on the top of the cache module.



Replacing the cache module

To replace the cache module:

1. Connect the capacitor pack cable to the replacement cache module.
2. Install the replacement cache module in the cache module slot (1).
3. Close the ejector latches on the cache module slot (2).



4. Install the capacitor pack bracket and insert the capacitor pack on the chassis wall.
5. Install the access panel.
6. Install the server blade into the enclosure.

Removing and replacing the capacitor pack

This section describes how to remove and replace the capacitor pack in the messaging system.

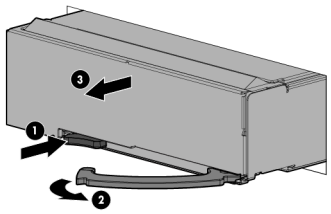
Removing the capacitor pack

⚠ **CAUTION:** Wear gloves or use care when removing the capacitor pack to avoid physical injury.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before performing this procedure.

To remove the capacitor pack:

1. Back up all data.
2. Close all applications.
3. Power off the server blade.
4. Remove the server blade from the enclosure by pushing the button to release the handle (1), pulling the handle toward you (2), and then removing the server blade from the enclosure (3).



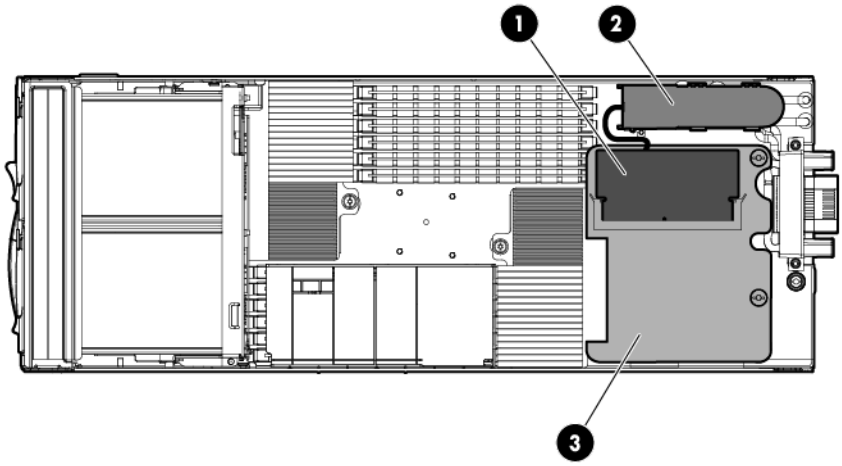
5. Press the release button on the access panel and slide the access panel to the left to remove it.
6. Since the original capacitor pack is connected to a cache module, observe the cache module LEDs.
   - If the amber cache LED is solid, data transfer to the flash device on the cache is in progress. Do not remove the cache until the amber LED is off, and then continue with the next step.
   - If the amber cache LED is not lit, proceed to the next step.

7. Open the ejector latches on each side of the cache module slot.

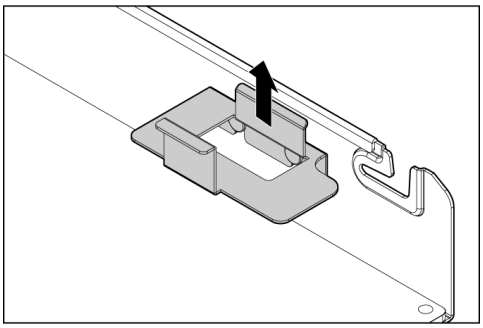
   Typically, opening the ejector latches ejects the cache module automatically. If the module does not eject automatically after you open the ejector latches, remove the cache module by grasping only the edges.

8. Remove the cache module (1) from the controller card (3) and the capacitor pack (2) from the server blade.

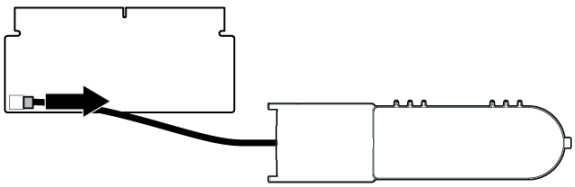
CAUTION: Wear gloves or use care when removing the capacitor to avoid physical injury.



NOTE: Be sure to first remove the capacitor pack bracket.



9. After you remove the cache module, disconnect the capacitor cable from the module.



Replacing the capacitor pack

To replace the capacitor pack:

1. Connect the replacement capacitor pack to the cache module.
2. Install the cache module in the cache module slot.
3. Install cache module on the controller, and then close the ejector latches on the cache module slot.
4. Install the capacitor pack bracket and insert the replacement capacitor pack on the chassis wall.
5. Install the access panel.
6. Install the server blade in the enclosure.

IMPORTANT: After installing a capacitor pack, you might see a POST message during reboot indicating that the array accelerator (cache) is disabled temporarily. This behavior is normal because the new capacitor pack is likely to have a low charge.

The controller operates properly while the capacitor pack is recharging, although the performance advantage of the array accelerator is absent. You do not need to take any action because the recharge process begins automatically when you install the capacitor pack. When the capacitor pack has been charged to a predetermined level, the array accelerator is enabled automatically.

8 Messaging System recovery

This chapter describes how to use the System Recovery DVD that is provided with your messaging system.

The E5000 System Recovery DVD

The E5000 System Recovery DVD that is provided with your storage system allows you to install an image or recover from a catastrophic failure.

At any later time, you may boot from the DVD and restore the server to the factory condition. This allows you to recover the system if all other means to boot the server fail.

While the recovery process makes every attempt to preserve the existing data volumes, you should have a backup of your data if at all possible before recovering the system.

During the recovery process, the original OS logical drive is overwritten. **All data on that drive is erased.**

Restoring the factory image with a DVD or USB flash device

1. Do one of the following:
   a. For direct access, attach the SUV cable (supplied with the E5300 Messaging System) to the port on the front of the server blade you wish to recover. Connect a monitor and USB mouse to the SUV cable. Then, using the remaining USB connector on the SUV cable, connect either a USB DVD drive (and insert the System Recovery DVD) or a bootable USB flash device (prepared with a System Recovery image).
   b. For remote management access, connect to the server using iLO from a client PC. Insert the System Recovery DVD in the client PC or attach a bootable USB flash device that has been prepared with a System Recovery image.
2. Reboot the server blade to either the USB flash device or USB DVD drive.

   The system BIOS attempts to boot to the USB device first by default. Watch the monitor output during the boot as you may need to press a key to boot to the USB media.

   NOTE: If directly connected, you may have to change the BIOS settings to ensure proper boot sequence. If connected remotely, you may have to change some iLO settings to ensure proper boot sequence.

3. Click **Restore Factory Image**.

   The recovery process completes with little user intervention required. The server automatically reboots more than once.

   IMPORTANT: Do not interrupt the recovery process.

   When the upgrade process is complete, the system automatically logs in as the Administrator using “HPinvent!” as the password, and then prompts you to change the Administrator password.

4. Remove the directly connected DVD or flash device (or remotely connected iLO virtual DVD or flash device) from the server.

Using a USB flash drive for messaging system recovery

Creating a System Recovery USB Flash drive is supported on Windows Vista, Windows 7, Windows Storage Server 2008, and Windows Storage Server 2008 R2 operating systems only.

If you create a backup copy of the System Recovery DVD using a USB Flash Drive, you can also use it to restore the system. To create system recovery media using a USB Flash drive, follow the instructions below.

To create a system recovery USB Flash Drive:

1. Obtain a blank 4 GB or larger USB Flash Drive.
2. Insert the USB Flash device into your workstation or laptop.
3. Open an elevated command prompt with Administrator privileges.
4. At the command prompt, enter `diskpart`.
5. At the diskpart prompt, enter `list disk`.
6. Identify the disk number that corresponds to the flash drive. This is typically the last disk listed.
7. Enter `sel disk <USB drive number>`. For example, `sel disk 4`.
8. Enter `clean`. This deletes everything from the USB flash device, so ensure you have the proper disk selected.
9. Enter `create par primary`.
10. Enter `sel par 1`.
11. Enter `format fs=fat32 quick`.

NOTE: If your USB Flash Drive does not support the FAT32 file system, format the drive as NTFS instead. Omitting the `quick` parameter lengthens the format time considerably.

12. Enter `active` to mark the partition as active.
13. Enter `assign letter=<drive letter>` to assign a drive letter to the USB drive. For example, `assign letter=U`.
14. Enter `exit` to quit diskpart context commands.
15. Insert the System Recovery DVD into the computer.
16. Using Windows Explorer or a comparable utility, open the DVD so that all contents are visible, including hidden and system files.
17. Select all of the files (including bootmgr) on the DVD.
18. Copy all of the selected files to the root of the USB drive.

Managing disks after a system restoration

When you restore a system using the System Recovery DVD, the E5000 Configuration Wizard automatically runs and detects the existence of the data volumes (volumes managed by the P1210m controller). The wizard remounts the data volumes as appropriate using the mount points in the `C:\ExchangeDatabases` directory. For example, the following mount points may be found:

- `C:\ExchangeDatabases\Recovery`
- `C:\ExchangeDatabases\VOL1`
- `C:\ExchangeDatabases\VOL2`
- `C:\ExchangeDatabases\VOL3`

Restoration in non-production environments

If the E5300 Messaging System was in a non-production environment prior to the system recovery and the Exchange data does not need to be retained, the data on the appropriate volumes should be deleted. This includes the mailbox databases and logs found in the mount points listed under `C:\ExchangeDatabases`. The HUB transport database and logs (located on the H:\drive) should also be deleted. The E5000 Exchange Deployment Tool can be used to create a fresh deployment of Exchange 2010.

Restoration in production environments

If the E5300 Messaging System was in a production environment and the Exchange data needs to be retained, follow the appropriate Exchange recovery steps for your situation. Remember that the E5000 system uses a multi-role Exchange configuration with the Client Access Server (CAS), Hub Transport Server (HT), and Mailbox Server (MBX) roles installed on each of the two nodes. **Do not** utilize the E5000 Exchange Deployment Tool in this situation. You can recover a lost Exchange server by using the `Setup /m:RecoverServer` switch in Microsoft Exchange Server 2010. See also http://technet.microsoft.com/en-us/library/dd638206.aspx.

9 Support and other resources

Contacting HP

HP technical support

For worldwide technical support information, see the HP support website:

http://www.hp.com/support

Before contacting HP, collect the following information:

- Product model names and numbers
- Technical support registration number (if applicable)
- Product serial numbers
- Error messages
- Operating system type and revision level
- Detailed questions

Subscription service

HP recommends that you register your product at the Subscriber's Choice for Business website:

http://www.hp.com/go/e-updates

After registering, you receive email notification of product enhancements, new driver versions, firmware updates, and other product resources.

Related information

The following documents provide related information:

- HP E5000 Series Messaging System for Microsoft Exchange documentation
  - *HP E5000 Series Messaging System for Microsoft Exchange Quick Start Guide*
  - *HP StorageWorks 3U Storage System Rail Kit Installation Instructions*

  To locate the messaging system documents, go to http://www.hp.com/go/e5000, and then click the support link.

You can also find these documents from the Manuals page of the HP Business Support Center website:

http://www.hp.com/support/manuals

HP websites

For additional HP information, see the following HP websites:

- http://www.hp.com/go/E5000
- http://www.hp.com
- http://www.hp.com/go/storage
- http://www.hp.com/go/hpsim
- http://www.hp.com/service_locator
- http://www.hp.com/support/manuals
- http://www.hp.com/support/downloads

- http://www.hp.com/storage/whitepapers
- http://www.hp.com/solutions/activeanswers/exchange
- http://h18013.www1.hp.com/products/servers/management/hpsim/index.html

Microsoft websites

For additional Microsoft information, see the following Microsoft websites:

- http://technet.microsoft.com/en-us/library/bb124558.aspx
- http://technet.microsoft.com/en-us/library/bb125255(EXCHG.80).aspx
- http://msdn.microsoft.com/en-us/library/aa562607(EXCHG.140).aspx
- http://msdn.microsoft.com/en-us/library/cc425506(EXCHG.80).aspx

Typographic conventions

Table 15 Document conventions

Convention	Element
Blue text: Table 15 (page 151)	Cross-reference links and e-mail addresses
Blue, underlined text: http://www.hp.com	Website addresses
Bold text	• Keys that are pressed • Text typed into a GUI element, such as a box • GUI elements that are clicked or selected, such as menu and list items, buttons, tabs, and check boxes
Italic text	Text emphasis
`Monospace` text	• File and directory names • System output • Code • Commands, their arguments, and argument values
`Monospace, italic` text	• Code variables • Command variables
`Monospace, bold` text	Emphasized monospace text

WARNING! Indicates that failure to follow directions could result in bodily harm or death.

CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.

TIP: Provides helpful hints and shortcuts.

Rack stability

Rack stability protects personnel and equipment.

WARNING! To reduce the risk of personal injury or damage to equipment:

- Extend leveling jacks to the floor.
- Ensure that the full weight of the rack rests on the leveling jacks.
- Install stabilizing feet on the rack.
- In multiple-rack installations, fasten racks together securely.
- Extend only one rack component at a time. Racks can become unstable if more than one component is extended.

A EMU reference

CLI reference

The Command Line Interface is the primary interface for managing the Enclosure Manager. This CLI is accessed via secure shell protocol over the LAN. Using the CLI is necessary for functions not possible through any other mechanism or interface. For example, creating and setting Enclosure Manager user accounts and passwords can be done through no other interface. Remotely powering ON or OFF the enclosure can be done only with the CLI.

Command line conventions

CLI input is case-insensitive except when otherwise noted. Commands are organized into a tree, with approximately 30 base commands. Each of these commands can have any number of subcommands. Subcommands can also have further subcommands. Each command used in this appendix follows the conventions listed in the following table.

Table 16 Command line conventions

Symbol	Description
<lowercase>	Denotes the variable within the symbols that must be substituted with a value, such as a user name. Symbols must be removed.
UPPERCASE	Denotes input to be entered as shown. Unless noted, symbol is not case-sensitive.
|	Used to separate input options.

{ }	Denotes a list of mandatory choices that must be made. For example, `SET ENCLOSURE UID {ON | OFF}` must be in one of the following forms:
	`SET ENCLOSURE UID ON`
	`SET ENCLOSURE UID OFF`

[ ]	Denotes an optional argument or set of characters.
" "	Used to enclose command arguments that contain spaces.

NOTE: All users logged into the CLI have administrator privilege. When a user account is created, the account has administrator privilege.

Operational groups

Descriptions of the CLI commands are grouped below by functional areas instead of the parser implementation which (as mentioned above) is a tree of commands, subcommands, and sub-subcommands. The functional groups are:

- Authentication—user identity and authentication
- Time functions—Real Time Clock/Calendar control
- Role definition—access control
- Inventory and status—self explanatory
- Internet control—internal and external LAN management
- Server control –iLO dependent control of server
- Enclosure control—global control of enclosure, excluding JBOD management zone
- Forensic—global diagnostic context functions (not directed validation tests)
- Session—CLI session control

Authentication

This section defines EM authentication CLI functions.

ADD USER

Syntax

```
ADD USER "<user name>" ["<password>"]
```

Description

Adds a user to the system. If you do not provide a password, you are prompted for one. If script mode is enabled and the password is not provided, the password is assigned an unmatched string. This unmatched string requires an enclosure administrator to change the password to allow the new user to access the system.

Restrictions

- You can add a maximum of 30 users, including the reserved accounts.
- The <user name> is case-sensitive and must be unique to all other user names and group names. The user name must be 1 to 40 characters long and can include all alphanumeric characters, the dash, and the underscore.
- The <user name> must begin with a letter.
- The <password> must be 3 to 40 characters long. The character set includes all printable characters. If you do not enter a password, you are prompted to enter one.
- Reserved user names are: ALL (case insensitive), ADMINISTRATOR (case insensitive), switch1, switch2, switch3, switch4, switch5, switch6, switch7, switch8, daemon, ldapuser, nobody, tbmuser_, vcmuser_, root, and quire.

CLEAR SSHKEY

Syntax

```
CLEAR SSHKEY
```

Description

Disables a user account. The system immediately logs out the user and prevents the user from logging in until the account is enabled.

This command is used in the factory to disable the 'root' user account. The root user account is required to perform certain factory-only configuration and diagnostic operations when logged into the Linux shell.

Restrictions

None

DOWNLOAD SSHKEY

Syntax

```
DOWNLOAD SSHKEY <url>
```

Description

Downloads an authorized key file to use with Secure Shell 2, which can contain the public keys for the built-in Administrator user. Supported protocols are http, ftp, and tftp. The url should be formatted as `protocol://host/path/file`. If your ftp server does not support anonymous connections, then you can specify a username and password by replacing the host part in the above format with `username:password@host`. The authorized keys file must contain only protocol version 2 public keys. Each line of the file represents one key (empty lines and lines starting

with # represent comments). Each protocol version 2 key consists of the following fields, separated by spaces: keytype, base64 encoded key, comment. Keytype is either ssh-rsa or ssh-dss. Downloading an SSH key file replaces all currently installed SSH keys.

Restrictions

None

ENABLE USER

Description

Enables a user account that was previously disabled by the `DISABLE USER` command.

Restrictions

The <user name> is case-sensitive.

REMOVE USER

Syntax

```
REMOVE USER {ALL | "<user name>" | CERTIFICATE "<user name>"}
```

Description

Removes the existing user specified by *<user name>* and/or any certificate mapped to this user. If the user is currently logged on, their sessions are terminated. Specifying `ALL` removes all users from the system except the default Administrator account. The user is prompted for confirmation except in script mode.

Restrictions

- The *<user name>* is case-sensitive.
- You cannot remove the Administrator user.

SET PASSWORD

Syntax

```
["<password>"]
```

Description

Sets the password of the user who entered the command. The *<password>* parameter is optional, but failure to enter a password results in the system prompting your for a password.

- Passwords must be between 3 and 40 characters in length.
- Acceptable characters include any printable character.
- This command is not valid in script mode.

Restrictions

None

SET USER PASSWORD

Syntax

```
SET USER PASSWORD "<user name>" ["<new password>"]
```

Description

Sets a user's password. If you do not supply a password on the command line, you are prompted for one.

Restrictions

- Only the Administrator account can modify the password of the Administrator account.
- The <*user name*> is case-sensitive.
- The <*new password*> must be 3 to 40 characters long.
- The character set includes all printable characters.
- This command is not valid in script mode.

SHOW USER

Syntax

```
SHOW USER [ [LIST | "<user name>"] ]
```

Description

Displays general user information and user rights (which is always "Admin") for this firmware version.

Restrictions

- Does not show information for restricted user accounts—only shows information for Administrator and other end-user-created accounts.
- Since there are no bay or device access restrictions, no information about bays being assigned is given.

SHOW SSHFINGERPRINT

Syntax

```
SHOW SSHFINGERPRINT
```

Description

Displays the key fingerprint of the host public key of the Enclosure Manager.

Restrictions

None

Example

```
EM-78E7D1C12074> show sshfingerprint
1024 c3:86:bf:2d:17:b5:bf:ee:69:d7:47:87:7b:bd:4c:f5 /etc/ssh/id_dsa.pub (DSA)
EM-78E7D1C12074>
```

SHOW SSHKEY

Syntax

```
SHOW SSKEY
```

Description

Displays the contents of the existing ssh authorized key files (stored in NAND Flash).

Restrictions

None

ADD SSHKEY

Syntax

```
ADD SSHKEY <end marker><newline><certificate><newline><end marker>
```

Description

Adds an SSH key on the command line. Start with a string that does not appear within the certificate (end marker). Next, paste in the certificate. Terminate the command with the end marker. Failure to give a proper end marker before and after the certificate may cause the interface to wait for the appropriate end marker indefinitely.

Restrictions

This command is only available in script mode.

SHOW PASSWORD SETTINGS

Syntax

```
SHOW PASSWORD SETTINGS
```

Description

Displays the current minimum password length and strong password settings.

Restrictions

EM 1.0 does not support the ENABLE STRONG PASSWORD command so the settings are always constant.

Time functions

Because this small group of functions is used in conjunction with other groups, it is separated as its own group.

SET DATE

Syntax

```
SET DATE MMDDhhmm
```

Description

Sets the enclosure date and time and optionally year and time zone. Time is in 24-hour format. If the year or time zone parameters are omitted, the current values remain in effect. The definitions of the parameters above are:

MM: Month
DD: Day
hh: Hour (24–hour format)
mm: Minute
CC: Century
YY: Year
TZ: Time Zone (chosen from strings in Table 17 (page 157))

Table 17 Universal time zone settings

CET	Etc/GMT-2	Etc/GMT+7	Etc/GMT-13	MST
CST6CDT	Etc/GMT+2	Etc/GMT+8	Etc/GMT-14	MST7MDT
EET	Etc/GMT-3	Etc/GMT+8	Etc/Greenwich	Navajo
EST	Etc/GMT+3	Etc/GMT-9	Etc/UCT	PST8PDT

Table 17 Universal time zone settings *(continued)*

EST5EDT	Etc/GMT-4	Etc/GMT+9	Etc/Universal	UCT
Etc/GMT	Etc/GMT+4	Etc/GMT-10	Etc/UTC	Universal
Etc/GMT0	Etc/GMT-5	Etc/GMT+10	Etc/Zulu	UTC
Etc/GMT-0	Etc/GMT+5	Etc/GMT-11	GMT	WET
Etc/GMT+0	Etc/GMT-6	Etc/GMT+11	Greenwich	WSU
Etc/GMT-1	Etc/GMT+6	Etc/GMT-12	HST	Zulu
Etc/GMT+1	Etc/GMT-7	Etc/GMT+12	MET	

If you leave the time zone, century, or year blank, the current setting is reused.

Restrictions

- Date and time can only be set if NTP is disabled.
- MM is an integer from 01 to 12.
- DD is an integer from 01 to 31.
- hh is an integer from 00 to 23.
- mm is an integer from 00 to 59.
- CC is an integer from 00 to 99.
- YY is an integer from 00 to 99.

SET TIMEZONE

Syntax

```
SET TIMEZONE <timezone>
```

Description

Sets the time zone.

Restrictions

Only the choices listed in Table 17 (page 157) may be used.

ENABLE NTP

Syntax

```
ENABLE NTP
```

Description

Enables Network Time Protocol support for the Enclosure Manager.

Restrictions

None

DISABLE NTP

Syntax

```
DISABLE NTP
```

Description

Disables the synchronizing of time and date with a remote server using the NTP protocol. Does not clear any NTP servers that have been configured with SET NTP.

Restrictions

None

CLEAR NTP

Syntax

```
CLEAR NTP {PRIMARY | SECONDARY }
```

Description

Clears the Primary or Secondary NTP server IP address.

Restrictions

Clearing the Primary NTP address disables NTP.

SET NTP POLL

Syntax

```
SET NTP POLL <seconds>
```

Description

Sets the polling interval for Network Time Protocol servers. The factory default polling interval is 720 seconds (12 minutes).

Restrictions

The polling range is 60 – 86400 seconds (1 minute to 1 day).

SET NTP PRIMARY

Syntax

```
SET NTP PRIMARY <host>
```

Description

Sets the primary server used for synchronizing time/date using the Network Time Protocol (NTP). <host> can be either an IPv4 address, an IPv6 address, or a DNS name.

Restrictions

- IPv4 addresses must be in the form ###.###.###.###, where each ### ranges from 0 to 255.
- IPv6 addresses must be formed without the network prefix length.

SET NTP SECONDARY

Syntax

```
SET NTP SECONDARY <host>
```

Description

Sets the secondary server used for synchronizing time/date using the Network Time Protocol (NTP). <host> can be either an IPv4 address, and IPv6 address or a DNS name.

Restrictions

- IPv4 addresses must be in the form ###.###.###.###, where each ### ranges from 0 to 255.
- IPv6 addresses must be formed without the network prefix length.

Inventory and status

These commands display various inventory and global state data.

SET DISPLAY EVENTS

Syntax

```
SET DISPLAY EVENTS { ON | OFF }
```

Description

Turns on or off the displaying of events that are triggered by status changes in the system.

Restrictions

- This command is specific to the current CLI session and must be issued for each CLI session to display events in that session. (The setting is not persistent.)
- Upon boot of EM, event display is OFF.

SHOW ALL

Syntax

```
SHOW ALL
```

Description

Executes all SHOW commands in succession.

Restrictions

To save the output, you must configure your SSH software to log the session to a file or increase the history buffer size so that the output can be copied and pasted into another file.

SHOW CONFIG

Syntax

```
SHOW CONFIG
```

Description

Displays the script required to recreate the settings of the enclosure. Passwords are not included for any user.

Restrictions

None

SHOW DATE

Syntax

```
SHOW DATE
```

Description

Displays the current date, time, and time zone settings of the internal Real Time Clock of the Enclosure Manager.

Restrictions

None

SHOW DEVICE SERIAL_NUMBER BLADE

Syntax

```
SHOW DEVICE SERIAL_NUMBER BLADE <bay#>
```

Description

Displays the serial number of the blade specified by the bay <bay#>.

Restrictions

Can be used only when enclosure power is on, blade is present, and iLO is communicating to EM properly. If enclosure power is off, the EM has no signal from the blade to determine whether it is present, and iLO in the blade has no power to report its serial number. The EM reports '[Unknown]' if this command is used with enclosure power off.

SHOW DISPLAY EVENTS

Syntax

```
SHOW DISPLAY EVENTS
```

Description

Displays the current status of the display event setting.

Restrictions

None

SHOW EM

Syntax

```
SHOW EM INFO
```

Description

Displays information about the Enclosure Manager.[1]

Restrictions

None

Example

```
EM-78E7D1C12074> show em info
Enclosure Manager information:
Product Name : HP CSP EMU
Part Number : 620022-001
Serial Number : PBCYUAX9VZ6062
UUID : 99PBCYUAX9VZ6062
Manufacturer : HP
Firmware Ver. : 1.00 Nov 08 2010
```

1. Hardware versions are A, B, C, and so forth. Aux info includes the change management SubVersion number and the health monitor PSoC firmware version number. Both are needed occasionally in lab testing environments. In production environments, the HM version may sometimes be needed, and this command is the only way to find it in v1.0 EM firmware.

```
EMU Type : 1
Hw Version : A
Aux Info : SVN: 2452, HM: 1.2
```

SHOW ENCLOSURE FAN

Syntax

```
SHOW ENCLOSURE FAN { ALL | <fan number> }
```

Description

Displays information about and current status of the specified enclosure fan.

Restrictions

- The <fan number> must be 1 or 2.
- Fan information is not available if fan status is Dormant (meaning not powered).
- EM is only directly controlling FAN 1. The JBOD IE expanders control FAN 2 so information on FAN 2 can only be reported if enclosure power is on AND at least one SAS IO module is present and functioning normally.
- Not all information (for example, part number and serial number) of FAN 2 are reported to EM by the SAS module so it cannot be reported as with FAN 1.
- When enclosure power is first turned on, FAN 2 status changes from 'Dormant' to 'Absent' and then to actual status when this information is given to the EM.

Example

```
EM-78E7D1C12074> show enclosure fan all
Fan #1 information:
Status: OK
Speed: 33 percent of Maximum speed
Maximum speed: 14000
Minimum speed: 4200
Product Name: HP IDP FAN MODULE
Part Number: 999999
Spare Part Number: 620825-001
Version: 0.9
Fan #2 information:
Status: OK
Speed: 30 percent of Maximum speed
Maximum speed: 14000
Minimum speed: 0
Version: 0.9
```

SHOW ENCLOSURE INFO

Syntax

```
SHOW ENCLOSURE INFO
```

Description

Displays information about the enclosure and included options.[2]

Restrictions

None

2. Some information, such as Enclosure Name, is user supplied, and if never programmed has a default value. The Solution part number, serial number and name string are programmed in the factory depending on the software SKU that is pre-installed. These numbers and strings are not customer programmable but vary by solution SKU even if the CSP is the same type. The solution numbers, not the chassis numbers, are used for warranty obligation tracking.

Example

```
EM-78E7D1C12074> show enclosure info
Enclosure Information:
Enclosure Name: UnnamedEnclosure
Enclosure ID: 0
Chassis Part Number: 595271-001
Chassis Serial Number: 1234567890
UUID: 991234567890
Asset Tag:
Solution Part Number: DANCSP-001
Solution Serial Number: ABCDEFGHIJ
Solution Name: StorageWorks CSP Enclosure
```

SHOW ENCLOSURE POWERSUPPLY

Syntax

```
SHOW ENCLOSURE POWERSUPPLY { ALL | <bay> { , | - } <bay>}
```

Description

Displays the following general information and current status for the specified power supply or range of power supplies:

- Status (OK, Degraded, Dormant, Failed, Unnown)
- AC Input status
- Capacity: (watts)
- Current power output (watts)
- Serial Number. V 1.0 firmware incorrectly parses PS and shows the manufacture date instead of the serial number. But serial number is printed on PS label so warranty tracking is still possible. The firmware fix was deferred.
- Product name
- Part number
- Spare part number
- Product version. Integer value, 01, 02, and so forth.

Restrictions

None

Example

```
EM-78E7D1C12074> show enclosure powersupply all
Power Supply #1 Information:
Status: OK
AC Input Status: OK
Capacity: 1200 Watts
Current Power Output: 139 Watts
Serial Number: 05/19/09
Product Name: HP POWER SUPPLY
Part Number: 578322-B21
Spare Part Number: 579229-001
Product Ver: 01
Power Supply #2 Information:
Status: OK
AC Input Status: OK
Capacity: 1200 Watts
Current Power Output: 171 Watts
Serial Number: 05/19/09
Product Name: HP POWER SUPPLY
Part Number: 578322-B21
```

```
Spare Part Number: 579229-001
Product Ver: 01
```

SHOW ENCLOSURE STATUS

Syntax

```
SHOW ENCLOSURE STATUS
```

Description

Displays the basic health and status of the enclosure and its subsystems. If the enclosure shows degraded, the subsystem(s) causing the state change are detailed (for example, failed or missing redundant module).

Restrictions

None

Example

```
SHOW ENCLOSURE STATUS
Enclosure:
Status: OK
Unit Identification LED: Off
Enclosure Manager:
Status: OK
Power Subsystem:
Status: OK
Power Mode: Power Supply Redundant
Power Capacity: 2400 Watts DC
Present Power: 454 Watts DC
Cooling Subsystem:
Status: OK
Fans Good/Wanted/Needed: 2/2/2
Fan 1: 4300 RPM (31%)
Fan 2: 6398 RPM (46%)
Server Subsystem
Status: OK
2 server blades installed, 2 powered on.
I/O Modules Subsystem:
Status: OK
```

SHOW ENCLOSURE TEMP

Syntax

```
SHOW ENCLOSURE TEMP
```

Description

Displays current status and reading of some of the thermal sensors in the enclosure. If the sensor is unreadable due to absence of power or failure, ? is shown.

Restrictions

- Only integral measurements in Celsius are displayed (fraction, if any, is truncated).
- Not every sensor that is present in the enclosure is reported.
- For blades a 'virtual ambient' (not a physical) sensor temperature is shown that is computed by iLO based on its thermal model and measurements from several sensors. This model is opaque to EM. Until this calculation normalizes, 0 is shown as the temperature for the blade, so that right after power on of the enclosure, it takes several seconds before a nonzero value is shown for the blades while other sensors are reported immediately.

Example

```
EM-78E7D1C12074> show enclosure temp
Locale Bay # Temp Status Temp Caution Critical
---------------------- ----- ---------- -------- ------- --------
EMU 1 OK 36C 65C 70C
Blade 1 N/A 23C 42C 46C
Blade 2 N/A 22C 42C 46C
LOMA OK 39C 90C 95C
LOMB OK 39C 90C 95C
MEZZA OK 33C 90C 95C
MEZZB OK 33C 90C 95C
PCIE1 OK 36C 80C 85C
PCIE2 OK 39C 80C 85C
SASA OK 49C 70C 75C
SASB OK 52C 70C 75C
```

SHOW FRU

Syntax

```
SHOW FRU
```

Description

Displays summary information on field replaceable units (FRUs) within the enclosure. Information provided in this section can quickly aid the administrator in contacting HP Customer Service for troubleshooting, repair, and ordering replacements.

Restrictions

- Only displays known/live data.
- Some FRU devices are not accessible by the EMU when enclosure power is off so their information is unavailable.

Example

```
EM-78E7D1C12074> show fru
Enclosure
Model: HP 36SFF BACKPLANE
Manufacturer: HP
Serial Number: 1234567890
Part Number: 595271-001
Enclosure Manager
Model: HP IDP EMU
Manufacturer: HP
PCA Serial Number: PBCYUAX9VZ6062
Spare Part Number: 620022-001
Firmware Version: 1.00
HwVersion: X4
Blade 1
Model: ProLiant BL460c G6
Manufacturer: HP
Serial Number: MXQ9350526
Part Number: 507782-B21
Spare Part Number: 531221-001
Mezz 1
Model: NC360m Dual Port 1Gb NIC for c-Class BladeSystem
Manufacturer: HP
Serial Number: MYI93100X7
Part Number: 445978-B21
Spare Part Number: 448068-001
Product Ver: 0A
Mezz 2
Model: StorageWorks 1210m
```

```
Manufacturer: HP
Serial Number: RT06BK0398
Part Number: 580089-B21
Spare Part Number: 587311-001
Product Ver: X3
Blade 2
Model: ProLiant BL460c G6
Manufacturer: HP
Serial Number: MXQ93305T8
Part Number: 507782-B21
Spare Part Number: 531221-00
Mezz 1
Model: NC360m Dual Port 1Gb NIC for c-Class BladeSystem
Manufacturer: HP
Serial Number: MYI93100EB
Part Number: 445978-B21
Spare Part Number: 448068-001
Product Ver: 0A
Mezz 2
Model: StorageWorks 1210m
Manufacturer: HP
Serial Number: RT06BK0393
Part Number: 580089-B21
Spare Part Number: 587311-001
Product Ver: X3
I/O Module Bay: LOMA
Model: HP IDP 1G LOM MODULE
Manufacturer: HP
PCA Serial Number: PBCZEAX9VZ602G
Spare Part Number: 611378-001
Firmware Version: 0.10
HwVersion: X5
I/O Module Bay: LOMB
Model: HP IDP 1G LOM MODULE
Manufacturer: HP
PCA Serial Number: PBCZEX59VYV011
Spare Part Number: 999999-999
Firmware Version: 0.10
HwVersion: X1
I/O Module Bay: MEZZA
Model: HP IDP 1G SWITCH MEZZ
Manufacturer: HP
PCA Serial Number: PBCZHAX9VZ6082
Spare Part Number: 620021-001
Firmware Version: 0.10
HwVersion: X5
I/O Module Bay: MEZZB
Model: HP IDP 1G SWITCH MEZZ
Manufacturer: HP
PCA Serial Number: PBCZHAX9VZ602K
Spare Part Number: 620021-001
Firmware Version: 0.10
HwVersion: X5
I/O Module Bay: PCIE1
Model: HP IDP PCIE MODULE
Manufacturer: HP
PCA Serial Number: PBCZDAX9VZ602P
Spare Part Number: 615879-001
Firmware Version: none
HwVersion: X4
I/O Module Bay: PCIE2
Model: HP IDP PCIE MODULE
Manufacturer: HP
PCA Serial Number: PBCZDAX9VZ6081
Spare Part Number: 615879-001
```

```
Firmware Version: none
HwVersion: X4
I/O Module Bay: SASA
Firmware Version: EE:1209 IE:1209
I/O Module Bay: SASB
Firmware Version: EE:1209 IE:1209
```

SHOW IOMODULES

Syntax

```
SHOW IOMODULES
```

Description

Shows information for the IOMODULE within the enclosure: SAS, LOM, MEZZ, and PCIe.

Restrictions

- Should really only be used when enclosure power is on.
- If enclosure power has never been turned on, no information is available. If it was on but is now off, only the firmware version of the IO modules that have firmware is shown.

Example

```
EM-78E7D1C12074> show iomodules
I/O Module Bay: LOMA
Status: OK
Power: on
Product Name: HP IDP 1G LOM MODULE
Part Number: 611378-001
Serial Number: PBCZEAX9VZ602G
HwVersion: X5
FwVersion: 0.10
Unit Identification LED: off
Health Status LED: Healthy
I/O Module Bay: LOMB
Status: OK
Power: on
Product Name: HP IDP 1G LOM MODULE
Part Number: 999999-999
Serial Number: PBCZEX59VYV011
HwVersion: X1
FwVersion: 0.10
Unit Identification LED: off
Health Status LED: Healthy
I/O Module Bay: MEZZA
Status: OK
Power: off
Product Name: HP IDP 1G SWITCH MEZZ
Part Number: 620021-001
Serial Number: PBCZHAX9VZ6082
HwVersion: X5
FwVersion: 0.10
Unit Identification LED: off
Health Status LED: Healthy
I/O Module Bay: MEZZB
Status: OK
Power: off
Product Name: HP IDP 1G SWITCH MEZZ
Part Number: 620021-001
Serial Number: PBCZHAX9VZ602K
HwVersion: X5
FwVersion: 0.10
Unit Identification LED: off
```

```
Health Status LED: Healthy
I/O Module Bay: PCIE1
Status: OK
Power: on
Product Name: HP IDP PCIE MODULE
Part Number: 615879-001
Serial Number: PBCZDAX9VZ602P
HwVersion: X4
FwVersion: none
Unit Identification LED: off
Health Status LED: Unknown
I/O Module Bay: PCIE2
Status: OK
Power: on
Product Name: HP IDP PCIE MODULE
Part Number: 615879-001
Serial Number: PBCZDAX9VZ6081
HwVersion: X4
FwVersion: none
Unit Identification LED: off
Health Status LED: Unknown
I/O Module Bay: SASA
Status: OK
Power: on
FwVersion: EE:1209 IE:1209
I/O Module Bay: SASB
Status: OK
Power: on
FwVersion: EE:1209 IE:1209
```

SHOW RACK

Syntax

```
SHOW RACK { NAME | ID }
```

Description

Displays user-defined rack name (string) or id (0...255) that is part of the persistent EM configuration.

Restrictions

- If rack name has not been set it is 'UnnamedRack'.
- If rack id has not been set, it is 0.

Example

```
EM-78E7D1C12074> show rack name
Rack Name: UnnamedRack
```

SHOW SERVER TEMP

Syntax

```
SHOW SERVER TEMP { ALL | <bay#>[ { , | - } <bay#>] }
```

Description

Displays temperature sensor information for the specified server or range of servers. This data is provided by iLO to the EM, which has no direct sensor access.

Restrictions

The enclosure must be powered on, otherwise iLO has no power and cannot sense temperature or send data to the EM.

Example

```
EM-78E7D1C12074> show server temp all
Device Bay #1 Temperature Information
Locale Status Temp Caution Critical
--------------------------------- ------ -------- ------- --------
Ambient Zone OK 23C/ 73F 42C 46C
CPU 1 OK 40C/104F 82C 83C
CPU 2 OK N/A
Memory Zone OK 32C/ 89F 87C 92C
Memory Zone OK 30C/ 86F 85C 90C
Memory Zone OK 37C/ 98F 85C 90C
System Zone OK 37C/ 98F 85C 90C
System Zone OK 39C/102F 78C 83C
System Zone OK 52C/125F 110C 115C
Drive Backplane OK 21C/ 69F 60C 65C
Device Bay #2 Temperature Information
Locale Status Temp Caution Critical
--------------------------------- ------ -------- ------- --------
Ambient Zone OK 23C/ 73F 42C 46C
CPU 1 OK 40C/104F 82C 83C
CPU 2 OK N/A
Memory Zone OK 31C/ 87F 87C 92C
Memory Zone OK 29C/ 84F 85C 90C
Memory Zone OK 36C/ 96F 85C 90C
System Zone OK 36C/ 96F 85C 90C
System Zone OK 38C/100F 78C 83C
System Zone OK 49C/120F 110C 15C
Drive Backplane OK 15C/ 59F 60C 65C
```

Internet control

The EM bridges two networks: an external network and an internal network. The iLO of both servers is connected to the internal network, and EM uses this network to interact with iLO using IPMI messages to control the servers. EM also bridges the two iLO management processors to the external management LAN for other software and to enable users to interact with iLO directly. Only the two servers and the two SAS IO modules are connected. CSP IO modules have no web-based user interface, so EBIPA is used exclusively for the 2 iLO management processors in the blades.

The following commands define the EM 1.0 CLI functions for Internet control in CSP.

ADD EBIPA

Syntax

```
ADD EBIPA { SERVER } DNS <ip address>
```

Description

Adds an EBIPA DNS server IP address to the list of DNS servers for server bays.

Restrictions

- A maximum of 3 DNS servers can be added for EBIPA.
- <ip address> must be in the form ###.###.###, where each ### ranges from 0 to 255.

REMOVE EPIBA

Syntax

```
REMOVE EBIPA { SERVER } DNS <ip address>
```

Description

Removes an EBIPA DNS server IP address from the list of DNS servers for server bays.

Restrictions

<ip address> must be in the form ###.###.###, where each ### ranges from 0 to 255.

SET EBIPA

Syntax

```
SET EBIPA { SERVER } { NETMASK <netmask> | GATEWAY <gateway> | DOMAIN
"<domain name>" | <ip address> {<netmask> | [netmask] { ALL | <bay#>
[{ , | - } <bay#>]} }
```

Description

Sets Enclosure Bay IP Addressing settings, including starting IP address, net mask, default gateway, and domain name for the specified bay. If no bay#s are given when setting <ip address>, then both server bays are assigned an IP address in the range starting from <ip address>. The keyword NONE can be used in place of <ip address>, <netmask>, or <gateway> to clear the IP address.

Restrictions

- <ip address> and <netmask> must be in the form ###.###.###, where each ### ranges from 0 to 255.
- <domain name> is a string containing letters (a-z, A-Z), digits (0–9), or a dash (-).
- <bay#> must be 1 or 2.

SET EM GATEWAY

Syntax

```
SET EM GATEWAY [<bay number>] <ip address>
```

Description

Sets the network default gateway. <*bay number*> is optional because there is only 1 EM bay.

Restrictions

- This Gateway is used only if the system is currently configured to use a static IP address rather than the DHCP protocol.
- <*ip address*> must be in the form ###.###.###, where each ### ranges from 0 to 255.
- 1 is the only valid value for <*bay number*> because EM is not redundant in CSP, and there is no bay 2.

PING

Syntax

```
PING IPV6 [<NUMBER>] {<ipv6 address> | "<server name>"}
```

Description

Sends ICMP echo messages to a remote IPv6 device. If you omit <*NUMBER*>, or use a number larger than 9999 or one that is negative, then only four packets are sent. Packets are sent at one-second intervals to prevent congestion.

Restrictions

- <number> must be between 1 and 9999.
- IPv6 must be enabled.
- <ipv6 address> must be in the format ####:####:####::##.

SET IPCONFIG

Syntax

```
SET IPCONFIG { DHCP | STATIC | LOCAL }
```

Description

Configures EM addressing mode to be DCHP, static, or link local. The setting takes effect immediately. If mode chosen is static, other parameters are required (see below).

Restrictions

None

SET IPCONFIG STATIC

Syntax

```
SET IPCONFIG STATIC <ip address> <netmask> [<gateway>]
```

Description

Configures the IP settings for the EM to static mode. In selecting this mode, the IP address and Netmaks are be set to *<ip address>* and *<netmask>*, respectively. These settings take effect immediately. The Gateway address will be cleared if it is omitted. Note the Gateway address can also be set by using the `SET EM GATEWAY` command.

Restrictions

None

SHOW NETWORK

Syntax

```
SHOW NETWORK
```

Description

Displays the network settings of the Enclosure Manager.

Restrictions

None

SHOW EBIPA

Syntax

```
SHOW EBIPA
```

Description

Displays EBIPA configuration information.

Restrictions

EM EBIPA control only functions for the 2 iLO processors in the server blades.

Server management

Use the commands in this section to perform server management operations.

POWEROFF SERVER

Syntax

```
POWEROFF SERVER { ALL | <bay#> {[ , | - } <bay#>]} [FORCE]
```

Description

Sends an asynchronous request for a graceful shutdown to the server. This command returns the user to the CLI immediately but the shutdown command can take up to 5 minutes to complete. If the FORCE option is specified, the Server Blade OS is not given the opportunity to perform a graceful shutdown before power is removed. This option can cause a Server Blade to lose data and possibly to become unstable.

Restrictions

- <*bay#*> must be 1 or 2.
- Use of the FORCE option can cause a Server Blade to lose data and possibly to become unstable.

POWERON SERVER

Syntax

```
POWERON SERVER { ALL | <bay#> [{ , | - } <bay#>]} [{NORMAL | PXE | HDD
| RBSU }]
```

Description

Power on the specified server. Adding an optional boot argument forces the blade to ignore the regular boot order and forces a boot using the specified method. If no blade is in the specified bay, you are notified that the bay is empty.

Restrictions

This command functions only if the enclosure power is already on.[3]

REBOOT SERVER

Syntax

```
REBOOT SERVER { ALL | <bay#> [{ , | - } <bay#>]} [FORCE] [{NORMAL | PXE
| HDD | RBSU }]
```

Description

Sends an asynchronous request to the server to do a graceful shutdown of the OS. Afterthe OS has had sufficient time to perform a graceful shutdown, the Server Blade is power cycled. If the FORCE option is specified, the Server Blade OS is not given the opportunity to perform a graceful shutdown before power is removed but is cleanly powered off and then immediately powered back on. The FORCE option can cause a Server Blade to lose data and possibly to become unstable.

Restrictions

This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

RESET SERVER

Syntax

```
RESET SERVER { <bay#> }
```

3. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

Description

Resets the server bay by momentarily removing all power. This also resets iLO and is a required operation following firmware update of iLO.

Restrictions

This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

SET SERVER UID

Syntax

```
SET SERVER UID { ALL | <bay#> [{ , | - } <bay#>]} { ON | OFF }
```

Description

Turns on or off the Unit Identification (UID) LED on the specified server(s).

Restrictions

This command functions only if the enclosure power is already on.[4]

SET SERVER BOOT

Syntax

```
SET SERVER BOOT { FIRST | ONCE } { NORMAL | HDD | PXE | RBSU } { ALL |
<bay#> [{ , | - } <bay#>]}
```

Description

Turns on or off the Unit Identification (UID) LED on the specified server(s).

Persistently stores a setting for the IPL to be passed to the specified server(s) at the next reboot.

SET SERVER BOOT FIRST sets the boot order of the blade.

SET SERVER BOOT ONCE sets the boot device to be used on the next boot of the bay(s) specified; The RBSU option is only available for SET SERVER BOOT ONCE.

Restrictions

- This setting is only valid on present blades and is cleared if the blade is removed.
- This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

SHOW SERVER NAMES

Syntax

```
SHOW SERVER NAMES
```

Description

Displays a brief description of all server blades.

Restrictions

This command functions only if the enclosure power is already on. If power is not on, the command responds with the message: “enclosure power is off”. If power is just now coming on but state

4. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

exchange between iLO and EM have not normalized, some displayed information may show '[Unknown]' or '?'.

Example

```
EM-78E7DC12074> show server names
Bay Server Name Serial Number Status Power UID
--- ---------------------------- -------------- -------- ------- ---
1 MSATAZ2 MXQ9350526 OK On On
2 MSATAZ1 MXQ93305T8 OK On On
Totals: 2 server blades installed, 2 powered on.
```

SHOW SERVER BOOT

Syntax

```
SHOW SERVER BOOT { ALL | <bay#> [{ - | , } <bay#>
```

Description

Displays the boot order and one-time boot device for the specified server or range of servers. These settings correspond to the server boot settings in the ROM-Based Setup Utility (RBSU).

Restrictions

This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning that the blade is not present if this command is used when enclosure power is off.

Example

This example is with enclosure power off:

```
This example is with enclosure power off:
EM-78E7DC12074> show server boot all
Server Blade #1 Boot Information:
The blade is not present.
Server Blade #2 Boot Information:
The blade is not present.
```

This example is same system with enclosure power on:

```
EM-78E7DC12074> show server boot all
Server Blade #1 Boot Information:
One time boot from: NoneIPL Devices (Boot Order):
CD-ROM
Diskette Drive (A:)
USB
Hard Drive (C:)
PXE NIC 1
Server Blade #2 Boot Information:
One time boot from: NoneIPL Devices (Boot Order):
CD-ROM
Diskette Drive (A:)
USB
Hard Drive
PXE NIC 1
```

SHOW SERVER INFO

Syntax

```
SHOW SERVER INFO { ALL | <bay#>[{ , | - } <bay#>]}
```

Description

Displays a description of the server blade hardware, including the embedded NICs, the Mezz HBAs, and the management processor, in the specified bay or 2 bays.

Restrictions

This command functions only if the enclosure power is already on.

Example

```
EM-78E7DC12074> show server info all
Server Blade #1 Information:
Type: Server Blade
Manufacturer: HP
Product Name: ProLiant BL460c G6
Part Number: 507782-B21
System Board Spare Part Number: 531221-001
Serial Number: MXQ9350526
UUID: 37373035-3238-584D-5139-333530353236
Server Name: MSATAZ2
Asset Tag: [Unknown]
ROM Version: I24 06/20/2009
CPU 1: Quad-Core Intel Xeon 2267 MHz
CPU 2: Not present
Memory: 14336 MB
Flex-10 Embedded Ethernet
NIC 1 MAC Address: 00:26:55:20:25:58
NIC 2 MAC Address: 00:26:55:20:25:5C
iSCSI 1 MAC Address: 00:26:55:20:25:59
iSCSI 2 MAC Address: 00:26:55:20:25:5D
NC360m Dual Port 1Gb NIC for c-Class BladeSystem
Port 1: 00:1b:78:29:d7:a0
Port 2: 00:1b:78:29:d7:a1
StorageWorks 1210m
Port 1: 50:01:43:80:06:fe:4f:20
Port 2: 50:01:43:80:06:fe:4f:21
Port 3: 50:01:43:80:06:fe:4f:22
Port 4: 50:01:43:80:06:fe:4f:23
Management Processor Information:
Type: iLO2
Name: ILOMXQ9350526
Firmware Version: 1.78 Jun 10 2009
IP Address: 16.83.141.254
MAC Address: 00:26:55:22:F3:84
Power Management Controller Version: 3.4
Server Blade #2 Information:
Type: Server Blade
Manufacturer: HP
Product Name: ProLiant BL460c G6
Part Number: 507782-B21
System Board Spare Part Number: 531221-001
Serial Number: MXQ93305T8
UUID: 37373035-3238-584D-5139-333330355438
Server Name: MSATAZ1
Asset Tag: [Unknown]
ROM Version: I24 06/20/2009
CPU 1: Quad-Core Intel Xeon 2267 MHz
CPU 2: Not present
Memory: 14336 MB
Flex-10 Embedded Ethernet
NIC 1 MAC Address: 00:26:55:21:44:28
NIC 2 MAC Address: 00:26:55:21:44:2C
iSCSI 1 MAC Address: 00:26:55:21:44:29
iSCSI 2 MAC Address: 00:26:55:21:44:2D
NC360m Dual Port 1Gb NIC for c-Class BladeSystem
Port 1: 00:1b:78:29:d6:4c
Port 2: 00:1b:78:29:d6:4d
StorageWorks 1210m
Port 1: 50:01:43:80:06:fe:5a:e0
```

```
Port 2: 50:01:43:80:06:fe:5a:e1
Port 3: 50:01:43:80:06:fe:5a:e2
Port 4: 50:01:43:80:06:fe:5a:e3
Management Processor Information:
Type: iLO2
Name: ILOMXQ93305T8
Firmware Version: 1.78 Jun 10 2009
IP Address: 16.83.142.21
MAC Address: 00:26:55:22:E9:AA
Power Management Controller Version: Not Available
```

SHOW SERVER LIST

Syntax

```
SHOW SERVER LIST
```

Description

Displays a brief iLO and status description of all server blades. For a longer description, use SHOW SERVER INFO.

Restrictions

This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning 'enclosure power is off' if this command is issued when power is off.

Example

```
EM-78E7DC12074> show server list
Bay iLO Name iLO IP Address Status Power UID
--- ---------------------------- --------------- -------- ------- ---
1 ILOMXQ9350526 16.83.141.254 OK On Off
2 ILOMXQ93305T8 16.83.142.21 OK On Off
Totals: 2 server blades installed, 2 powered on.
```

SHOW SERVER STATUS

Syntax

Description

Displays current status of the server blade in the specified bay or 2 bays.

Restrictions

This command functions only if the enclosure power is already on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning 'enclosure power is off' if this command is issued when power is off.

Example

```
EM-78E7DC12074> show server status all
Blade #1 Status:
Power: On
Current Wattage used: 191
Health: OK
Unit Identification LED: Off
Blade #2 Status:
Power: On
Current Wattage used: 173
Health: OK
Unit Identification LED: Off
```

Enclosure control

The commands in the section provide various enclosure control functions.

DOWNLOAD CONFIG

Syntax

```
DOWNLOAD CONFIG <URL>
```

Description

Downloads a previously saved configuration script file from a specific IP host then executes it. This command should be used to recover configuration after replacement of a failed EMU.

Supported protocols are HTTP, FTP, and TFTP. The URL should be formatted as`protocol://host/path/file`. If your FTP server does not support anonymous connections, you can specify a username and password by replacing the host part in the above format with `username:password@host`.

Restrictions

Only IPv4 is supported in version 1.0.

RESTART EM

Syntax

```
RESTART EM
```

Description

This reboots the Linux OS and restarts the EM software. It is necessary to do this command following a firmware downgrade using `UPGRADE IMAGE FORCE`. Except when in script mode, the user is prompted for an explicit confirmation, which must be given or the command is terminated.

Restrictions

None

POWEROFF ENCLOSURE

Syntax

```
POWEROFF ENCLOSURE
```

Description

The EM removes main DC power from the enclosure (just as if the user had pressed the enclosure power-button. Servers are NOT automatically sent a graceful shutdown command; that should be done prior to issuing this command using `POWEROFF SERVER`. Except when in script mode, the user is prompted for an explicit confirmation, which must be given, or the command is terminated.

Restrictions

None

POWERON ENCLOSURE

Syntax

```
POWERON ENCLOSURE
```

Description

The EM sends a command to the health monitor to enable main DC power (just as if the user had pressed the enclosure power button).

Restrictions

None

UPLOAD CONFIG

Syntax

```
UPLOAD CONFIG {<URL>}
```

Description

Uploads a script to the specified URL, which duplicates the current runtime configuration. Supported protocols are FTP and TFTP. The URL should be formatted as: `protocol://host/path/filename`. If your FTP server does not support anonymous logins, you can specify a username and password within the URL formatted as: `ftp://username:password@host/path/filename`

Restrictions

Only IPv4 is supported in EM version 1.0.

SET EM NAME

Syntax

```
SET EM NAME "<EM name>"
```

Description

Sets the user defined string reported with SHOW EM STATUS. The system responds with confirmation of the change. The default (unset by user) EM name is 'EM-<mac address>' where *<mac-address>* is the hardware Ethernet address for the iLO port on the EMU. For example, EM-78E7D1C12074.

Restrictions

<EM name> must be 1 to 32 characters long and includes all alphanumeric, underscore (_) , and dash (-) characters.

SET ENCLOSURE ASSET

Syntax

```
SET ENCLOSURE ASSET [TAG] "<asset tag>"
```

Description

Sets the enclosure asset tag that is stored persistently in the EM, displayed with `SHOW ENCLOSURE INFO` command.

Restrictions

<asset tag> must be 1 to 32 characters long and includes all alphanumeric, underscore (_) and dash (-) characters.

SET ENCLOSURE ID

Syntax

```
SET ENCLOSURE ID <id>
```

Description

Sets the persistent enclosure ID in the EMU. This ID is displayed on the 2 digit LED display on the EMU module, displayed with `SHOW ENCLOSURE INFO` command and is provided to the StorageWorks 1200m HBA in the MEZZ2 slot of the server through the MEZZPOS CLP string. The command takes effect immediately.

IMPORTANT: Do not change enclosure ID. You will be unable to access the LUNs.

Restrictions

<id> is a decimal integer from 0 to 99.

SET ENCLOSURE NAME

Syntax

```
SET ENCLOSURE NAME "<enclosure name>"
```

Description

Sets the persistent enclosure name stored in the EMU. This name is displayed with `SHOW ENCLOSURE INFO` command. The default (unset by user) value is 'UnnamedEnclosure'.

Restrictions

<enclosure name> must be 1 to 32 characters long and includes all alphanumeric, underscore (_), and dash (-) characters.

SET ENCLOSURE UID

Syntax

```
SET ENCLOSURE UID { ON | OFF | SLOW | FAST }
```

Description

Sets the blue enclosure UID. The enclosure has UID on both front and rear of the enclosure, however, the front is only capable of being lit when enclosure power is on, while the rear UID is visible under standby power alone. The Unit Identification LED on the enclosure to steady on, off, or one of two blinking speeds. The system confirms the operation. There is no particular meaning to SLOW or FAST.

Restrictions

Blinking rates are not user definable. SLOW is 1 Hz; FAST is 2 Hz.

Example

```
EM-78E7D1C12074> set enclosure UID ON
Enclosure's Unit Identification is ON
```

SET FACTORY

Syntax

```
SET FACTORY
```

Description

Restores configuration settings back to the factory defaults, including deleting any created user accounts, except for the Administrator password, which remains unmodified. The EM restarts after restoring the configuration settings. If the enclosure power is on, the iLOs are reset (to force a refresh of the enclosure information passed to iLO) .

Restrictions

None

SET RACK NAME

Syntax

```
SET RACK NAME "<rack name>"
```

Description

Sets the user-defined string reported with `SHOW RACK NAME` command. The system responds with confirmation of the change. The default (unset by user) rack name is 'UnnamedRack'.

Restrictions

<rack name> must be 1 to 32 characters long and includes all alphanumeric, underscore (_), and dash (–) characters.

Example

```
EM-78E7D1C12074> set rack name RACK_DATABASE
Changed rack name to "RACK_DATABASE".
```

UPDATE IMAGE

Syntax

```
UPDATE IMAGE { [ FORCE ] <URL> }
```

Description

Downloads a new EM firmware image from the network and uses it to update the Enclosure Manager's firmware. Supported protocols are HTTP, FTP, and TFTP. The EM validates the image before performing the update. Unless the session is in script mode, the EM requests confirmation before performing the update.

After update, the EM is restarted unless the FORCE operation was used in which case a manual invocation of `RESTART EM` is necessary to reboot the new firmware.

Restrictions

- <*URL*> should be formatted as: `protocol://host/path/filename`.
- Host is a fully qualified domain name or an IPv4 address.
- `path/filename` is the pathname of the file to download.
- Use FORCE to allow downgrading firmware even if settings/passwords may be lost.

Forensic

The following set of forensically useful functions is supported by EM CLI.

CLEAR SYSLOG

Syntax

```
CLEAR SYSLOG [ EM | ENCLOSURE ]
```

Description

Completely erases the local syslog of the Enclosure Manager. The EM prompts the user for confirmation because once deleted, this information cannot be recovered.

Restrictions

Only deletes the syslog stored inside the EM itself—not the remote syslog if remote logging is enabled.

SHOW SYSLOG SERVER

Syntax

```
SHOW SYSLOG SERVER <bay#>
```

Description

Displays the syslog for the specified server. If the session is not script mode, the EM paged the display of the output to throttle output and give the user time to view the data. iLO syslog data is formatted in XML.

Restrictions

- <*bay#*> must be 1 or 2.
- This command can only function if enclosure power is on. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning "Could not determine the ip address of the management processor for blade' if this command is issued when power is off.

SHOW SYSLOG EM

Syntax

```
SHOW SYSLOG EM
```

Description

Displays the local syslog for the Enclosure Manager.

Restrictions

None

SHOW SYSLOG SETTINGS

Syntax

```
SHOW SYSLOG SETTINGS
```

Description

Displays the remote syslog settings (enabled/disabled status, IP address, Port#) for the Enclosure Manager.

Restrictions

None

TEST SYSLOG

Syntax

```
TEST SYSLOG
```

Description

Tests the remote system log settings by logging a test message to the remote syslog. The test message also appears in the local EM system log.

Restrictions

Only functions if remote syslog is enabled.

SET REMOTE SYSLOG SERVER

Syntax

```
SET REMOTE SYSLOG SERVER { <IPv4> | <dns name> }
```

Description

Sets the IP address of a remote system log server.

Restrictions

- EM version 1.0 only supports IPv6.
- Settings are not used unless remote system logging is enabled.

SET REMOTE SYSLOG PORT

Syntax

```
SET REMOTE SYSLOG PORT <port>
```

Description

Sets the UDP destination port for remote system logging.

Restrictions

- The default remote system logging port is 514.
- <port> must be a number between 1 and 65535.
- Settings are not used unless remote system logging is enabled.

ENABLE SYSLOG REMOTE

Syntax

```
ENABLE SYSLOG REMOTE
```

Description

Enables remote system logging.

Restrictions

The remote system log server address must be configured before enabling remote system logging.

DISABLE SYSLOG REMOTE

Syntax

```
DISABLE SYSLOG REMOTE
```

Description

Disables remote system logging.

Restrictions

None

Session

Interacting with EM via the CLI requires a login-initiated session. A session represents a transient context which has state that can be explicitly controlled by the user, whether it be an interhuman user or a script. This section describes commands for managing session state and behavior.

CLEAR SCREEN

Syntax

```
CLEAR SCREEN
```

Description

Clears the terminal screen.

Restrictions

None

CONNECT SERVER

Syntax

```
CONNECT SERVER <bay#>
```

Description

Opens a Text Console session to the iLO specified by the server bay number. Exit from the session with 'exit'.

Restrictions

This command can function only if enclosure power is on and blade is present. Because the EM hardware cannot determine if a blade is physically present unless enclosure power is on, the EM reports the warning " The blade is not present.' if this command is issued when enclosure power is off.

EXIT

Syntax

```
EXIT | LOGOUT | QUIT
```

Description

Exit the Command Line Interpreter.

Restrictions

None

HELP

Syntax

```
HELP [<command>]
```

Description

Show Help messages for or list the top level commands if no arguments are provided. Arguments listed in braces({ })and separated by the pipe symbol (|) are mutually exclusive choices. Arguments listed in square brackets ([ ])are optional arguments and can be omitted. Fields listed in angle brackets (< >) should be replaced with the value indicated.

Restrictions

None

SET SCRIPT

Syntax

```
SET SCRIPT [MODE] { ON | OFF }
```

Description

Sets script mode on or off. script mode prevents commands from prompting for input or confirmation. All actions are performed without confirmation. Default values are used for any parameters that normally require user interaction. This setting is only effective for the current CLI session.

Restrictions

The ADD USER command must have a password argument if executed in script mode.

SHOW SESSION TIMEOUT

Syntax

```
SHOW SESSION TIMEOUT <timeout>
```

Description

Displays the current Enclosure Manager user session timeout. The session timeout is the number of minutes before insessions are removed.

Restrictions

None

SET SESSION TIMEOUT

Syntax

```
SET SESSION TIMEOUT <timeout>
```

Description

Sets the number of minutes before insessions are removed. Valid session timeout. Please note: If the session timeout value is lowered, currently insessions may be removed. The default timeout is 1,440 minutes.

Restrictions

<timeout> must be in the range from 10 to 1,440 minutes (24 hours). The session timeout can be disabled by setting it to zero.

SLEEP

Syntax

```
SLEEP <seconds>
```

Description

Pauses the session for a fixed period of time. Useful for adding delays to scripts. The *<seconds>* parameter can be any whole number from 1 to 86400.

NOTE: Once the pause has begun, there is no way to continue the session before time runs out, but you can always terminate the session (form the client end) and start another one.

Restrictions

<seconds> parameter can be any whole number from 1 to 86400.

HISTORY

Syntax

```
HISTORY
```

Description

Shows the history of commands for the current session.

Restrictions

None

Manual button functions

The primary interface to the Enclosure Manager is its Ethernet LAN port, which is intended for remote management of the enclosure. AC power is applied to the enclosure so that aux power is available to the EM. The enclosure may or may not be powered on. Solution software may or may not be installed.

IMPORTANT: Use the following manual button functions only with the assistance of HP Technical Support.

The two manual buttons and two-digit LED display on the EMU provide basic management functions when the EM is not connected to the network. The figure below illustrates the physical (touch/visual) interaction elements:

Figure 24 EM Physical Interface

Activate Button Menu

You cannot manage the EM using a remote management interface because the system is not connected to the LAN, the LAN interface is not functioning properly, or management software is not installed or available.

Procedure:

1. Press and hold the UP (left) button until the two digits display "- -".
2. Release the UP button. System displays two underscores "_ _":

This display indicates context is at the bottom of the menu range and is awaiting menu selection, which requires pressing UP button one or more times.

Reboot EM (bE)

The EM LAN interface is not responding to the remote management software but is configured to do so, or the EM has just been reconfigured and needs to be rebooted for the configuration to take effect.

Procedure:

1. Enter the menu mode by performing Activate Button Menu.
2. Press the UP button once.

   The EM changes the display from "_ _" to "bE" to indicate menu choice 0 (Reboot) is selected.
3. Press and hold the UP button down for 3 seconds.

   The system blinks (or flashes) the 2 "bE" for one second to acknowledge the selection.
4. Release the UP button.

   The system then reboots the EM. This event is logged in the system log. The display shows - - during the reboot. Also the module fault LED flashes. When the reboot is complete, the EM green health LED is lit steady and the enclosure ID is displayed on the two digits.

Restore Factory Defaults (Fd)

You may be replacing an EM or reconfiguring a messaging system.

Procedure:

1. Enter the menu mode by performing Activate Button Menu.
2. Press the UP button three times to select menu choice (Set Factory Defaults) so that the display changes from "_ _" to "Fd".
3. Press and hold the UP button down for 3 seconds.

   In response, the EM blinks (or flashes) the 2 "Fd" digits 3 times to acknowledge the selection.
4. Release the UP button.

   The system stops flashing the pattern, internally restores all configurations to factory defaults, and reboots the EM.

Recover Lost Password (Fp)

You changed the Administrator password from the one set by the factory and then lost or forgot the new password.

Procedure:

1. Enter the menu mode by performing Button Menu.
2. Press the UP button four times to select menu choice (Recover Lost Password) so that the display changes from "_ _" to "Fp".
3. Press and hold the UP button for 3 seconds.

   In response, the EM blinks (or flashes) the 2 "Fp" digits to acknowledge the selection.
4. Release the UP button.

   The system stops flashing the "Fp". The system restores the Administrator password from hardware and logs the event in the syslog. The system displays the Enclosure ID to indicate that the operation is complete.

Set DHCP IP Address (dH)

You need to reconfigure the messaging system for a different network where IP address assignment is handled dynamically.

Procedure:

1. Enter the menu mode by performing Activate Button Menu.
2. Press the UP button 5 times so that the display changes from "_ _" to "dH" (Set DHCP Mode).

3. Press and hold down the UP button for 3 seconds.

   The EM flashes the display “dH” to indicate acceptance of the command.

4. Release the UP button.

   The system sets the EM to DHCP and exits the menu mode. This event is also logged in the EM syslog and takes effect immediately. The system displays the Enclosure ID to indicate that the operation is complete.

Set Link Local IP Address (LL)

You need to reconfigure the messaging system for a network where IP address assignment is static.

Procedure:

1. Enter the menu mode by performing Activate Button Menu.
2. Press the UP button six times so that the display changes from “_ _“ to “LL” (Set Link Local Mode).
3. Press and hold down the UP button for 3 seconds.

   The EM flashes the display “LL” acknowledging the operator’s request.

4. Release the UP button.

   The system then sets the EM to Link Local mode and exits menu mode. The system also logs this event in the EM syslog and the effect on network configuration is immediate. The system displays the Enclosure ID to indicate that the operation is complete.

Display Current IP Address (IP)

You need to learn the IP address of the EM.

Procedure:

1. Enter the menu mode by performing Activate Button Menu.
2. Press the UP button six times so that the display changes from “_ _“ to “IP” (Display IP Address).
3. Press and hold the down UP button for 3 seconds.

   The EM displays “IP” acknowledging the request.

4. Release the UP button.

   System then enters the ‘Display IP’ sub function and displays the first octet of the IPv4 address being used by the EM.

5. You may press the UP button 3 more times to scroll through the other 3 octets of the EM IP address. You can backup using the DOWN button.
6. Press and hold the DOWN button for 3 seconds.

   The EM flashes displays “IP” acknowledging the operator’s request and then exits the operation. The system displays the Enclosure ID to indicate that the operation is complete.

Exit Button Menu

You want to exit the main menu (or any sub function).

Procedure: Press and hold the DOWN button for 3 seconds.

The system displays and flashes the two hyphens (“- -“) three times to indicate the menu was exited. The system then returns the LEDs to their original display state showing the enclosure ID.

B Regulatory compliance notices

This section contains regulatory notices for the HP _____.

Regulatory compliance identification numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique regulatory model number. The regulatory model number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this regulatory model number. The regulatory model number is not the marketing name or model number of the product.

Product specific information:

HP _____

Regulatory model number: _____

FCC and CISPR classification: _____

These products contain laser components. See Class 1 laser statement in the Laser compliance notices section.

Federal Communications Commission notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

FCC rating label

The FCC rating label on the device shows the classification (A or B) of the equipment. Class B devices have an FCC logo or ID on the label. Class A devices do not have an FCC logo or ID on the label. After you determine the class of the device, refer to the corresponding statement.

Class A equipment

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user must correct the interference at personal expense.

Class B equipment

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference does not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment

off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit that is different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or television technician for help.

Declaration of Conformity for products marked with the FCC logo, United States only

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For questions regarding this FCC declaration, contact us by mail or telephone:

- Hewlett-Packard Company P.O. Box 692000, Mail Stop 510101 Houston, Texas 77269-2000
- Or call 1-281-514-3333

Modification

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

Cables

When provided, connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

Canadian notice (Avis Canadien)

Class A equipment

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Class B equipment

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

European Union notice

This product complies with the following EU directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

Compliance with these directives implies conformity to applicable harmonized European standards (European Norms) which are listed on the EU Declaration of Conformity issued by Hewlett-Packard for this product or product family.

This compliance is indicated by the following conformity marking placed on the product:

CE	This marking is valid for non-Telecom products and EU harmonized Telecom products (e.g., Bluetooth).

Certificates can be obtained from http://www.hp.com/go/certificates.
Hewlett-Packard GmbH, HQ-TRE, Herrenberger Strasse 140, 71034 Boeblingen, Germany

Japanese notices

Japanese VCCI-A notice

この装置は，クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。 VCCI－A

Japanese VCCI-B notice

この装置は，クラスB情報技術装置です。この装置は，家庭環境で使用することを目的としていますが，この装置がラジオやテレビジョン受信機に近接して使用されると，受信障害を引き起こすことがあります。
取扱説明書に従って正しい取り扱いをして下さい。 VCCI－B

Japanese VCCI marking

Japanese power cord statement

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

Please use the attached power cord.
The attached power cord is not allowed to use with other product.

Korean notices

Class A equipment

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

Class B equipment

B급 기기 (가정용 정보통신기기)

이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든지역에서 사용할 수 있습니다.

Taiwanese notices

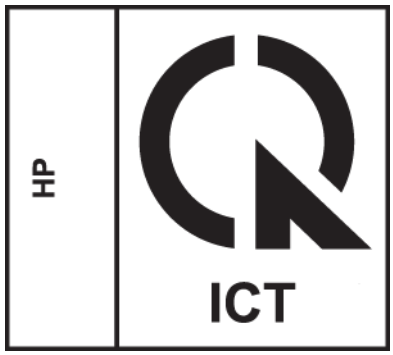
BSMI Class A notice

警告使用者:

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Taiwan battery recycle statement

Vietnamese notice



Laser compliance notices

English laser notice

This device may contain a laser that is classified as a Class 1 Laser Product in accordance with U.S. FDA regulations and the IEC 60825-1. The product does not emit hazardous laser radiation.

⚠ **WARNING!** Use of controls or adjustments or performance of procedures other than those specified herein or in the laser product's installation guide may result in hazardous radiation exposure. To reduce the risk of exposure to hazardous radiation:

- Do not try to open the module enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only HP Authorized Service technicians to repair the unit.

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

Dutch laser notice

WAARSCHUWING: dit apparaat bevat mogelijk een laser die is gedassificeerd als een laserproduct van Klasse 1 overeenkomstig de bepalingen van de Amerikaanse FDA en de richtlijn IEC 60825-1. Dit product geeft geen gevaarlijke laserstraling af.

Als u bedieningselementen gebruikt, instellingen aanpast of procedures uitvoert op een andere manier dan in deze publicatie of in de installatiehandleiding van het laserproduct wordt aangegeven, loopt u het risico te worden blootgesteld aan gevaarlijke straling. Het risico van blootstelling aan gevaarlijke straling beperkt u als volgt:

- Probeer de behuizing van de module niet te openen. U mag zelf geen onderdelen repareren.
- Gebruik voor de laserapparatuur geen andere knoppen of instellingen en voer geen andere aanpassingen of procedures uit dan die in deze handleiding worden beschreven.
- Alleen door HP geautoriseerde technici mogen het apparaat repareren.

French laser notice

AVERTISSEMENT : cet appareil peut être équipé d'un laser classé en tant que Produit laser de classe 1 et conforme à la réglementation de la FDA américaine et à la norme 60825-1 de l'IEC. Ce produit n'émet pas de rayonnement dangereux.

L'utilisation de commandes, de réglages ou de procédures autres que ceux qui sont indiqués ici ou dans le manuel d'installation du produit laser peut exposer l'utilisateur à des rayonnements dangereux. Pour réduire le risque d'exposition à des rayonnements dangereux :

- Ne tentez pas d'ouvrir le boîtier renfermant l'appareil laser. Il ne contient aucune pièce dont la maintenance puisse être effectuée par l'utilisateur.
- Tout contrôle, réglage ou procédure autre que ceux décrits dans ce chapitre ne doivent pas être effectués par l'utilisateur.
- Seuls les Mainteneurs Agréés HP sont habilités à réparer l'appareil laser.

German laser notice

VORSICHT: Dieses Gerät enthält möglicherweise einen Laser, der nach den US-amerikanischen FDA-Bestimmungen und nach IEC 60825-1 als Laserprodukt der Klasse 1 zertifiziert ist. Gesundheitsschädliche Laserstrahlen werden nicht emittiert.

Die Anleitungen in diesem Dokument müssen befolgt werden. Bei Einstellungen oder Durchführung sonstiger Verfahren, die über die Anleitungen in diesem Dokument bzw. im Installationshandbuch des Lasergeräts hinausgehen, kann es zum Austritt gefährlicher Strahlung kommen. Zur Vermeidung der Freisetzung gefährlicher Strahlungen sind die folgenden Punkte zu beachten:

- Versuchen Sie nicht, die Abdeckung des Lasermoduls zu öffnen. Im Inneren befinden sich keine Komponenten, die vom Benutzer gewartet werden können.
- Benutzen Sie das Lasergerät ausschließlich gemäß den Anleitungen und Hinweisen in diesem Dokument.
- Lassen Sie das Gerät nur von einem HP Servicepartner reparieren.

Italian laser notice

AVVERTENZA: AVVERTENZA Questo dispositivo può contenere un laser classificato come prodotto laser di Classe 1 in conformità alle normative US FDA e IEC 60825-1. Questo prodotto non emette radiazioni laser pericolose.

L'eventuale esecuzione di comandi, regolazioni o procedure difformi a quanto specificato nella presente documentazione o nella guida di installazione del prodotto può causare l'esposizione a radiazioni nocive. Per ridurre i rischi di esposizione a radiazioni pericolose, attenersi alle seguenti precauzioni:

- Non cercare di aprire il contenitore del modulo. All'interno non vi sono componenti soggetti a manutenzione da parte dell'utente.
- Non eseguire operazioni di controllo, regolazione o di altro genere su un dispositivo laser ad eccezione di quelle specificate da queste istruzioni.
- Affidare gli interventi di riparazione dell'unità esclusivamente ai tecnici dell'Assistenza autorizzata HP.

Japanese laser notice

警告:本製品には、US FDA規則およびIEC 60825-1に基づくClass 1レーザー製品が含まれている場合があります。本製品は人体に危険なレーザー光は発しません。

本書およびレーザー製品のインストール ガイドに示されている以外の方法で制御、調整、使用した場合、人体に危険な光線にさらされる場合があります。人体に危険な光線にさらされないため、以下の項目を守ってください。

- モジュール エンクロージャを開けないでください。ユーザーが取り扱えるコンポーネントは含まれていません。
- 本書に示されている以外の方法で、レーザー デバイスを制御、調整、使用しないでください。
- HPの正規サービス技術者のみが本ユニットの修理を許可されています。

Spanish laser notice

ADVERTENCIA: Este dispositivo podría contener un láser clasificado como producto de láser de Clase 1 de acuerdo con la normativa de la FDA de EE.UU. e IEC 60825-1. El producto no emite radiaciones láser peligrosas.

El uso de controles, ajustes o manipulaciones distintos de los especificados aquí o en la guía de instalación del producto de láser puede producir una exposición peligrosa a las radiaciones. Para evitar el riesgo de exposición a radiaciones peligrosas:

- No intente abrir la cubierta del módulo. Dentro no hay componentes que el usuario pueda reparar.
- No realice más operaciones de control, ajustes o manipulaciones en el dispositivo láser que los aquí especificados.
- Sólo permita reparar la unidad a los agentes del servicio técnico autorizado HP.

Recycling notices

English recycling notice

Disposal of waste equipment by users in private household in the European Union

This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information, please contact your household waste disposal service

Bulgarian recycling notice

Изхвърляне на отпадъчно оборудване от потребители в частни домакинства в Европейския съюз

Този символ върху продукта или опаковката му показва, че продуктът не трябва да се изхвърля заедно с другите битови отпадъци. Вместо това, трябва да предпазите човешкото здраве и околната среда, като предадете отпадъчното оборудване в предназначен за събирането му пункт за рециклиране на неизползваемо електрическо и електронно борудване. За допълнителна информация се свържете с фирмата по чистота, чиито услуги използвате.

Czech recycling notice

Likvidace zařízení v domácnostech v Evropské unii

Tento symbol znamená, že nesmíte tento produkt likvidovat spolu s jiným domovním odpadem. Místo toho byste měli chránit lidské zdraví a životní prostředí tím, že jej předáte na k tomu určené sběrné pracoviště, kde se zabývají recyklací elektrického a elektronického vybavení. Pro více informací kontaktujte společnost zabývající se sběrem a svozem domovního odpadu.

Danish recycling notice

Bortskaffelse af brugt udstyr hos brugere i private hjem i EU

Dette symbol betyder, at produktet ikke må bortskaffes sammen med andet husholdningsaffald. Du skal i stedet den menneskelige sundhed og miljøet ved at afl evere dit brugte udstyr på et dertil beregnet indsamlingssted for af brugt, elektrisk og elektronisk udstyr. Kontakt nærmeste renovationsafdeling for yderligere oplysninger.

Dutch recycling notice

Inzameling van afgedankte apparatuur van particuliere huishoudens in de Europese Unie

Dit symbool betekent dat het product niet mag worden gedeponeerd bij het overige huishoudelijke afval. Bescherm de gezondheid en het milieu door afgedankte apparatuur in te leveren bij een hiervoor bestemd inzamelpunt voor recycling van afgedankte elektrische en elektronische apparatuur. Neem voor meer informatie contact op met uw gemeentereinigingsdienst.

Estonian recycling notice

Äravisatavate seadmete likvideerimine Euroopa Liidu eramajapidamistes

See märk näitab, et seadet ei tohi visata olmeprügi hulka. Inimeste tervise ja keskkonna säästmise nimel tuleb äravisatav toode tuua elektriliste ja elektrooniliste seadmete käitlemisega egelevasse kogumispunkti. Küsimuste korral pöörduge kohaliku prügikäitlusettevõtte poole.

Finnish recycling notice

Kotitalousjätteiden hävittäminen Euroopan unionin alueella

Tämä symboli merkitsee, että laitetta ei saa hävittää muiden kotitalousjätteiden mukana. Sen sijaan sinun on suojattava ihmisten terveyttä ja ympäristöä toimittamalla käytöstä poistettu laite sähkö- tai elektroniikkajätteen kierrätyspisteeseen. Lisätietoja saat jätehuoltoyhtiöltä.

French recycling notice

Mise au rebut d'équipement par les utilisateurs privés dans l'Union Européenne

Ce symbole indique que vous ne devez pas jeter votre produit avec les ordures ménagères. Il est de votre responsabilité de protéger la santé et l'environnement et de vous débarrasser de votre équipement en le remettant à une déchetterie effectuant le recyclage des équipements électriques et électroniques. Pour de plus amples informations, prenez contact avec votre service d'élimination des ordures ménagères.

German recycling notice

Entsorgung von Altgeräten von Benutzern in privaten Haushalten in der EU

Dieses Symbol besagt, dass dieses Produkt nicht mit dem Haushaltsmüll entsorgt werden darf. Zum Schutze der Gesundheit und der Umwelt sollten Sie stattdessen Ihre Altgeräte zur Entsorgung einer dafür vorgesehenen Recyclingstelle für elektrische und elektronische Geräte übergeben. Weitere Informationen erhalten Sie von Ihrem Entsorgungsunternehmen für Hausmüll.

Greek recycling notice

Απόρριψη άχρηστου εξοπλισμού από ιδιώτες χρήστες στην Ευρωπαϊκή 'Ενωση

Αυτό το σύμβολο σημαίνει ότι δεν πρέπει να απορρίψετε το προϊόν με τα λοιπά οικιακά απορρίμματα. Αντίθετα, πρέπει να προστατέψετε την ανθρώπινη υγεία και το περιβάλλον παραδίδοντας τον άχρηστο εξοπλισμό σας σε εξουσιοδοτημένο σημείο συλλογής για την ανακύκλωση άχρηστου ηλεκτρικού και ηλεκτρονικού εξοπλισμού. Για περισσότερες πληροφορίες, επικοινωνήστε με την υπηρεσία απόρριψης απορριμμάτων της περιοχής σας.

Hungarian recycling notice

A hulladék anyagok megsemmisítése az Európai Unió háztartásaiban

Ez a szimbólum azt jelzi, hogy a készüléket nem szabad a háztartási hulladékkal együtt kidobni. Ehelyett a leselejtezett berendezéseknek az elektromos vagy elektronikus hulladék átvételére kijelölt helyen történő beszolgáltatásával megóvja az emberi egészséget és a környezetet.További információt a helyi köztisztasági vállalattól kaphat.

Italian recycling notice

Smaltimento di apparecchiature usate da parte di utenti privati nell'Unione Europea

Questo simbolo avvisa di non smaltire il prodotto con i normali rifi uti domestici. Rispettare la salute umana e l'ambiente conferendo l'apparecchiatura dismessa a un centro di raccolta designato per il riciclo di apparecchiature elettroniche ed elettriche. Per ulteriori informazioni, rivolgersi al servizio per lo smaltimento dei rifi uti domestici.

Latvian recycling notice

Europos Sąjungos namų ūkio vartotojų įrangos atliekų šalinimas

Šis simbolis nurodo, kad gaminio negalima išmesti kartu su kitomis buitinėmis atliekomis. Kad apsaugotumėte žmonių sveikatą ir aplinką, pasenusią nenaudojamą įrangą turite nuvežti į elektrinių ir elektroninių atliekų surinkimo punktą. Daugiau informacijos teiraukitės buitinių atliekų surinkimo tarnybos.

Lithuanian recycling notice

Nolietotu iekārtu iznīcināšanas noteikumi lietotājiem Eiropas Savienības privātajās mājsaimniecībās

Šis simbols norāda, ka ierīci nedrīkst utilizēt kopā ar citiem mājsaimniecības atkritumiem. Jums jārūpējas par cilvēku veselības un vides aizsardzību, nododot lietoto aprīkojumu otrreizējai pārstrādei īpašā lietotu elektrisko un elektronisko ierīču savākšanas punktā. Lai iegūtu plašāku informāciju, lūdzu, sazinieties ar savu mājsaimniecības atkritumu likvidēšanas dienestu.

Polish recycling notice

Utylizacja zużytego sprzętu przez użytkowników w prywatnych gospodarstwach domowych w krajach Unii Europejskiej

Ten symbol oznacza, że nie wolno wyrzucać produktu wraz z innymi domowymi odpadkami. Obowiązkiem użytkownika jest ochrona zdrowa ludzkiego i środowiska przez przekazanie zużytego sprzętu do wyznaczonego punktu zajmującego się recyklingiem odpadów powstałych ze sprzętu elektrycznego i elektronicznego. Więcej informacji można uzyskać od lokalnej firmy zajmującej wywozem nieczystości.

Portuguese recycling notice

Descarte de equipamentos usados por utilizadores domésticos na União Europeia

Este símbolo indica que não deve descartar o seu produto juntamente com os outros lixos domiciliares. Ao invés disso, deve proteger a saúde humana e o meio ambiente levando o seu equipamento para descarte em um ponto de recolha destinado à reciclagem de resíduos de equipamentos eléctricos e electrónicos. Para obter mais informações, contacte o seu serviço de tratamento de resíduos domésticos.

Romanian recycling notice

Casarea echipamentului uzat de către utilizatorii casnici din Uniunea Europeană

Acest simbol înseamnă să nu se arunce produsul cu alte deșeuri menajere. În schimb, trebuie să protejați sănătatea umană și mediul predând echipamentul uzat la un punct de colectare desemnat pentru reciclarea echipamentelor electrice și electronice uzate. Pentru informații suplimentare, vă rugăm să contactați serviciul de eliminare a deșeurilor menajere local.

Slovak recycling notice

Likvidácia vyradených zariadení používateľmi v domácnostiach v Európskej únii

Tento symbol znamená, že tento produkt sa nemá likvidovať s ostatným domovým odpadom. Namiesto toho by ste mali chrániť ľudské zdravie a životné prostredie odovzdaním odpadového zariadenia na zbernom mieste, ktoré je určené na recykláciu odpadových elektrických a elektronických zariadení. Ďalšie informácie získate od spoločnosti zaoberajúcej sa likvidáciou domového odpadu.

Spanish recycling notice

Eliminación de los equipos que ya no se utilizan en entornos domésticos de la Unión Europea

Este símbolo indica que este producto no debe eliminarse con los residuos domésticos. En lugar de ello, debe evitar causar daños a la salud de las personas y al medio ambiente llevando los equipos que no utilice a un punto de recogida designado para el reciclaje de equipos eléctricos y electrónicos que ya no se utilizan. Para obtener más información, póngase en contacto con el servicio de recogida de residuos domésticos.

Swedish recycling notice

Hantering av elektroniskt avfall för hemanvändare inom EU

Den här symbolen innebär att du inte ska kasta din produkt i hushållsavfallet. Värna i stället om natur och miljö genom att lämna in uttjänt utrustning på anvisad insamlingsplats. Allt elektriskt och elektroniskt avfall går sedan vidare till återvinning. Kontakta ditt återvinningsföretag för mer information.

Turkish recycling notice

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Battery replacement notices

Dutch battery notice

Verklaring betreffende de batterij

WAARSCHUWING: dit apparaat bevat mogelijk een batterij.

- Probeer de batterijen na het verwijderen niet op te laden.
- Stel de batterijen niet bloot aan water of temperaturen boven 60° C.
- De batterijen mogen niet worden beschadigd, gedemonteerd, geplet of doorboord.
- Zorg dat u geen kortsluiting veroorzaakt tussen de externe contactpunten en laat de batterijen niet in aanraking komen met water of vuur.
- Gebruik ter vervanging alleen door HP goedgekeurde batterijen.

Batterijen, accu's en accumulators mogen niet worden gedeponeerd bij het normale huishoudelijke afval. Als u de batterijen/accu's wilt inleveren voor hergebruik of op de juiste manier wilt vernietigen, kunt u gebruik maken van het openbare inzamelingssysteem voor klein chemisch afval of ze terugsturen naar HP of een geautoriseerde HP Business of Service Partner.

Neem contact op met een geautoriseerde leverancier of een Business of Service Partner voor meer informatie over het vervangen of op de juiste manier vernietigen van accu's.

French battery notice

Avis relatif aux piles

AVERTISSEMENT : cet appareil peut contenir des piles.

- N'essayez pas de recharger les piles après les avoir retirées.
- Évitez de les mettre en contact avec de l'eau ou de les soumettre à des températures supérieures à 60°C.
- N'essayez pas de démonter, d'écraser ou de percer les piles.
- N'essayez pas de court-circuiter les bornes de la pile ou de jeter cette dernière dans le feu ou l'eau.
- Remplacez les piles exclusivement par des pièces de rechange HP prévues pour ce produit.

Les piles, modules de batteries et accumulateurs ne doivent pas être jetés avec les déchets ménagers. Pour permettre leur recyclage ou leur élimination, veuillez utiliser les systèmes de collecte publique ou renvoyez-les à HP, à votre Partenaire Agréé HP ou aux agents agréés.

Contactez un Revendeur Agréé ou Mainteneur Agréé pour savoir comment remplacer et jeter vos piles.

German battery notice

Hinweise zu Batterien und Akkus

VORSICHT: Dieses Produkt enthält unter Umständen eine Batterie oder einen Akku.

- Versuchen Sie nicht, Batterien und Akkus außerhalb des Gerätes wieder aufzuladen.
- Schützen Sie Batterien und Akkus vor Feuchtigkeit und Temperaturen über 60°.
- Verwenden Sie Batterien und Akkus nicht missbräuchlich, nehmen Sie sie nicht auseinander und vermeiden Sie mechanische Beschädigungen jeglicher Art.
- Vermeiden Sie Kurzschlüsse, und setzen Sie Batterien und Akkus weder Wasser noch Feuer aus.
- Ersetzen Sie Batterien und Akkus nur durch die von HP vorgesehenen Ersatzteile.

Batterien und Akkus dürfen nicht über den normalen Hausmüll entsorgt werden. Um sie der Wiederverwertung oder dem Sondermüll zuzuführen, nutzen Sie die öffentlichen Sammelstellen, oder setzen Sie sich bezüglich der Entsorgung mit einem HP Partner in Verbindung.

Weitere Informationen zum Austausch von Batterien und Akkus oder zur sachgemäßen Entsorgung erhalten Sie bei Ihrem HP Partner oder Servicepartner.

Italian battery notice

Istruzioni per la batteria

AVVERTENZA: Questo dispositivo può contenere una batteria.

- Non tentare di ricaricare le batterie se rimosse.
- Evitare che le batterie entrino in contatto con l'acqua o siano esposte a temperature superiori a 60° C.
- Non smontare, schiacciare, forare o utilizzare in modo improprio la batteria.
- Non accorciare i contatti esterni o gettare in acqua o sul fuoco la batteria.
- Sostituire la batteria solo con i ricambi HP previsti a questo scopo.

Le batterie e gli accumulatori non devono essere smaltiti insieme ai rifiuti domestici. Per procedere al riciclaggio o al corretto smaltimento, utilizzare il sistema di raccolta pubblico dei rifiuti o restituirli a HP, ai Partner Ufficiali HP o ai relativi rappresentanti.

Per ulteriori informazioni sulla sostituzione e sullo smaltimento delle batterie, contattare un Partner Ufficiale o un Centro di assistenza autorizzato.

Japanese battery notice

バッテリに関する注意

警告:本製品はバッテリを内蔵している場合があります。

- バッテリを取り外している場合は、充電しないでください。
- バッテリを水にさらしたり、60°C (140°F) 以上の温度にさらさないでください。
- バッテリを誤用、分解、破壊したり、穴をあけたりしないでください。
- 外部極を短絡させたり、火や水に投棄しないでください。
- バッテリを交換する際は、HP指定の製品と交換してください。

バッテリ、バッテリ パック、蓄電池は一般の家庭廃棄物と一緒に廃棄しないでください。リサイクルまたは適切に廃棄するため、公共の収集システム、HP、HPパートナー、またはHPパートナーの代理店にお送りください。

バッテリ交換および適切な廃棄方法についての情報は、HPのサポート窓口にお問い合わせください。

Spanish battery notice

Declaración sobre las baterías

ADVERTENCIA: Este dispositivo podría contener una batería.

- No intente recargar las baterías si las extrae.
- Evite el contacto de las baterías con agua y no las exponga a temperaturas superiores a los 60 °C (140 °F).
- No utilice incorrectamente, ni desmonte, aplaste o pinche las baterías.
- No cortocircuite los contactos externos ni la arroje al fuego o al agua.
- Sustituya las baterías sólo por el repuesto designado por HP.

Las baterías, los paquetes de baterías y los acumuladores no se deben eliminar junto con los desperdicios generales de la casa. Con el fin de tirarlos al contenedor de reciclaje adecuado, utilice los sistemas públicos de recogida o devuélvalas a HP, un distribuidor autorizado de HP o sus agentes.

Para obtener más información sobre la sustitución de la batería o su eliminación correcta, consulte con su distribuidor o servicio técnico autorizado.

Glossary

CAS	Client Access Server. The Client Access server role is one of five distinct server roles for Microsoft Exchange Server 2010. It supports the Outlook Web App and Microsoft Exchange ActiveSync client applications, and the Post Office Protocol version 3 (POP3) and Internet Message Access Protocol version 4rev1 (IMAP4) protocols. The Client Access server role also provides access to free/busy data by using the Availability service and enables certain clients to download automatic configuration settings from the Autodiscover service. For more information, see the Microsoft Technet article, *Understanding Client Access* at http://technet.microsoft.com/en-us/library/bb124915.aspx.
DAG	Database Availability Group. A database availability group is the base component of the high availability and site resilience framework built into Microsoft Exchange Server 2010. A DAG is a group of up to 16 Mailbox servers that hosts a set of databases and provides automatic database-level recovery from failures that affect individual servers or databases. For more information, see the Microsoft Technet article, *Understanding Database Availability Groups* at http://technet.microsoft.com/en-us/library/dd979799.aspx.
OWA	Outlook Web Access. The Web browser-based version of Microsoft Outlook. Formerly called "Exchange Web Connect" (EWC), Outlook Web Access (OWA) is provided by Exchange Server and enables users on the road to access their email, contacts and calendar from any Web browser without having to run a pre-configured Outlook client program.
UFM	Voltaire's Unified Fabric Manager client software.
Witness Server	A server used for high availability in conjunction with Database Availability Groups. For more information, see the Microsoft Technet article, *Create a Database Availability Group* at http://technet.microsoft.com/en-us/library/dd351172.aspx.
WWN	Worldwide name.
WWPN	World wide port name. A unique 64-bit address used in a FC storage network to identify each device in a FC network.

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