

IBM PowerHA SystemMirror for AIX

Standard Edition

Version 7.2.4

*Release Notes*



**Note**

Before using this information and the product it supports, read the information in [“Notices” on page 15.](#)

**First edition (December 2019)**

This edition applies to PowerHA SystemMirror Version 7.2.4 for AIX and to all subsequent release and modifications until otherwise indicated in new editions.

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# About this document

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The Release Notes topics include late technical information that is not included in other topics, and they highlights new functions for the PowerHA® SystemMirror® Version 7.2.4 for AIX® licensed program.

## Highlighting

The following highlighting conventions are used in this document:

<b>Bold</b>	Identifies commands, subroutines, keywords, files, structures, directories, and other items whose names are predefined by the system. Bold highlighting also identifies graphical objects, such as buttons, labels, and icons that the you select.
<i>Italics</i>	Identifies parameters for actual names or values that you supply.
Monospace	Identifies examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, messages from the system, or text that you must type.

## Case sensitivity in AIX

Everything in the AIX operating system is case sensitive, which means that it distinguishes between uppercase and lowercase letters. For example, you can use the **ls** command to list files. If you type LS, the system responds that the command is not found. Likewise, **FILEA**, **FiLea**, and **filea** are three distinct file names, even if they reside in the same directory. To avoid causing undesirable actions to be performed, always ensure that you use the correct case.

## ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.



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# New functions and features

## Cross-cluster verification utility

The cluster verification utility checks the cluster configuration on all nodes within the same cluster. In PowerHA SystemMirror Version 7.2.4, or later, you can use the cross-cluster verification (ccv) utility to compare the configuration of two different clusters and to view differences in installed software and other attributes of clusters. For more information, see [clmgr compare](#) command.

## Cluster snapshot and clmgr command enhancements

All cluster snapshot functions are now available through the **clmgr** command. The **clsnapshot** command is no longer supported. You can use new cluster snapshot functions to view information within a snapshot and compare snapshot files.

## Availability metrics enhancements

The availability metrics feature is enhanced with extra reporting capabilities for easier analysis. For more information, see the [cl\\_availability](#) command.

## Support for up to 256 resource groups

The support for maximum number of resource groups is increased from 64 to 256. For more information, see [PowerHA SystemMirror maximum limits](#).

## DB2® multiple database support

You can configure and independently monitor multiple databases for the same Db2® server. Additional databases can be configured manually or can be configured through PowerHA SystemMirror Smart Assist for DB2.

## WebSphere® MQ listener support

PowerHA SystemMirror supports multiple listeners for the same WebSphere MQ application. Additional listeners can be configured either manually or can be configured by using a discovery process.

## Support for CAA 4K disk block size for repository disks

The Cluster Aware AIX (CAA) subsystem now supports repository disks that use 4K block size. PowerHA SystemMirror checks for the supported repository disk sizes when you configure the repository.

## Support for iSCSI disk as cluster repository disk

In PowerHA SystemMirror Version 7.2.4, or later, you can configure Internet Small Computer System Interface (iSCSI) disks as cluster repository disks.

## Enhanced PowerHA SystemMirror RBAC to include new commands and roles

Federated Security is enhanced to enable PowerHA SystemMirror commands that are not already supported for role-based access control (RBAC).

**Note:** RBAC enablement is not recommended for PowerHA SystemMirror Enterprise Edition.

## PowerHA SystemMirror graphical user interface (GUI)

The following updates are new in PowerHA SystemMirror GUI:

- Enhanced visual representation of availability metrics and the newly available resource-centric views. You can also view the CPU and memory usage statistics. You can troubleshoot performance issues and predict application downtime and application uptime, and optimize your resource groups and applications.
- Create and manage logical volumes, mirror pools, and resource group dependencies.
- Generate the snapshot report and view contents of a snapshot before you restore a snapshot.
- Enhanced cluster reports to display details about repository disks and methods.
- Non-root support for cloning cluster from snapshots.
- Configure PowerHA SystemMirror GUI server to be highly available by using the High Availability wizard option in the PowerHA SystemMirror GUI.
- Import multiple clusters by using the Add Multiple Clusters wizard.

- Enhanced activity log to display the activity ID, start time and end time of the activity, and the duration of the activity. You can also view details such as the number of successful login attempts and failed login attempts, the number of new activities, and the number activities that are not viewed.
- Enhanced security features with options to disable anonymous login and global access.
- Automatic download and installation of the remaining files that are required to complete the PowerHA SystemMirror GUI installation process from the IBM® website by using the **smuinst.ksh** command.

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# Software requirements

Before you install PowerHA SystemMirror Version 7.2.4, you must install all available service packs for AIX and PowerHA SystemMirror from the [IBM Fix Central](#) website.

PowerHA SystemMirror Version 7.2.4 is supported on the following versions of the AIX operating system:

- IBM AIX 7.1 with Technology Level 4 with Service Pack 8, or later
- IBM AIX 7.1 with Technology Level 5 with Service Pack 4, or later
- IBM AIX 7.2 with Technology Level 1 with Service Pack 6, or later
- IBM AIX 7.2 with Technology Level 2 with Service Pack 4, or later
- IBM AIX 7.2 with Technology Level 3 with Service Pack 3, or later
- IBM AIX 7.2 with Technology Level 4 with Service Pack 1, or later

## PowerHA SystemMirror GUI

PowerHA SystemMirror GUI is supported only on the following web browsers:

- Google Chrome Version 57, or later
- Firefox Version 54, or later

The PowerHA SystemMirror GUI requires that OpenSSL is installed on the PowerHA SystemMirror GUI server to generate a unique set of security files (keys and certificate). Secure Shell (SSH) must be configured on the PowerHA SystemMirror GUI server and on all nodes in the cluster. SSH is used to add clusters to the PowerHA SystemMirror GUI to restore snapshots, create new clusters from the PowerHA SystemMirror GUI, and to restore cluster snapshots. To perform these tasks from the PowerHA SystemMirror GUI as a non-root user, you must configure the **sudo** command on cluster nodes. For more information, see [Logging in as a non-root user](#). After a cluster is successfully added to the PowerHA SystemMirror GUI, the root access or **sudo** access is no longer required to manage the cluster through the PowerHA SystemMirror GUI.

PowerHA SystemMirror GUI can also manage clusters that are running earlier versions of PowerHA SystemMirror. When you manage older clusters in the PowerHA SystemMirror GUI, you can use only the capabilities that are associated with the PowerHA SystemMirror version of the cluster. For example, with PowerHA SystemMirror Version 7.2.4 GUI server, if you select a cluster in the PowerHA SystemMirror GUI and that cluster is running PowerHA SystemMirror Version 7.2.1, some of the PowerHA SystemMirror Version 7.2.4 capabilities might not be available for the selected cluster.

## CAA auto start on DR site

CAA auto start on Disaster Recovery (DR) site is supported only on the following versions of the AIX operating system:

- IBM AIX 7.1 with Technology Level 5, or later
- IBM AIX 7.2 with Technology Level 2, or later

## Cloud backup management options

To use the PowerHA SystemMirror cloud backup management options, you can use any one of the following versions of Python:

- Python version 2.7.x
- Python version 3.x.x

## Availability metrics options

To use the PowerHA SystemMirror availability metrics options, you can use any one of the following versions of Python:

- Python version 2.7.x
- Python version 3.x.x



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## Hardware requirements

PowerHA SystemMirror graphical user interface (GUI) requires IBM POWER7® or later technology-based servers.



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# Installation and migration

For more information, see [Supported upgrade PowerHA SystemMirror versions](#).

## PowerHA SystemMirror GUI

You do not need to install the PowerHA SystemMirror GUI server in a PowerHA SystemMirror cluster, but the PowerHA SystemMirror GUI agent must be installed in a cluster. When you migrate a PowerHA SystemMirror GUI agent, an attempt is made to restart the agent service when the migration completes. When you migrate a PowerHA SystemMirror GUI server, an attempt is made to maintain the original state of the agent service. If the PowerHA SystemMirror GUI server is active when the migration begins, an attempt is made to restart the PowerHA SystemMirror GUI server when the migration completes.

After you install filesets that are available on the PowerHA SystemMirror Version 7.2.4 for AIX media, you must run the `/usr/es/sbin/cluster/ui/server/bin/smuiinst.ksh` command to complete the installation process. The `smuiinst.ksh` command automatically downloads and installs the remaining files that are required to complete the PowerHA SystemMirror GUI installation process. These downloaded files are not included in the PowerHA SystemMirror filesets because the files are licensed under the General Public License (GPL).

You must migrate the PowerHA SystemMirror GUI server before you migrate any cluster that is managed by the PowerHA SystemMirror GUI server. New clusters cannot be managed by an earlier version of the PowerHA SystemMirror GUI server. If the PowerHA SystemMirror GUI server is configured for high availability, you must disable high availability of the PowerHA SystemMirror GUI server before you migrate the PowerHA SystemMirror GUI server. You can enable the PowerHA SystemMirror GUI server for high availability after the migration process is complete. For more information, see [Configuring the PowerHA SystemMirror GUI server to be highly available](#).

For more information about migration, see the [Upgrading a PowerHA SystemMirror cluster](#) topic.





# Additional information

## PowerHA SystemMirror GUI

- If you cannot add a cluster to the PowerHA SystemMirror GUI, or create a new cluster from the PowerHA SystemMirror GUI, consider the following points:
  - Verify that the nodes in the cluster have a host name that can be routed to the PowerHA SystemMirror GUI server. You cannot use a routed service IP addresses to manage a cluster.
  - Verify that SSH connection from the PowerHA SystemMirror GUI server to the remote system that you are trying to connect is working. For example:

```
# ssh 172.19.67.49 /bin/hostname
The authenticity of host '172.19.67.49 (172.19.67.49)' can't be established.
ECDSA key fingerprint is 41:19:ea:f6:4f:46:91:29:f5:a0:fd:89:91:f7:28:97.
Are you sure you want to continue connecting (yes/no)?
```

In the current version of PowerHA SystemMirror GUI, you must also respond to the prompt to establish the SSH connection. You must respond by entering yes to add the host to the `~/.ssh/known_hosts` file of the PowerHA SystemMirror GUI server. After adding the host name to the hosts files the prompt is not displayed again.

- Only a **root** user can create or add a cluster. After the cluster is added in the PowerHA SystemMirror GUI, a non-root user can also manage clusters through the PowerHA SystemMirror GUI. If you do not have root credentials, a **root** user must configure the **sudo** command such that it can be run on one of the nodes in the cluster. For more information, see [Logging in as a non-root user](#). If you have root credentials, Secure Shell (SSH) service must be configured on the cluster to allow root access. The value of the **PermitRootLogin** parameter must be set to yes in the `/etc/ssh/sshd_config` file. You must restart the SSH service after you modify the `sshd_config` file.
  - SSH service can be used with a key or with a password. For a key, the key must not have a passphrase. The **configPasswordAuthentication** parameter must be set to yes in the `/etc/ssh/sshd_config` file. You must restart the SSH service after you modify the `sshd_config` file.
- If the status of a cluster is incorrect in the PowerHA SystemMirror GUI, consider the following points:
    - The PowerHA SystemMirror GUI server does not poll the cluster nodes for status. The PowerHA SystemMirror GUI listens for status change notifications from each node as indicated in the following actions:
      - Core PowerHA SystemMirror GUI events are sent to the PowerHA SystemMirror GUI server immediately after they occur.
      - When the **clmgr** command is used to modify the configuration of a cluster, a notification is sent to the PowerHA SystemMirror GUI server.
    - Verify that the network and firewall settings are allowing traffic between the PowerHA SystemMirror GUI server and PowerHA SystemMirror GUI agents by checking the following items:
      - The default port for the PowerHA SystemMirror GUI server is 8080. You can specify a different value for the port in the `/usr/es/sbin/cluster/ui/server/configuration-server.json` file.
      - The default port for the PowerHA SystemMirror GUI agent is 8081. You can specify a different value for the port in the `/usr/es/sbin/cluster/ui/agent/configuration-agent.json` file.

For more information about changing the values for the ports, see the [Changing ports](#).

- Synchronize the cluster by running the following command:

```
clmgr synchronize cluster
```

After you synchronize the cluster, if the **sync PASSED** event does not appear in the event viewer for that cluster or if the cluster status in the PowerHA SystemMirror GUI is not correct, the problem might require IBM Support assistance.

See [Troubleshooting the PowerHA SystemMirror GUI](#) for more assistance.

- In the PowerHA SystemMirror GUI, you must avoid changing the host name of the PowerHA SystemMirror GUI server. If you must modify the host name of the PowerHA SystemMirror GUI server, clusters that are managed by the PowerHA SystemMirror GUI might not be able to communicate status updates to the PowerHA SystemMirror GUI server. You can avoid this issue in one of the following ways:
  - Remove the cluster from the PowerHA SystemMirror GUI server before you modify the host name, and add the cluster after you modify the host name.
  - Modify the host name of the PowerHA SystemMirror GUI server, and manually update the `/usr/es/sbin/cluster/ui/agent/configuration-agent.json` file on each cluster node. Replace the old server IP address with the new IP address in the **serverURI** property. Restart the PowerHA SystemMirror GUI agent after you modify the file.
- PowerHA SystemMirror GUI cannot identify temporary host name changes that are made by using the **hostname** command. You can modify the host name permanently in the following ways:
  - Use the `/usr/es/sbin/cluster/ui/agent/bin/cl_set_hostname` utility.

```
cl_set_hostname -p [-P] [-a <ADDRESS>] <NEW_HOSTNAME>
```

- Update the `/etc/hosts` file and add the new host name. The previous host name must not be removed.
- Run **smitty hostname** and set the new hostname.
- Run any of the following commands:

```
chdev -l inet0 -a hostname=<NEW_HOSTNAME>
```

```
/usr/sbin/hostid [hostname]
```

```
/usr/lib/lpd/pio/etc/piodmgr -c > /dev/null 2>&1
```

- The option to authenticate by using an SSH key is not available from the open terminal feature. SSH authentication is supported only through a password.
- You do not need to install the PowerHA SystemMirror GUI server in a PowerHA SystemMirror cluster, but the PowerHA SystemMirror GUI agent must be installed in a cluster. If the PowerHA SystemMirror GUI server is installed within a PowerHA SystemMirror cluster, the PowerHA SystemMirror GUI can be used to keep the PowerHA SystemMirror GUI server highly available.
- The PowerHA SystemMirror GUI can manage AIX and Linux® clusters concurrently, and with full multi-tenancy support. For more information, see [Cluster zones](#).
- If you install the PowerHA SystemMirror GUI server within a cluster, you must install it on only one of the nodes in the cluster unless you are configuring the PowerHA SystemMirror GUI for high availability. For more information, see [Configuring the GUI to be highly available](#).
- By default, the PowerHA SystemMirror GUI server uses the IP address that is associated with the default host name of the system on which it is running. The PowerHA SystemMirror GUI agents use IP address of the host name to communicate the cluster status to the PowerHA SystemMirror GUI server. If you want to use an alternative IP address for the PowerHA SystemMirror GUI communication, specify the IP address in the **serverAddress** property in the `/usr/es/sbin/cluster/ui/server/configuration-server.json` file. For more information, see [Configuring the PowerHA SystemMirror GUI](#).

## Support matrix for PowerHA SystemMirror Smart Assists

The following table describes the version of middleware that can be configured and managed with PowerHA SystemMirror Smart Assists. For information about supported PowerHA SystemMirror versions, see [PowerHA SystemMirror for AIX Reference Information](#).

<i>Table 1. Support matrix for PowerHA SystemMirror Smart Assists.</i> The table describes the middleware application versions that are supported on PowerHA SystemMirror with different versions of the AIX operating system.		
Middleware application	AIX 7.1 with Technology Level 4, or later	AIX Version 7.2 with Technology Level 2, or later
AIX print subsystem	7.1	7.2
Oracle Database Server	18C	19C
SAP Netwearver	7.52	7.52
DB2	11.1	11.1
WebSphere MQSeries®	9	9
IBM Tivoli® Directory Server	6.3	Not supported
IBM Lotus® Domino® Server	9.0.1	9.0.1
SAP liveCache Hot Standby	7.9.08	7.9.08
MaxDB	7.9.08	7.9.08

### Documentation

To view the latest updates to the documentation, see the [What's new in PowerHA SystemMirror Version 7.2.4 for AIX](#) topic.

To view the documentation in PDF files, see the [PowerHA SystemMirror for AIX PDFs](#) topic.

### Man pages

The man pages for the PowerHA SystemMirror commands are provided in the `cluster.man.en_US.es.data` fileset. To view the man pages, from the command line, enter `man command_name` (where `command_name` is the name of the command). You can also view the man pages in the IBM Knowledge Center, [PowerHA SystemMirror commands](#).

You can use the **clmgr** command to perform most of the PowerHA SystemMirror operations. For more information about the operations that you can perform by using the **clmgr** command, see the [clmgr command: Quick reference](#) topic.



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