

IBM PowerHA SystemMirror for AIX

Standard Edition

Version 7.2.5

Release Notes



Note

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

First edition (December 2020)

This edition applies to PowerHA SystemMirror Version 7.2.5 for AIX and to all subsequent release and modifications until otherwise indicated in new editions.

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Contents

- About this document.....V**
 - Highlighting.....v
 - Case sensitivity in AIX.....v
 - ISO 9000.....v

- Contents..... 1**

- New functions and features..... 3**

- Software requirements..... 5**

- Hardware requirements.....7**

- Installation and migration.....9**

- Additional information..... 11**

- Notices.....15**
 - Privacy policy considerations..... 16
 - Trademarks..... 17

About this document

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 7.2.5 for AIX® licensed program.

Highlighting

The following highlighting conventions are used in this document:

Bold	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.

Contents

- [New functions and features](#)
- [Software requirements](#)
- [Hardware requirements](#)
- [Installation and migration](#)
- [Additional information](#)

New functions and features

Support for CRIT_DAEMON_RESTART_GRACE_PERIOD tunable

The Reliable Scalable Cluster Technology (RSCT) subsystem consists of multiple daemons that provide various functions to PowerHA SystemMirror. Few RSCT daemons are marked as critical because PowerHA SystemMirror depends on these daemons to provide high availability. When RSCT critical daemons are not available, PowerHA SystemMirror nodes are halted to avoid corruptions. In case of system failure, the resource monitoring and control (RMC) subsystem and IBM.ConfigRM daemon restart automatically. To save the downtime that is required to halt and restart the node, you can use the CRIT_DAEMON_RESTART_GRACE_PERIOD tunable. RSCT will wait for the specified grace period to allow the RMC subsystem and IBM.ConfigRM daemons to restart without halting the node. You can set the value of the CRIT_DAEMON_RESTART_GRACE_PERIOD tunable both at cluster level and node level of PowerHA SystemMirror in the range 0 to 240. For more information, see [Configuring the Critical Daemon Restart Period tunable](#).

Skip resource handling for Unmanaged resource groups option

In PowerHA SystemMirror Version 7.2.5, or later, you can skip cluster resource processing by using the SKIP_EVENT_PROCESSING_MANAGE_MODE tunable after restarting the cluster services that are stopped by using the **Unmanaged resource groups** option. During the cluster restart operation, the SKIP_EVENT_PROCESSING_MANAGE_MODE tunable restores the state of the cluster resource group to the previous state without disturbing its current state. After you enable the SKIP_EVENT_PROCESSING_MANAGE_MODE tunable in the `hacmp.out` log file, the new **forced** option of the `node_up` events directs the `node_up` event to skip cluster resources processing. For more information, see [Starting cluster services on a node with a resource group in the UNMANAGED state](#).

Cloud tiebreaker option

PowerHA SystemMirror supports different tiebreaker mechanisms that can be used to determine cluster behavior during split and merge scenarios. The **disk** and **NFS** tiebreaker options use storage outside of the cluster domain to read and write files. This determine the winning and losing sides of a partition. PowerHA SystemMirror Version 7.2.5 introduces a new **Cloud** option that uses cloud-based storage for the same purpose. This feature supports IBM® and Amazon Web Services (AWS) cloud services. For more information, see [Configuring split and merge policies](#).

Enhancements to clverify option for netmon.cf file content validation

PowerHA SystemMirror includes a robust verification mechanism, which checks multiple aspects of the cluster and AIX configuration for proper settings and consistency. In PowerHA SystemMirror Version 7.2.5, or later, the cluster verification operation includes checking an optional `netmon.cf` file. This verification process avoids false network events. The cluster verification process now verifies the content and consistency of the `netmon.cf` file across the cluster nodes.

Oracle migration support

During Oracle database migration, a customer might change the Oracle home directory. In such cases, PowerHA SystemMirror Smart Assist for Oracle must be configured with new Oracle home directory. In PowerHA SystemMirror Version 7.2.5, or later, a new option is introduced, which automatically updates PowerHA SystemMirror Smart Assist for Oracle to use the new Oracle home directory.

Oracle temporary file removal

During discovery, start, stop, and monitoring operations of PowerHA SystemMirror Smart Assist for Oracle, temporary files are created in the `/tmp` directory. However, system failure might occur due to increase in size of the `/tmp` directory and low availability of free space. In PowerHA SystemMirror Version 7.2.5, or later, you can use the PowerHA SystemMirror default log directory for intermediate file operations.

SMIT enhancements

After changing the PowerHA SystemMirror configuration, the cluster must be verified and synchronized to implement the updates. If the updates are made by using the System Management Interface Tool (SMIT) interface, the option to verify and synchronize was not available for some SMIT panels. In PowerHA SystemMirror Version 7.2.5, or later, the verify and synchronize options are available on most SMIT panels.

Cross-cluster verification utility enhancements

The cluster verification utility checks the cluster configuration on all nodes within the same cluster. In PowerHA SystemMirror Version 7.2.5, or later, you can use the cross-cluster verification (ccv) utility to compare Cluster Aware AIX (CAA) tunables between two different clusters.

PowerHA SystemMirror GUI

The following updates are new in the PowerHA SystemMirror GUI:

- The Operation Center Support (OCS) is used to configure the PowerHA SystemMirror GUI for long-term use, with visual and audio alerts.
- The Cross-Cluster Verification (CCV) feature in PowerHA SystemMirror compares two cluster configurations to show differences in the PowerHA SystemMirror configuration, file sets, interim fixes, and more. CCV compares attributes that are collected from one or two clusters by using the current cluster configuration or snapshots.
- All the supported application monitor configuration parameters are now available in the PowerHA SystemMirror GUI.
- The PowerHA SystemMirror GUI server's hostname is logged in the **clmgr** log file for cluster changes that are initiated from the PowerHA SystemMirror GUI. This provides complete GUI-to-cluster and cluster-to-GUI activity auditing.
- PowerHA SystemMirror can create a backup communication method for the PowerHA SystemMirror GUI server by configuring a Secure Shell (SSH) key while adding a cluster to the PowerHA SystemMirror GUI.
- The PowerHA SystemMirror GUI has removed the use of the **hostname** command to determine how to communicate with nodes. The PowerHA SystemMirror GUI server now collects either a public boot IP or persistent IP from each cluster node and uses that IP to communicate with that node.
- Importing multiple clusters has been enhanced to provide a progress indicator.
- Improved the clarity of events that are displayed in the PowerHA SystemMirror GUI by adding a start and complete indicator for two-phase events.

Software requirements

Before you install PowerHA SystemMirror Version 7.2.5, you must install all available service packs for AIX and PowerHA SystemMirror from the [IBM Fix Central](#) website.

PowerHA SystemMirror Version 7.2.5 is supported on the following versions of the AIX operating system:

- IBM AIX 7.2 with Technology Level 4 with Service Pack 2, or later
- IBM AIX 7.2 with Technology Level 5, or later
- IBM AIX 7.1 with Technology Level 5 with Service Pack 6, 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 7.2.5 GUI server, if you select a cluster in the PowerHA SystemMirror GUI and that cluster is running PowerHA SystemMirror Version 7.2.3, some of the PowerHA SystemMirror Version 7.2.5 capabilities might not be available for the selected cluster.

Hardware requirements

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

Installation and migration

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

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

Support matrix for PowerHA SystemMirror Smart Assists

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

Middleware application	AIX 7.2	AIX Version 7.3
AIX print subsystem, DHCP, and DNS	7.2	7.3
Oracle Database Server	19C	19C
SAP Netweaver	7.52	7.52
Db2 [®]	11.5	11.5
WebSphere [®] MQSeries [®]	9.3	9.3
IBM Tivoli [®] Directory Server	6.4	6.4
IBM Lotus [®] Domino [®] Server Note: Support is withdrawn for this product from PowerHA SystemMirror 7.2.8 or later.	NA	NA
SAP liveCache Hot Standby Note: Support is withdrawn for this product from PowerHA SystemMirror 7.2.8 or later.	NA	NA
MaxDB	7.9.08	7.9.08
IBM Tivoli Storage Manager Note: The product is now known as IBM Spectrum [®] Protect [™] .	8.1.8	8.1.8

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 boot IP or persistent IP that can be routed to the PowerHA SystemMirror GUI server. You cannot use a service IP to manage a cluster.
 - If you have trouble adding a cluster to the PowerHA SystemMirror GUI, verify the 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.
 - The 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.

- The option to authenticate by specifying 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 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 the IP address of the server's 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](#).

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 7.2.5 for AIX media, or migrate to PowerHA SystemMirror Version 7.2.5 from PowerHA SystemMirror Version 7.2.3, or earlier, 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](#).

Documentation

To view the latest updates to the documentation, see the [What's new in PowerHA SystemMirror Version 7.2.5 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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