IBM PowerHA SystemMirror for AIX

Standard Edition

Version 7.2.2

Release Notes

Note

Before using this information and the product it supports, read the information in “Notices” on page 13.

First edition (December 2017)

This edition applies to PowerHA® SystemMirror® Version 7.2.2 for AIX® and to all subsequent release and modifications until otherwise indicated in new editions.

Contents

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 7.2.2 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.
Italics	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.

What's new

April 2020

Added a prerequisite for migrating from PowerHA SystemMirror Version 7.2.1 SP2, or later, to PowerHA SystemMirror Version 7.2.2. For more information, see “Additional information” on page 11.

April 2019

For more information, see “Hardware requirement” on page 7.

New functions for PowerHA SystemMirror Version 7.2.2 for AIX

PowerHA SystemMirror Version 7.2.2 for AIX has the following new functions and updates:

PowerHA SystemMirror graphical user interface (GUI)

The PowerHA SystemMirror GUI provides the following advantages over the PowerHA SystemMirror command line:

- Monitors the status of all clusters, sites, nodes, and resource groups in your environment in a single, unified view. If a problem occurs in any clusters, those clusters are always displayed at the top of the list for quick search.
- PowerHA SystemMirror Version 7.2.2 for AIX supports the concepts of cluster zones. Cluster zones can be used to organize clusters in various ways. For more information, see Cluster zones topic.
- Management features allows authorized users to perform actions on their clusters, such as:
  - Start and stop cluster services
  - Start and stop resource groups
  - Move resource groups to new nodes
  - Create new clusters
  - Create new resource groups with resources
- Provides security controls by using user permissions that restrict users to authorized functions.
- Scans event summaries and provides a detailed description for each event. If the event occurred because of an error or issue in your environment, you can view suggested solutions to fix the problem. You can also save your own customized notes and solutions for each event.
- You can compare log files. Some commonly used log files are displayed first.
- Views properties for a cluster such as version, name of sites and nodes, and repository disk information.

For more information about the PowerHA SystemMirror GUI, see the PowerHA SystemMirror graphical user interface (GUI) topic.

Log Analyzer

PowerHA SystemMirror Version 7.2.2 for AIX supports the Log analyzer option, which provides capabilities for scanning and extracting detailed information about different types of errors from the PowerHA SystemMirror, AIX, and other system components log files. For more information, see the Log Analyzer topic.

NovaLink support

PowerHA SystemMirror Version 7.2.2 for AIX supports the LPAR managed by PowerVM® NovaLink®. PowerVM NovaLink® is enabled by a software package that runs within a Linux® LPAR on a POWER8® host. For more information, see the Adding a PowerVM NovaLink definition topic.

Easy Update

The **cl_ezupdate** tool is designed to help the PowerHA SystemMirror cluster administrator with software upgrade management tasks. It allows the administrator to automatically update the entire cluster or a subset of its nodes without disruption of user application services, in most cases. The **cl_ezupdate** script is started from one of the cluster nodes. The repository must be a local directory or a NIM resource that is on NIM servers. The **cl_ezupdate** rollback option backs up the system (all details in the rootvg volume group) and rolls back the backup copy of the rootvg volume group if an error occurs in the **cl_ezupdate** tool. The rollback occurs only if the system is changed by using the **cl_ezupdate** tool. For more information, see the cl_ezupdate topic.

Shared Listener support

PowerHA SystemMirror Version 7.2.2 for AIX added support for individual monitors of each Oracle listener thread. When any listener thread failure is detected, the corresponding monitor restarts only the specific listener thread. The main monitor monitors only the database instance. Hence, high availability of Oracle database instance is possible, even though the listener thread is started during failure scenarios.

However, if the database instance fails, the main monitor ensures that it restarts the database instance along with all the associated listener's threads.

Oracle DB Shared Memory Clean Up

Shared memory that is associated with the Oracle database instance is cleaned up before starting the database. The clean up process ensures that when an Oracle resource group is made online, the oracle database instance is started successfully. The cleanup process is performed only when the shared segments exist before you start the Oracle database instance.

CAA auto start on Disaster Recovery (DR) site

The Cluster Aware AIX (CAA) function stores the primary and backup repository disks PVIDs and uses them to identify the repository disks during disaster recovery when UUID-based identification fails. The new **CAA_DR** capability by CAA enables or disables this function. PowerHA SystemMirror provides a *clmgr* option to update the CAA tunable when the **CAA_DR** capability is available and also enables the **dr_enabled** mode in CAA by default, if supported by current version of the AIX operating system.

Note: This facility is not supported by PowerHA SystemMirror linked clusters.

Monitor Restart Count

PowerHA SystemMirror Version 7.2.2 for AIX adds support for a Monitor Restart Count function for long running Custom Application Monitors. Depending on the complexity of your customer monitor, the monitor might timeout or hang during one monitoring interval, but might run successfully during the next monitoring interval. To compensate for this, you can establish a monitor restart count, which defines how many times PowerHA SystemMirror attempts to restart the failed monitor.

Note: Allowable value for the Monitor Restart Count function is in the range 0 - 10. The default value is 0.

Capturing CAA tunables in PowerHA Snapshot

PowerHA SystemMirror Version 7.2.2 for AIX captures all the CAA tunables and customer security preferences as part of the snapshot database feature. These values are then restored when the snapshot is applied.

clRGinfo updates

PowerHA SystemMirror Version 7.2.2 for AIX added the *-i* flag to show status of applications with administrative control operations. The *-i* flag is supported only for SAP applications. For more information, see the clRGinfo command topic.

Software requirements

Before you install PowerHA SystemMirror Version 7.2.2 for AIX, you must install all available service packs for AIX and PowerHA SystemMirror from the IBM® Fix Central website.

PowerHA SystemMirror Version 7.2.2 for AIX is supported on the following version of the AIX operating system:

- IBM AIX 7.1.4 with Service Pack 2, or later
- IBM AIX 7.1.5, or later
- IBM AIX 7.2.0 with Service Pack 2, or later
- IBM AIX 7.2.1 with Service Pack 1, or later
- IBM AIX 7.2.2, or later
- IBM AIX 7.2.3 with Service Pack 1, or later
- IBM AIX 7.2.4 with Service Pack 1, or later

PowerHA SystemMirror graphical user interface (GUI) is supported only on the following web browsers:

- Google Chrome Version 50, or later
- Firefox Version 52, or later

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

Hardware requirement

PowerHA SystemMirror graphical user interface (GUI) requires IBM POWER6® or later technology-based servers.

Installation and migration

You cannot migrate from PowerHA SystemMirror Version 6.1 to PowerHA SystemMirror Version 7.2.2 for AIX. You must first migrate from PowerHA SystemMirror Version 6.1 to PowerHA SystemMirror Version 7.2. For more information about migrating, see the Migrating from PowerHA SystemMirror 6.1 to PowerHA SystemMirror 7.1, or later topic.

For more information about upgrading PowerHA SystemMirror Version 7.2.2 for AIX by using a snapshot, see the Upgrading PowerHA SystemMirror by using a snapshot topic.

For more information about upgrading an offline cluster, see the Upgrading an offline cluster for PowerHA SystemMirror topic.

For more information about rolling migration, see the Performing a rolling migration topic.

It is not required to install the PowerHA SystemMirror GUI server in a PowerHA SystemMirror cluster, but the agent must be installed in a cluster. While migrating PowerHA SystemMirror GUI server or agent, an attempt is made to maintain the original state of the service. For example, if the server was active when the migration operation began, an effort is made to ensure it is running again after the migration operation completes.

Additional information

PowerHA SystemMirror graphical user interface (GUI)

After you install the filesets that are available on the PowerHA SystemMirror Version 7.2.2 for AIX media, you must run the **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 filesets because the files are licensed under the General Public License (GPL).

The PowerHA SystemMirror GUI can be installed on either AIX or Linux operating system, and can manage clusters from both platforms concurrently, within the same instance of the PowerHA SystemMirror GUI server. For AIX only, a PowerHA SystemMirror GUI Version 7.2.2 server can also work with clusters that run PowerHA SystemMirror 7.1.3 SP 7, PowerHA SystemMirror 7.2.0 SP 3, or PowerHA SystemMirror 7.2.1. For PowerHA SystemMirror 7.1.3 and PowerHA SystemMirror 7.2.0 clusters, only the monitoring and log viewing capabilities are supported. For PowerHA SystemMirror 7.2.1 clusters, full management capability is provided in service pack 2. Before that service pack, only the basic, non-management capabilities are supported.

Note: >|Before you migrate from PowerHA SystemMirror Version 7.2.1 SP2, or later, to PowerHA SystemMirror Version 7.2.2 by using **installp** or the SMIT interface, you must run the following command from the command line:

```
export OLD_SYSNAME=phauiagent
```

|<

PowerHA SystemMirror GUI has the following limitations in the PowerHA SystemMirror Version 7.2.2:

- If you cannot add or create a cluster, verify that SSH from the PowerHA SystemMirror GUI server system to the remote system you are trying to establish contact with is working, and does not require a response to the ssh prompt. 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 the PowerHA SystemMirror GUI, you must 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. You need to perform this action only once for each connection.
- In PowerHA SystemMirror GUI, you cannot change the hostname of any managed cluster node. If you must change the hostname of a cluster node that the PowerHA SystemMirror GUI server is managing, you might need to remove the cluster from the PowerHA SystemMirror GUI server before changing the hostname, then add the cluster again after changing the hostname.
- In PowerHA SystemMirror GUI, you cannot change the hostname of the GUI server host. If you must change the hostname of the GUI server, you must either remove all your clusters, then rediscover them after changing the hostname, or manually update the `/usr/es/sbin/cluster/ui/agent/configuration-agent.json` file on every cluster node and replace the old server IP address with the new address in the server URL. Restart the agent after this change is complete.
- Creating or adding a cluster currently requires a root login. After the cluster is added in the PowerHA SystemMirror GUI, a root login is no longer required to manage it through the PowerHA SystemMirror GUI.
- When creating a cluster by using the PowerHA SystemMirror GUI wizard, you cannot configure an alternative node name or a persistent IP for the first node that you added to the cluster. The first node is

used to authenticate to the remote environment. It is included in the cluster with a default node label that is assigned to it.

- The option to authenticate by using an SSH key is not available from the open terminal feature. For now, SSH authentication is supported only through password.

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.

Table 1. Support matrix for PowerHA SystemMirror Smart Assists. 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	12CR2 or 12CR1	12CR2 or 12CR1
SAP Netwearver	7.5	7.5
DB2®	11.1	11.1
WebSphere® MQSeries®	8.5	8.5
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	7.9

Documentation

To view the latest updates to the documentation, see the What's new in PowerHA SystemMirror topic.

To view the latest version of the release notes, see the PowerHA SystemMirror Version 7.2.2 for AIX release notes topic.

To view the documentation in PDF files, see the PowerHA SystemMirror Version 7.2.2 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. The fileset is installed in the `/usr/share/man/cat1` directory. To view the man pages, from the command line, enter `man` *command_name* (where *command_name* is the name of the command).

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.

Notices

This information was developed for products and services offered in the US.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

For license inquiries regarding double-byte character set (DBCS) information, contact the IBM Intellectual Property Department in your country or send inquiries, in writing, to:

Intellectual Property Licensing
Legal and Intellectual Property Law
IBM Japan Ltd.
19-21, Nihonbashi-Hakozakicho, Chuo-ku
Tokyo 103-8510, Japan

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this IBM product and use of those websites is at your own risk.

IBM may use or distribute any of the information you provide in any way it believes appropriate without incurring any obligation to you.

Licensees of this program who wish to have information about it for the purpose of enabling: (i) the exchange of information between independently created programs and other programs (including this one) and (ii) the mutual use of the information which has been exchanged, should contact:

IBM Director of Licensing
IBM Corporation
North Castle Drive, MD-NC119
Armonk, NY 10504-1785
US

Such information may be available, subject to appropriate terms and conditions, including in some cases, payment of a fee.

The licensed program described in this document and all licensed material available for it are provided by IBM under terms of the IBM Customer Agreement, IBM International Program License Agreement or any equivalent agreement between us.

The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on specific configurations and operating conditions.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

Statements regarding IBM's future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only.

All IBM prices shown are IBM's suggested retail prices, are current and are subject to change without notice. Dealer prices may vary.

This information is for planning purposes only. The information herein is subject to change before the products described become available.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to actual people or business enterprises is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs. The sample programs are provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of the sample programs.

Each copy or any portion of these sample programs or any derivative work must include a copyright notice as follows:

© (your company name) (year).

Portions of this code are derived from IBM Corp. Sample Programs.

© Copyright IBM Corp. _enter the year or years_.

Privacy policy considerations

IBM Software products, including software as a service solutions, (“Software Offerings”) may use cookies or other technologies to collect product usage information, to help improve the end user experience, to tailor interactions with the end user or for other purposes. In many cases no personally identifiable information is collected by the Software Offerings. Some of our Software Offerings can help enable you to collect personally identifiable information. If this Software Offering uses cookies to collect personally identifiable information, specific information about this offering’s use of cookies is set forth below.

This Software Offering does not use cookies or other technologies to collect personally identifiable information.

If the configurations deployed for this Software Offering provide you as the customer the ability to collect personally identifiable information from end users via cookies and other technologies, you should seek your own legal advice about any laws applicable to such data collection, including any requirements for notice and consent.

For more information about the use of various technologies, including cookies, for these purposes, see IBM's Privacy Policy at http://www.ibm.com/privacy and IBM's Online Privacy Statement at http://www.ibm.com/privacy/details the section entitled "Cookies, Web Beacons and Other Technologies" and the "IBM Software Products and Software-as-a-Service Privacy Statement" at http://www.ibm.com/software/info/product-privacy.

Trademarks

IBM, the IBM logo, and ibm.com are trademarks or registered trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the web at Copyright and trademark information at www.ibm.com/legal/copytrade.shtml.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Windows is a trademark of Microsoft Corporation in the United States, other countries, or both.