IBM PowerHA SystemMirror for AIX

Standard Edition

Version 7.2

PowerHA SystemMirror Graphical User Interface

IBM
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IBM
Note

Before using this information and the product it supports, read the information in “Notices” on page 17.

This edition applies to IBM PowerHA SystemMirror 7.2 Standard Edition for AIX and to all subsequent releases and modifications until otherwise indicated in new editions.

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About this document

This document provides information about viewing and monitoring clusters by using PowerHA® SystemMirror® for AIX®.

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. Also identifies graphical objects such as buttons, labels, and icons that the user selects.

*Italics*

Identifies parameters whose actual names or values are to be supplied by the user.

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 information you should actually 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.

Related information

- The PowerHA SystemMirror Version 7.2 for AIX PDF documents are available in the [PowerHA SystemMirror 7.2 PDFs](#) topic.
- The PowerHA SystemMirror Version 7.2 for AIX release notes are available in the [PowerHA SystemMirror 7.2 release notes](#) topic.
PowerHA SystemMirror graphical user interface (GUI)

In PowerHA SystemMirror Version 7.2 for AIX, you can use a graphical user interface (GUI) to monitor your cluster environment.

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

- Monitor the status for all clusters, sites, nodes, and resource groups in your environment in a single, unified view. If any clusters are experiencing a problem, those clusters are always displayed at the top of the view, so you will be sure to see them.
- A secure, single access point to all clusters
- A health-at-a-glance dashboard that highlights any problem that you need to be aware of
- Search and compare log files. Also, the format of the log file is easy to read and identify important information.
- View properties for a cluster such as the PowerHA SystemMirror version, name of sites and nodes, and repository disk information.

What's new in PowerHA SystemMirror Graphical User Interface

Read about new or significantly changed information for the PowerHA SystemMirror Graphical User Interface topic collection.

How to see what's new or changed

In this PDF file, you might see revision bars (|) in the left margin that identifies new and changed information.

December 2018

The following information is a summary of the updates that are made to this topic collection:

- Added information about how to make the PowerHA SystemMirror GUI highly available in the “Configuring the PowerHA SystemMirror GUI to be highly available” on page 14 topic.
- Added information about discovering clusters as a non-root user in the “Discovering a cluster as a non-root user” on page 14 topic.
- Added information about using Role-Based Access Control (RBAC) in the “Roles and role-based access control” on page 12 topic.
- Added information about how to change ports that are used by the PowerHA SystemMirror Graphical User Interface (GUI) in the “Changing ports” on page 11 topic.
- Added information about how to change the locations of log files in the “Changing the default location of log files” on page 13 topic.

June 2018

The following information is a summary of the updates that are made to this topic collection:

- Updated information about SSH configuration in the Planning for PowerHA SystemMirror topic.

December 2017

The following information is a summary of the updates that are made to this topic collection:

- Added the following new topic:
PowerHA SystemMirror Version 7.2.2, or later, supports the concept of “Cluster zones” on page 9.

- Updated the following topics:
  - PowerHA SystemMirror graphical user interface (GUI)
  - Planning for PowerHA SystemMirror
  - Installing PowerHA SystemMirror
  - Logging in to the PowerHA SystemMirror GUI
  - Navigating the PowerHA SystemMirror GUI
  - “Log files” on page 7

Planning for PowerHA SystemMirror GUI

Before you can install PowerHA SystemMirror GUI, your environment must meet certain requirements.

AIX operating system requirements

The nodes in the clusters on which you install the `cluster.es.smui.agent` fileset and the `cluster.es.smui.common` fileset must be running one of the following versions of the AIX operating system:

- AIX Version 7.1 Service Pack 6, or later
- AIX Version 7.2 Service Pack 1, or later

Notes:

- Before using the PowerHA SystemMirror GUI, you must install and configure secure shell (SSH) on each node.
- OpenSSL and OpenSSH must be installed on the system that is used as the PowerHA SystemMirror GUI server.
- You can install the latest available fixes for the AIX operating system from the Fix Central website.

You must install the following filesets to use PowerHA SystemMirror GUI:

`cluster.es.smui.agent`

The `cluster.es.smui.agent` fileset is also known as the GUI agent file set. The GUI agent fileset communicates with the system that you used to install the GUI server fileset. This fileset must be installed on all the nodes in every cluster that you want to be managed with the PowerHA SystemMirror GUI. This fileset can be installed on different versions of PowerHA SystemMirror. For more information, see “Managing previous versions of PowerHA SystemMirror.”

`cluster.es.smui.common`

This fileset must be installed with the `cluster.es.smui.server` (GUI server) fileset and with the `cluster.es.smui.agent` (GUI agent) fileset.

`cluster.es.smui.server`

The `cluster.es.smui.server` fileset is also known as the GUI server fileset. The GUI server fileset is typically installed on only one system to manage clusters with the PowerHA SystemMirror GUI. This fileset can be installed on a cluster that is running, or later, or on an AIX LPAR that does not have clusters that are configured.

Managing previous versions of PowerHA SystemMirror

With PowerHA SystemMirror 7.2, or later, you can use the PowerHA SystemMirror GUI to monitor clusters that are running the following version of PowerHA SystemMirror:

- PowerHA SystemMirror 7.1.3 SP 7, or later
- PowerHA SystemMirror 7.2.0 SP 3, or later
The full management capabilities that are provided in PowerHA SystemMirror 7.2 can be only used for clusters that are running PowerHA SystemMirror 7.2, or PowerHA SystemMirror 7.2.1 SP 2, or later. For earlier versions of PowerHA SystemMirror, only the monitoring features are supported.

You must install the cluster.es.smui.common and cluster.es.smui.agent filesets on all nodes that you want to manage with the PowerHA SystemMirror GUI. To install these filesets for the first time, run the smit install_all command. If the filesets are already installed, then run the smit update_all command to apply new service packs.

**Adding clusters**

You must add clusters to the PowerHA SystemMirror GUI. When you add clusters to the PowerHA SystemMirror GUI, you must have Secure Shell (SSH) configured to facilitate authentication between the PowerHA SystemMirror GUI server and a single node in the cluster.

OpenSSL and OpenSSH must be installed on the system that is used as the PowerHA SystemMirror GUI server. OpenSSH is used to create secure communication between PowerHA SystemMirror GUI server and nodes in the cluster. OpenSSH is needed only for the cluster addition process. After completion of cluster addition, OpenSSH is no longer used for communication between the server and the agents. For more information, see the [OpenSSL](https://www.openssl.org) website and the [OpenSSH](https://www.openssh.org) website.

The SSH File Transfer Protocol (SFTP) subsystem must be configured to work between the PowerHA SystemMirror GUI server and nodes in the cluster. You can verify that the SFTP subsystem is configured correctly in the `/etc/ssh/sshd_config` file. Verify that following path is correct:

```
Subsystem sftp /usr/sbin/sftp-server
```

If the path is not correct, you must enter the correct path in the `/etc/ssh/sshd_config` file, and then restart the `sshd` subsystem.

PowerHA SystemMirror supports both the key-based and password-based form of SSH authentication. SSH might have the ability to accept a password disabled by default. Hence, only key-based authentication is available on the system. To enable password authentication, you must change the SSH configuration. To enable password authentication in SSH, edit the `/etc/ssh/sshd_config` file by adding the following line:

```
PasswordAuthentication yes
```

After you add the `PasswordAuthentication yes` line to the `/etc/ssh/sshd_config` file, restart SSH by entering the following command:

```
stopsrc -s sshd && sleep 10 && startsrc -s sshd
```

The PowerHA GUI requires root authority to create and add clusters, which sometimes is not enabled in SSH. If the root access is disabled in SSH, edit the `/etc/ssh/sshd_config` file by adding the following line:

```
PermitRootLogin yes
```

After you add the `PermitRootLogin yes` line to the `/etc/ssh/sshd_config` file, restart SSH by entering the following command:

```
stopsrc -s sshd && sleep 10 && startsrc -s sshd
```

Gather the following information about your cluster environment before you add clusters to the PowerHA SystemMirror GUI:

**Note:** You need to connect to only one node in the cluster. After the node is connected, the PowerHA SystemMirror GUI automatically adds all other nodes in the cluster.

- Host name or IP address
• User ID and corresponding password
• SSH password or SSH key location

Note: A single cluster is managed by only one PowerHA SystemMirror GUI server.

Supported web browsers

PowerHA SystemMirror GUI is supported in the following web browsers:
• Google Chrome Version 50, or later
• Firefox Version 45, or later

Installing PowerHA SystemMirror GUI

The PowerHA SystemMirror GUI filesets are located on the PowerHA SystemMirror Version 7.2 for AIX, or later, media.

The PowerHA SystemMirror GUI server monitors clusters that are installed with the PowerHA SystemMirror 7.1.3 SP 7, or later, and PowerHA SystemMirror 7.2.0 SP 3, or later releases.

Install the following file sets to use PowerHA SystemMirror GUI:

cluster.es.smui.agent
This file set installs the agent files. Installing this fileset does not start the agent. This file set is automatically installed when you use the smit install_all command to install PowerHA SystemMirror Version 7.2, or later. The agent is configured and started when the cluster is added to the PowerHA SystemMirror GUI.

Note: You cannot install the cluster.es.smui.agent file set by using the smit update_all command. After running the smit update_all command, you need to install the cluster.es.smui.agent fileset separately.

cluster.es.smui.common
This file set installs common files that are required by both the agent and the PowerHA SystemMirror GUI server. This file set is automatically installed when you use the smit install_all command to install PowerHA SystemMirror Version 7.2, or later.

Note: You cannot install the cluster.es.smui.common file set by using the smit update_all command. After running the smit update_all command, you need to install the cluster.es.smui.common fileset separately.

cluster.es.smui.server
This file set installs the PowerHA SystemMirror GUI server files. The node on which you install the cluster.es.smui.server file set is known as the PowerHA SystemMirror GUI server. Installing this file set does not start the server. You do not need to install this file set on every node in the cluster, nor on every cluster that is to be managed. You can install this file set on a single node to manage multiple clusters.

To install this file set, complete the following steps:
1. From the command line, run smit install_latest.
2. Specify the input device or directory that contains the cluster.es.smui.server file set.
3. Select the cluster.es.smui.server file set from the list.
4. Press Enter to install the file set.

After the cluster.es.smui.server file set is installed, 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 shipped in the file sets because the files are licensed under the General Public License (GPL).

The PowerHA SystemMirror GUI server must have internet access or an HTTP proxy that is configured to allow access to the internet to run the smuinist.ksh command. If you are using an HTTP proxy, you must run the smuinist.ksh -p command to specify the proxy information, or you must specify the proxy information by using the http_proxy environment variable.

If the PowerHA SystemMirror GUI server does not have internet access, complete the following steps:
1. Copy the smuinist.ksh file from the GUI server to a system that is running the AIX operating system that has internet access.
2. Run the smuinist.ksh -d /directory command where /directory is the location where you want to download the files. For example, /smuinist.ksh -d /tmp/smui_rpms.
3. Copy the downloaded files (/tmp/smui_rpms) to a directory on the PowerHA SystemMirror GUI server.
4. From the PowerHA SystemMirror GUI server, run the smuinist.ksh -i /directory command where /directory is the location where you copied the downloaded files (/tmp/smui_rpms).

After the smuinist.ksh command is complete, a message displays a URL for the PowerHA SystemMirror GUI server. Enter the specified URL into a web browser and from the Health Summary menu in the navigation pane, click the icon and select Create Cluster option.

Related reference:
“Troubleshooting PowerHA SystemMirror GUI” on page 10

You can view log files to help you troubleshoot PowerHA SystemMirror GUI.

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**Logging in to the PowerHA SystemMirror GUI**

After you install the PowerHA SystemMirror GUI, you can log in to the PowerHA SystemMirror GUI from a web browser.

To log in to the PowerHA SystemMirror GUI, complete the following steps:
1. Open a supported web browser, and enter https://HostName:8080/#/login, where HostName is the system on which you installed the cluster.es.smui.server file set.
2. On the login page, enter the user name and password and click Log In. You can use the existing user names and passwords that exist on the system to login.

Note: The first time you log in to the PowerHA SystemMirror GUI, you must add clusters to the GUI or create new clusters.

To add existing clusters to the PowerHA SystemMirror GUI, complete the following steps:
1. In the navigation pane, click the icon.
2. Select Add cluster.
3. Complete all required information.
4. Click Discover clusters.

To create new clusters for the PowerHA SystemMirror GUI, complete the following steps:
1. In the navigation pane, click the icon.
2. Select Create cluster.
3. Complete all required information.
4. Click Complete.

**Navigating the PowerHA SystemMirror GUI**

The PowerHA SystemMirror graphical user interface (GUI) provides you with a web browser interface that can monitor your PowerHA SystemMirror environment.

**Health summary**

In the PowerHA SystemMirror GUI, you can quickly view all events for a cluster in your environment. The following figure identifies the different areas of the PowerHA SystemMirror GUI that are used to view events and status.

![Health summary](image)

*Figure 1. Health summary*

1. **Navigation pane**
   This area displays all the zones, clusters, sites, nodes, and resource groups in a hierarchy that was discovered by the PowerHA SystemMirror GUI. You can click to view resources for each cluster.

   **Note:** The clusters are displayed in alphabetic order. However, any clusters that are in a **Critical** or **Warning** state are listed at the top of the list.

2. **Health Summary**
   This menu provides cluster administrative features for the selected item. You can select **Add Cluster**, **Create Zone**, **Remove Cluster**, or **Create Cluster** from the **Health Summary** menu.

3. **Scoreboard**
   This area displays the number of zones, clusters, nodes, and resource groups that are in **Critical**, **Warning**, or **Maintenance** state. You can click **Critical**, **Warning**, or **Maintenance** to view all the messages for a specified resource. For example, in Figure 1 there are 2 resource groups identified.
If the warning icon was highlighted and you clicked the warning icon, all messages (critical, warning, and normal) for the 2 resource groups would be displayed.

4 Event filter
In this area, you can click the icons to display all events in your environment that correspond to a specific state. You can also search for specific event names.

5 Event timeline
This area displays events across a timeline of when the event occurred. This area allows you to view the progression of events that lead to a problem. You can zoom in and out of the time range by using the + or – keys or by using the mouse scroll wheel.

6 Event list
This area displays the name of the event, the time when each event occurred, and a description of the event. The information that is displayed in this area corresponds to the events you selected from the event timeline area. The most recent event that occurred is displayed first. You can click this area to display more detailed information about the event such as possible causes and suggested actions.

7 Action Menu
This area displays the following menus options:

User Management
PowerHA SystemMirror GUI allows an admin to create and manage users by using User Management menu. The admin can assign built-in roles to new users.

Note: You can only add user names that are defined on the host running the PowerHA SystemMirror GUI server.

Role Management
The Role Management tab displays information about available roles for each user. An admin can create custom roles and provide permission to different users. PowerHA SystemMirror GUI provides the following roles:
• ha_root
• ha_mon
• ha_op
• ha_admin

Zone Management
You can create zones, which are groups of clusters. An admin can create zones and assign any number of clusters to a zone. You can also add new zones or edit existing zones.

View Activity Log
You can view information about all activities performed in the PowerHA SystemMirror GUI that resulted in a change by using the View Activity Log tab. This view provides various filters to search for specific activities for the cluster, roles, zone, or user management changes.

Log files
PowerHA SystemMirror GUI provides the option to view log information about all files in a cluster.
Log files

To easily compare and identify log files that are displayed in the PowerHA SystemMirror GUI, the log files correspond to a particular color. For example, in the following figure all the log files for the hacmp.out file are displayed in a blue color and all the log files for the cluster.log file are displayed in a yellow color.

The following figure identifies the different areas of the PowerHA SystemMirror GUI that are used to view log files:

![PowerHA SystemMirror Graphical User Interface](image)

**Figure 2. Log files**

1. **Search terms**
   You can click the following predefined search terms to locate the specified term in the log file:
   - error
   - fail
   - could not

   You can click the < and > arrows to move to the previous and next instance of the search term in the selected log file. You can also enter your own search term and create a user-defined search term. A user-defined search term functions similar to the predefined search terms. For example, in the preceding figure, *preamble* is a user-defined search term.

2. **Log file selection**
   You can view the following log files from the PowerHA SystemMirror GUI:
   - hacmp.out
   - errpt
   - clutils.log
   - clverify.log
   - autoverify.log
• clstrmgr.debug
• cluster.log

Note: All of the log files, including the most current and the oldest, are merged together to create a single large log file. For example, when you view the hacmp.out log file you are able to view the hacmp.out.1, hacmp.out.2, and hacmp.out.3 log files as a single log file instead of three separate log files.

3 Log file viewer
In this area, you can view the log file information. To easily locate important information in the log files, the scripts are located within collapsed sections in the log files. You can expand sections within the log file to view more detailed scripts. You can also open the log file in a separate browser window by clicking the icon.

To view log files of a specific cluster, complete the following steps:
1. From the navigation menu, select the cluster and click View Cluster.
2. Click the Logs tab for that specific cluster.

Activity log
The PowerHA SystemMirror GUI records all change-related information in the GUI database. The Activity Log tab provides a quick and easy way to view that information. Various filtering options are provided to help find specific historical information about changes that are made to clusters, resource groups, roles, zones, and user accounts. An option to download the Activity Log is provided. You can also export the downloaded Activity Log into a comma-separated values (CSV) file.

Cluster zones
PowerHA SystemMirror Version 7.2.2 for AIX, or later, supports the concepts of cluster zones. Cluster zones can be used to organize clusters in a variety of ways. For example, you might create a zone for all your production clusters, another zone for development clusters, and another zone for test clusters. You can also organize zones based on the geographical location of the clusters, such as clusters located in New York City and clusters located in Boston. Cluster zones can be organized by various application such as DB2 Clusters, WebSphere Clusters, or cluster zones can also be organized by customer name.

Zone management
A group of clusters form a zone. An administrator can create different zones and assign any number of clusters to a zone. However, one cluster cannot be member of multiple zones. By creating a zone, an administrator can restrict the user from accessing a specific group of clusters.

You can also provide access to users for specific zones. If you do not add a user to a zone, that user cannot view clusters that are associated with the zone.

Note: If a cluster is not assigned to any zone, it will be displayed as Unassigned Cluster and it will be accessible to all PowerHA SystemMirror GUI users.

To create a zone by using the PowerHA SystemMirror GUI, complete the following steps:
1. Click the icon.
2. Select Zone Management.
3. Click Add zone and complete all the required information.
4. Click Continue.
5. Select Clusters from the Zone Management list and click Continue.
6. Select Users from the Zone Management list and click Save.

**Troubleshooting PowerHA SystemMirror GUI**

You can view log files to help you troubleshoot PowerHA SystemMirror GUI.

The information in this section is only a reference guide for different techniques and log files you may be able to use to troubleshoot problems with the PowerHA SystemMirror GUI. You should always contact IBM support if you are uncertain about the information here or how to solve your problem.

**Log files**

You can use the following log files to troubleshoot PowerHA SystemMirror GUI:

- `smui-server.log`  
  This log file is located in the `/usr/es/sbin/cluster/ui/server/logs/` directory. The `smui-server.log` file contains information about the PowerHA SystemMirror GUI server.

- `smui-agent.log`  
  This log file is located in the `/usr/es/sbin/cluster/ui/agent/logs/` directory. The `smui-agent.log` file contains information about the agent that is installed on each PowerHA SystemMirror node.

- `notify-event.log`  
  This log file is located in the `/usr/es/sbin/cluster/ui/agent/logs/` directory. The `notify-event.log` file contains information about all PowerHA SystemMirror events that are sent from the agent to the PowerHA SystemMirror server.

**Problems logging in to PowerHA SystemMirror GUI**

If you are experiencing problems logging in to the PowerHA SystemMirror GUI, complete the following steps:

2. Verify that the `smuiauth` command is installed correctly. Also, verify that the `smuiauth` command has the correct permissions by running the `ls -l` command from the `/usr/es/sbin/cluster/ui/server/node_modules/smui-server/lib/auth/smuiauth` directory. An output that is similar to the following example is displayed when you run the `ls -l` command:
   
   ```
   -r-x------ 1 root system 21183 Aug 31 21:48
   ```
3. Verify that you can run the `smuiauth` command by running the `smuiauth -h` command.
4. Verify that the pluggable authentication module (PAM) framework is configured correctly by locating the following lines in the `/etc/pam.conf` file:

   ```
   Note: The PAM configuration occurs when you install the `cluster.es.smui.server` file set.
   ```
   
   ```
   smuiauth auth required pam_aix
   smuiauth account required pam_aix
   ```

**Problem adding clusters to the PowerHA SystemMirror GUI**

If you are not able to add clusters to the PowerHA SystemMirror GUI, complete the following steps:

   a. If `sftp-related signatures` exist in the log file, such as `Received exit code 127 while establishing SFTP session`, a problem exists with the SSH communication between the PowerHA SystemMirror GUI server and the cluster you are trying to add.
   b. From the command line, verify that you can connect to the target system by using SSH File Transfer Protocol (SFTP). If you cannot connect, verify that the daemon is running on the server.
PowerHA SystemMirror GUI server and the target node by running the `ps -ef | grep -w sshd | grep -v grep` command. You can also check the SFTP subsystem configuration in the `/etc/ssh/sshd_config` file and verify that following path is correct:

```bash
Subsystem sftp /usr/sbin/sftp-server
```

If the path is not correct, you must enter the correct path in the `/etc/ssh/sshd_config` file, and then restart the sshd subsystem.


**The PowerHA SystemMirror GUI is not updating status**

If the PowerHA SystemMirror GUI is not updating the cluster status or displaying new events, complete the following steps:

2. Check for issues in the `/usr/es/sbin/cluster/ui/agent/logs/smui-agent.log` file. If certificate-related problem exists in the log file, the certificate on the target cluster and the certificate on the server do not match. An example of a certificate error follows:

   > WebSocket server - Agent authentication failed, remoteAddress:::ffff:10.40.20.186, Reason:SELF_SIGNED_CERT_IN_CHAIN

**Related concepts:**

- [“Installing PowerHA SystemMirror GUI” on page 4](#)

The PowerHA SystemMirror GUI filesets are located on the PowerHA SystemMirror Version 7.2 for AIX, or later, media.

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**Configuring PowerHA SystemMirror GUI**

Use this information to learn how to use Role-Based Access Control (RBAC), change the default location of log files, and change ports for the PowerHA SystemMirror GUI.

**Changing ports**

The PowerHA SystemMirror GUI uses ports to facilitate remote communication. The GUI server uses port 8080 to allow remote browsers to connect to it. The GUI agent uses port 8081 to allow the server to communicate with it. If these ports are not compatible with your firewall configuration, they may be changed.

The PowerHA SystemMirror GUI server and the PowerHA SystemMirror GUI agent have the following configuration files:

- GUI Server: `/usr/es/sbin/cluster/ui/server/configuration-server.json`
- GUI Agent: `/usr/es/sbin/cluster/ui/agent/configuration-agent.json`

The configuration files of the PowerHA SystemMirror GUI server and the PowerHA SystemMirror GUI agent can be manually edited to change the default ports. An example port number section of the GUI server configuration file follows:

```json
"port": 8080, // Server port

"agentPort": 8081, // Port of the agent
```

To change the port number of the PowerHA SystemMirror server, you must change the `port` setting. To change the port number of the PowerHA SystemMirror agent, you must change the `agentPort` setting. If you change a port setting in the server configuration file, you will need to update the agent configuration.
file on every node in each cluster that is currently being managed by that server. The current, remote GUI agents will still be listening on the original port number. Similarly, if you change the port number of the GUI server, the GUI agents will not be aware of the change and will still try to connect on the old port number. Therefore you must make similar changes in every agent configuration file.

An example port number section of the GUI agent configuration file follows:

```
"serverURI": "https://172.19.67.11:8080/", // Smu1-App URI
"port": 8081, // Server port
```

If the configuration file of the GUI server is modified to use a new port number for the GUI agent, the port property in the configuration file of every GUI agent must be updated to match the new value. If the port number of the GUI server is changed, the `serverURI` property of each GUI agent must be updated to specify the new port number. For example, if cluster XYZ has strict firewall rules that do not allow port number 8080 to be used in the data center, and if the network team allows the use of port number 1234, then follow the below steps:

1. In the `configuration-server.json` file, change the `port` setting from 8080 to 1234 and then restart the server using the following command:
   ```
   GUI Server: stopsrc -cs phauiserver; sleep 1; startsrc -s phauiserver
   ```
2. On every node that is running a GUI agent, change the `serverURI` in the `configuration-agent.json` file from "serverURI": "https://172.19.67.11:8080/", to "serverURI": "https://172.19.67.11:1234/", and then restart the GUI agent.

   When these files are updated, both the GUI server and the GUI agent must be restarted for the new configuration changes to take effect. To restart the the GUI agent, run the following commands:
   ```
   • GUI Agent: stopsrc -cs phauiaagent; sleep 11; startsrc -s phauiaagent
   ```
   Take a backup copy of the configuration file before changing it.

Roles and role-based access control

This section describes the Role-Based Access Control (RBAC) system for the PowerHA SystemMirror GUI.

Role-based access control

The PowerHA 7.2.3 GUI has a built-in Role-Based Access Control (RBAC) system. It is easy to access and independent from the AIX RBAC system.

Roles

The permission system of the GUI is based on roles. Permissions are allocated to a role and then the role is allocated to one or more users. A user with no role will be assigned a default role with view-only monitoring capabilities.

The PowerHA GUI provides the following predefined roles:

**ha_root**

Users with this role can access every zone defined in the GUI without any restrictions. This role is equivalent to the `root` access. When you log in as the root user, you will automatically be granted `ha_root` permissions.

**Note:** This role can be used while setting up the GUI, which includes setting up user access and creating zones (if zones will be used).

**ha_admin**

In this role, you will be an administrator and can perform all actions except defining users and zones.
ha_op  The ha_op, or operator, role can access only a subset of cluster management capabilities such as starting and stopping cluster services, starting and stopping resource groups, moving resource groups to another node, creating snapshots, and performing cluster verification.

ha_mon  The ha_mon, or monitor, role is the default role that is assigned automatically to a user who logs into the GUI as a non-root user without being added to the GUI’s user list.

Note: In this role, you cannot perform any actions on a cluster and you will have view-only access. If the users log in who do not have a user account created for them in the GUI, they will not be granted access to any of the zones and they will be able to see unassigned clusters only (clusters that are not assigned to any zones)

All non-ha_root users may only access zones that they have been assigned to by an ha_root user. They can also access clusters that are not assigned to any zones.

Note: Custom roles may be defined if none of the pre-defined roles are suitable for your needs.

Changing the default location of log files
When a GUI server or agent is initially setup, it creates a set of log files. These log files are created in the /usr file system by default. You can use the configuration file of the PowerHA SystemMirror GUI server and the PowerHA SystemMirror GUI agent to change this default location and to customize the method of logging.

The PowerHA SystemMirror GUI server and the PowerHA SystemMirror GUI agent have the following configuration files:

- PowerHA SystemMirror GUI Server: /usr/es/sbin/cluster/ui/server/log-configuration.json
- PowerHA SystemMirror GUI Agent: /usr/es/sbin/cluster/ui/agent/log-configuration.json

These files can be edited manually, but you must restart the service for the new configuration to take effect. To restart the GUI server and GUI agent use the following commands:

- For PowerHA SystemMirror GUI Server: stopsrc -cs phauiserver; sleep 1; startsrc -s phauiserver
- For PowerHA SystemMirror GUI Agent: stopsrc -cs phauiagent; sleep 1; startsrc -s phauiagent

An example of the log configuration follows:

"logLevel": "info", // Log level. Verbose mode levels: silly, debug, verbose, info, warn, error

"logDir": "logs", // log directory. The location of log files (absolute path or relative to the current working directory of the process)

"maxSizeFile": 5242880, // Maximum size of the logfile. If the size of the log file exceeds, a new file is created.

"maxFiles": 7, // Limit the number of files created when the size of the logfile exceeds.

"consoleEnabled": false, // Enable the log display on console (In addition to the log file).

"fileEnabled": true, // Enable the daily rotating File logging

"filename": "smui-agent.log" // filename of the rotating logfile

Note: Before changing the configuration file, it is recommended to take a backup of the configuration file.
Configuring the PowerHA SystemMirror GUI to be highly available

You can use the /usr/es/sbin/cluster/ui/server/bin/server_high_availability.sh script to make the PowerHA SystemMirror GUI highly available.

The following syntax applies to the /usr/es/sbin/cluster/ui/server/bin/server_high_availability.sh script:

```bash
server_high_availability.sh <Volume_Group> <Service_IP> <Network> [<Netmask>]
server_high_availability.sh --remove
server_high_availability.sh --help
```

After you run the /usr/es/sbin/cluster/ui/server/bin/server_high_availability.sh script, the PowerHA SystemMirror GUI server functions similar to any other application that PowerHA SystemMirror monitors. For example, the GUI server can be started and stopped by using the clmgr command or the SMIT interface, can be moved to another node, and can failover to another node automatically if a failure occurs.

The server_high_availability.sh script creates the following objects:
- Resource group that is named pha_gui_server_rg
- Service IP address
- File system that is created in the /opt/pha_gui_fs directory
- Application controller that is named pha_gui_server_app
- Application monitor that is named pha_gui_server_mon

Note: Do not change names and the location of the objects the server_high_availability.sh script creates. If you want to remove objects that are created, run the server_high_availability.sh --remove script.

When you run the server_high_availability.sh script, the following actions occur in your environment:
- The server database is copied to the new shared file system.
- The security files in the GUI server that runs the script is copied to the remote server node. This process overwrites any existing security files on the remote server node.

Discovering a cluster as a non-root user

To discover a cluster as a non-root user by using the PowerHA SystemMirror GUI, a root user must configure the sudo command to be used on one of the nodes in the cluster. The sudo command allows root-level access for specific commands.

To use the sudo command, you must install the following RPMs from the AIX Toolbox for Linux Applications website:
- cyrus-sasl
- db
- gettext
- libgcc
- ncurses
- openldap
- sudo
- zlib

A root user must complete the following steps to configure the sudo command, to create a user login, and to provide the created user the ability to discover clusters:
1. Run the visudo command or directly edit the /etc/sudoers file with a text editor.
2. Add the following text that corresponds to your operating system to the end of the /etc/sudoers file:

AIX

User_Alias POWERHA_GUI_USERS = glowther
Cmd_Alias POWERHA_GUI_CMDS = /usr/es/sbin/cluster/utilities/clmgr -v query nodes, \
                             /usr/es/sbin/cluster/utilities/clmgr query cluster, \
                             /bin/tar -xf /tmp/smu-security.tar /bin/ls, \
                             /bin/ksh93 ./deployment.sh ./distribution.sh ./configuration-agent.json ./smui-security.tar, \
                             /bin/rm -f ./deployment.sh ./distribution.sh ./configuration-agent.json ./smui-security.tar
POWERHA_GUI_USERS ALL=(POWERHA_GUI_CMDS)

Linux

User_Alias POWERHA_GUI_USERS = glowther
Cmd_Alias POWERHA_GUI_CMDS = /usr/bin/clmgr -v query nodes, /usr/bin/clmgr query cluster, \
                             /bin/mkdir -p /usr/es/sbin/cluster/ui/security, \
                             /bin/tar -xf /tmp/smu-security.tar /bin/ls, \
                             /bin/ksh93 ./deployment.sh ./distribution.sh ./configuration-agent.json ./smui-security.tar, \
                             /bin/rm -f ./deployment.sh ./distribution.sh ./configuration-agent.json ./smui-security.tar
POWERHA_GUI_USERS ALL=(POWERHA_GUI_CMDS)

3. Create a user login and password.
4. Add the login ID of the user to the /etc/sudoers configuration file that was represented as the user glowther in step 2.
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18  PowerHA SystemMirror Graphical User Interface
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