Pillar Axiom

CLI Reference Guide

for axiomcli

ORACLE
PILLAR AXIOM
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CHAPTER 1

Introduction to the Pillar Axiom CLI

About the Pillar Axiom CLI

The Pillar Axiom Command Line Interface (CLI) is a client-based application that enables administrative actions by means of commands from a shell session.

Through the Pillar Axiom CLI, you can perform administrative tasks. You can start a shell session, submit one or more requests to the Pillar Axiom system, and end the shell session. Two CLI utilities are available:

- **pdscli**: A fully-featured executable available on all platforms and supports all commands available in the system. System administrators can run individual CLI commands, use templates, or integrate the CLI commands into their own scripts. The Pillar Axiom CLI Reference Guide documents the pdscli utility. Sample input and output templates, as well as representative XML, are available for each command.

- **axiomcli**: Referred to as the Pillar Axiom CLI, this executable supports a subset of the pdscli commands and is available on only specific platforms. The Pillar Axiom CLI follows conventions used by other command line interfaces and supports automation through scripting within standard shells, such as Perl or Python. This guide documents the axiomcli utility.
About the Pillar Axiom CLI Shell Session

The Pillar Axiom CLI uses a shell session that resembles logging into a storage system.

The Pillar Axiom CLI

- Uses familiar conventions for parameters and options.
- Supplies reasonable default values where possible.
- Checks for required sets of parameters and issues specific error messages if you do not provide them.
- Checks the ranges or values provided for parameters and issues specific error messages if the values are not valid.
- Provides a help text for each command.
- Uses consistent conventions across all commands.
- Supports automation through customer scripting using standard shells, such as Perl, Python, and so on.
- Uses existing management interfaces to avoid schedule disruption.
- Uses strings encoded in UTF-8.

Pillar Axiom CLI Supported Platforms

The Pillar Axiom CLI supported platforms are:

- AIX
- HP-UX on ia64
- Red Hat 8
- Red Hat 9
- RHEL4
- RHEL5
- Solaris 10 on Sparc
Windows XP

Note: Linux platforms use the resource `libc.so` library version 2.3.2 or later. The Windows or Linux client must have connectivity to the Pillar Axiom system.

Each Pillar Axiom CLI release is supported only on Pillar Axiom systems having the same release number (or later) as the Pillar Axiom CLI. For example, Pillar Axiom CLI release 3.2 will not function on a Pillar Axiom system that is running release 2.6.

About Pillar Axiom CLI Environment Variables

Environment variables can be defined prior to running the Pillar Axiom CLI. The Pillar Axiom CLI looks for environment variables and applies them as credentials during login. Additionally, these credentials can be supplied using command line arguments.

The environment variables are:

- **PDS_USER**: User ID account
- **PDS_PASSWORD**: User account password
- **PDS_HOST**: Pillar Axiom system name

A temporary file is created in the user’s home directory to store the session ID and environment variables. This file is used by the Pillar Axiom CLI to retrieve the session information needed to interact with the Pillar Axiom system.

If the system does not find usable credentials in either the environment or the temporary file, Pillar Axiom CLI commands return an error instructing you to run the `axiom_login` command.

**Tip:** Pillar Axiom CLI commands can be embedded within scripts to simplify repetitive actions. Output from the Pillar Axiom CLI is written to either the `stdout` file for non-errors, or the `stderr` file for errors.

Download the Pillar Axiom CLI Software

To run the Pillar Axiom CLI, you must first download the software.

Perform this task on the workstation from which you will manage the Pillar Axiom storage system.
Note: Pillar Axiom CLI utilizes the Perl dynamic programming language to run on your local workstation. However, the `axiomcli` executable for each software platform includes the complete Perl run-time libraries. Pillar Axiom CLI does not require any Perl resources to be installed on your workstation.

1. Log in to the graphical user interface (GUI).
2. Click the Support icon in the top context pane.
3. Click the command line interface (CLI) link in the left navigation pane.
4. Choose a download option from the Actions drop-down list for your workstation environment.
5. Follow the prompts to download the software.
6. Extract the software to a folder on your local workstation.

About the Pillar Axiom CLI Executable Extraction

After you download the Pillar Axiom CLI software, use a platform-specific extraction tool to expand the compressed file.

Tip: If the install directory is not on the path, update the path environment variable to point to the install directory.

For example:

- Non-Windows platforms: Expand with `tar –xzvf archive-file`. For all non-Windows platforms, the downloaded file is a tarball (a GNU zip compressed tar file).
- Windows: Expand with the built-in Windows XP zip compression utility, or a third-party utility such as WinZip.

Pillar Axiom CLI Executable Folder Contents

Once downloaded and extracted, the Pillar Axiom CLI executable contains everything needed to function.

Note: Although this guide documents the Pillar Axiom CLI, the extracted folder contents also include files that are used for the `pdscli`. For more information about the `pdscli`, see the Pillar Axiom CLI Reference Guide.
<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>cliSampleInput</td>
<td>Files specifically used for <code>pdscli</code> and are not related to the Pillar Axiom CLI.</td>
</tr>
<tr>
<td>cliSampleOutput</td>
<td>Specifiy used within the Pillar Axiom CLI, these files assist with display formatting.</td>
</tr>
<tr>
<td>CommandOutputFormatters</td>
<td>Files are provided in Plain Old Documentation format (POD). POD is a simple-to-use markup language used for writing documentation for Perl, Perl programs, and Perl modules. <strong>Note:</strong> You can also view <code>.pod</code> files by opening them using a text editor of choice. The help files are located in the Help folder (of the <code>root</code> directory where you extracted the utility).</td>
</tr>
<tr>
<td>Help</td>
<td>XML file examples which are passed between the <code>pdscli</code> and the system. These files are not used for Pillar Axiom CLI communication with the system.</td>
</tr>
<tr>
<td>xml</td>
<td>The executable file used to launch the Pillar Axiom Command Line Interface tool.</td>
</tr>
<tr>
<td>.login_message.txt</td>
<td>Note: When you install a new release of the Pillar Axiom CLI, the modified <code>.login_message.txt</code> file is overwritten. Before updating, ensure that you create a backup copy of your customized file to replace the newly installed <code>.login_message.txt</code> file.</td>
</tr>
<tr>
<td>axiomcli</td>
<td>Note: You can also view <code>.pod</code> files by opening them using a text editor of choice. The help files are located in the Help folder (of the <code>root</code> directory where you extracted the utility).</td>
</tr>
<tr>
<td></td>
<td>You can modify the contents of this file if you wish to see a different message displayed when you login.</td>
</tr>
</tbody>
</table>

**Table 1 File names and descriptions**
Table 1 File names and descriptions

<table>
<thead>
<tr>
<th>File name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pdscli</td>
<td>The executable file used to launch the Pillar Data Systems Command Line Interface tool.</td>
</tr>
</tbody>
</table>
Log In to the Pillar Axiom CLI Shell Session

The Pillar Axiom CLI executable runs as a shell session on your local workstation. If you are running a series of scripts, the first script must log into the shell session.

1. To begin the shell session, launch the Pillar Axiom CLI executable that you downloaded and extracted on your local workstation.
   
   **Note:** The first time the session software is run it automatically unpacks and installs the files it requires for proper execution. Subsequent shell sessions run faster.

2. Enter `axiomcli` at the prompt.

   **Result:**
   
   Upon completion, the system displays the software's copyright date and version number, along with the following prompt:

   
   Axiom nohost>

   If you do not receive this prompt, contact the Pillar World Wide Customer Support Center.

3. Enter `axiom_login` at the prompt.

4. Enter the following at the prompt:
   
   - Pillar Axiom system DNS name or IP address
   - User ID and password

   Refer to the *Pillar Axiom Administrator’s Guide* for details.

   **Result:**
   
   The system displays *Login Succeeded* and the prompt changes to reflect the system name or IP address, depending on what you had entered.

   Otherwise, you are notified if the user ID and password are incorrect or if the Pillar Axiom storage system cannot be found.

After successfully logging in, the software creates a session file in the user's home directory. This session file contains the credentials and session information needed by all subsequent Pillar Axiom CLI commands.

You are now able to enter Pillar Axiom CLI commands.
Log Out of the Pillar Axiom System

The Pillar Axiom CLI does not automatically time out a shell session. Logging out of the Pillar Axiom system is a security best practice.

When you have completed administrative tasks, log out. If you do not log out:

- An unauthorized user may gain access to the Pillar Axiom system from your workstation.
- One login session is tied up unnecessarily until your session is automatically logged out when the inactivity time limit is reached.
- An unauthorized user may gain access to the Pillar Axiom system from your workstation.
- One login session is tied up unnecessarily until your session is automatically logged out when the inactivity time limit is reached.

Run either of the following commands at the command prompt or within a shell script:

- `axiomcli quit`
- `axiomcli exit`

These commands end your shell session with the Pillar Axiom CLI and removes the session file.
Access the Pillar Axiom CLI Help

The `help` command supplies instant assistance on any Pillar Axiom CLI command.

1. To see a list of all supported commands, run the command `help`.
2. To display help about a specific command, run `cmd -help`, where `cmd` is equal to the command name.
   
   For example, `fileserver -help` returns the help for the `fileserver` command.
# Contact Information

## Table 2 Contacts at Pillar Data Systems

<table>
<thead>
<tr>
<th>For help with…</th>
<th>Contact…</th>
</tr>
</thead>
</table>
| Error messages, usage questions, and other support issues | US and Canada: 877-4PILLAR (1-877-474-5527)  
Europe: +800 PILLAR FS (+800 74 44 27 37)  
Asia Pacific: +1-408-518-4515  
South Africa: +0 800 980 400  
Have your system serial number ready.  
support@pillardata.com  
Customer support portal (https://support.pillardata.com/login.do) |
| Sales and general contact information | Company contacts (http://www.pillardata.com/company/contact) |
| Documentation improvements and resources | docs@pillardata.com  
Technical documents (http://www.pillardata.com/techdocs) (Log in with your username and password, and select Documents.) |
CHAPTER 2

Administrator Accounts

About Administrator Accounts Management

Administrators have specific privileges in the Pillar Axiom storage system based on their account type.

You can create multiple administrator accounts in a Pillar Axiom system. Additional accounts are not necessary, but they are useful if you want to delegate administrator responsibilities. For example, you might choose to create:

- One administrator account. In this way, a designated person can assume responsibility while the Primary system administrator is on vacation. Assign this account to the Administrator 1 role.

  **Tip:** Pillar strongly recommends that you set up a Type 1 Administrator account when you install the system. Besides the Primary system administrator, only a Type 1 Administrator can modify an account password (including that of the Primary system administrator) without knowing the previous password.

- One or more administrator accounts with read-only privileges. In this way, managers can monitor the system but they cannot change configuration details. Assign these accounts to the Monitor role.

You can create up to 23 administrator accounts.

If you delegated administrative tasks to other administrators, you may need to:

- Modify account attributes (for example, change an administrator's password or disable an account other than the Primary system administrator account).

- Change administrator account security settings.

- Delete obsolete accounts.

At times, you may need to modify the attributes of an administrator account. A Primary system administrator and people who are assigned to the Administrator 1 role can modify their own or another administrator's account.

Some changes take effect immediately. For example, a logged-in administrator's session is terminated when you disable or delete the administrator account.
Other changes affect the administrators the next time that they log in, for example, when you modify the administrator's password or modify the session timeout value.

You can change the security settings for system administrator accounts, including:

- Set the number of failed login attempts that the Pillar Axiom system permits. When the threshold is exceeded, the system disables the account and writes an entry in the event log. Only a Primary system administrator or Administrator 1 account can re-enable the account, and the system resets the counter upon a successful login. If you do not set this value, there is no limit to the number of unsuccessful login attempts.

- Set the session timeout so that the Pillar Axiom system terminates an administrator's session after a given period of inactivity. If you do not set this value, inactive sessions are terminated after 20 minutes.

- Select Secure Session Only to specify that administrator access to the Pillar Axiom system is over secure HTTP sessions. Upload a secure sockets layer (SSL) certificate to the Pillar Axiom Pilot to authenticate logins.
Administrator Roles and Privileges

The administrator account commands review and modify the accounts that are configured on the Pillar Axiom storage system.

To administer a Pillar Axiom storage system, you must log in from an administrator account. Every account is assigned a specific role that defines system privileges.

Table 3 Administrator privileges by role

<table>
<thead>
<tr>
<th>Administrator role</th>
<th>Privileges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary System Administrator</td>
<td>Performs all configuration, management, and monitoring tasks. This account cannot be deleted or disabled.</td>
</tr>
<tr>
<td>Administrator 1</td>
<td>Performs all configuration, management, and monitoring tasks.</td>
</tr>
<tr>
<td>Administrator 2</td>
<td>Performs all tasks except:</td>
</tr>
<tr>
<td></td>
<td>• Create and manage File Servers and administrator accounts.</td>
</tr>
<tr>
<td></td>
<td>• Modify global, Small Network Management (SNMP), and Network Data Management Protocol (NDMP) settings.</td>
</tr>
<tr>
<td></td>
<td>• Modify software or hardware configurations.</td>
</tr>
<tr>
<td></td>
<td>• Shut down the system.</td>
</tr>
<tr>
<td>Monitor</td>
<td>Displays system information only; cannot modify the configuration. Can modify own administrator account attributes.</td>
</tr>
<tr>
<td>Support</td>
<td>Performs limited customer service-only functions; cannot modify the configuration.</td>
</tr>
</tbody>
</table>

**Note:** Only Pillar Data Systems customer service personnel can use this account.
CHAPTER 3

Pillar Axiom CLI Commands

About the Pillar Axiom CLI Commands

In addition to the unique properties of a command, each Pillar Axiom CLI command uses the following options:

- `-add`
- `-delete`
- `-modify`
- `-list`

You can also use the `-help` option to display a short description of the command's syntax.

Pillar Axiom CLI uses fully qualified names (FQNs) that are exposed in the results when requesting a list of a particular Pillar Axiom system object. FQNs are also used to identify a Pillar Axiom storage resource.

Note: Use double quotes when entering filenames that contain spaces or comments and descriptions. The double quotes ensure that the spaces won't be removed by Pillar Axiom CLI when processing the command.
admin_acct

Manages administrative accounts for a Pillar Axiom system.

Using `admin_acct` you can:

- Create new administrative accounts.
- Delete administrative accounts.
- List existing administrative accounts.
- Change administrative passwords.
- Assign roles to administrative accounts.
- Manage administrative account sessions.

**SYNTAX**

```
admin_acct -add -name admin-name -role role -password password
    -retypepassword password [-email email-address]
    [-phone phone-number] [-enable | -disable]
    [-fullname full-name]
```

```
admin_acct -modify [-fullname full-name]
    [-password password -retypepassword password]
    [-email email-address] [-phone phone-number]
    [-name admin-name] [-newname new-admin-name] [-role role]
    [-enable | -disable] 
```

```
admin_acct -delete -name admin-name
```

```
admin_acct -list [-details] [-name admin-name]
```

```
admin_acct -sessions
```

**OPTIONS**

- `-add`

You can create multiple administrator accounts in a Pillar Axiom system. Additional accounts are not necessary, but they are useful if you want to delegate administrator responsibilities. For example, you might choose to create:

- One administrator account so that a designated person assumes responsibility while the Primary System Administrator is on vacation. Assign this account to the Administrator 1 role.
One or more administrator accounts with read-only privileges so that managers can monitor the system but they cannot change configuration details. Assign these accounts to the Monitor role.

You can create up to 23 administrator accounts.

Valid options are:

- admin-name
  Identifies the administrator's login (user) name.

- full-name
  Identifies the administrator's full name (“first” and “last”).

- role
  Specifies the administrator's privileges. Valid options are:
  - admin1, if the person can perform all configuration and administration tasks.
  - admin2, if the person can perform all tasks except create, modify, and delete administrator accounts and File Servers; modify global, SNMP, and NDMP settings; modify software or hardware configurations; or shut down the system.
  - monitor, if the person can display information only, and cannot modify the configuration.

- password
  Identifies the login password. Passwords are case sensitive, and blank passwords are not permitted.

- retype-password
  Confirms that the password was entered correctly.

- email
  Specifies the email address of the administrator.

- phone
  Specifies the phone number of the administrator.

- enable
  Enables the account. By default the add command enables the account.

- disable
  Disables the account. The Pillar Axiom system maintains disabled accounts but does not allow them to log in.

- modify
At times, you may need to modify the attributes of an administrator account. A Primary system administrator and people who are assigned to the Administrator 1 role can modify their own or another administrator's account.

Some changes take effect immediately. For example, a logged-in administrator’s session is terminated when you disable or delete the administrator account. Other changes, such as modifying the administrator’s password or the session timeout value take affect the next time the administrator logs in.

Valid options are:

- **-password**
  Changes the account's password. Passwords are case sensitive, and blank passwords are not permitted.
  - Primary system administrators and administrators who are assigned to the Administrator 1 role can change the password of any administrator account.

  **Tip:** If you forget the Primary system administrator password, you can reset it in these ways:
  - Use a Type 1 Administrator account, if one exists, to reset the password. A support administrator cannot reset the Primary system administrator password.
  - Contact the Pillar World Wide Customer Support Center for the encrypted file (for resetting the password). The Pillar World Wide Customer Support Center will send you the encrypted file on a USB key and instruct you on installing the file.
  - Administrators who are assigned to the Administrator 2 or Monitor roles can change their own passwords.

You can change administrator passwords if they forget their password and cannot log into the system.

- **-retypepassword**
  Confirms that the password was entered correctly.

- **-newname**
  Changes the account name.

- **-name**
  Identifies the administrator's login (user) name.
Note: If you do not specify the -name option, then -modify changes the administrator account that is currently logged into the system. In these instances, the only parameters that can be used are fullname, password, retypepassword, email, and phone. All other parameters result in an error.

- admin-name
  Identifies the administrator's login (user) name.

- full-name
  Identifies the administrator's full name (“first” and “last”).

- role
  Specifies the administrator's privileges. Valid parameters are:
  - admin1, if the person can perform all configuration and administration tasks.
  - admin2, if the person can perform all tasks except create, modify, and delete administrator accounts and File Servers; modify global, SNMP, and NDMP settings; modify software or hardware configurations; or shut down the system.
  - monitor, if the person can display information only, and cannot modify the configuration.

- -email
  Specifies the email address of the administrator.

- -phone
  Specifies the phone number of the administrator.

- -enable
  Enables the account. By default the -add command enables the account.

- -disable
  Disables the account. The Pillar Axiom system maintains disabled accounts but does not allow them to log in.

- -delete
  Deletes an existing administrator account.

- -list
  Displays a list of administrator account names.

Valid options are:
- -details
Displays the account name, role, email address, phone number, and whether or not it is enabled for all accounts.

- **-name**

Displays the information for the specified *admin-name* account only.

- **-sessions**

Lists all logged in administrator sessions. The username, login time, and idle time are displayed for each logged in administrator. The administrator account that performs this command displays *username* followed by Pillar Axiom CLI use for easy identification. The idle time for this entry is always 0 seconds because execution of this command resets the timer.

The format of date-time is *YYYY-MM-DDTHH:mm:SS.xx+-HH:mm* where:

- **YYYY-MM-DD** designates a four-digit year, two-digit month, and two-digit day for the date.
- **T** is a separator that designates the start of the time portion of the string.
- **HH:mm:SS** designates hours, minutes, and seconds in values for a 24-hour clock.
- **xx** designates a fraction of a second, to two decimal places.
- **+-HH:mm** designates the time zone as an offset from Coordinated Universal Time (UTC) in hours and minutes. Include the + or – prefix as appropriate.
alert

Notifies email recipients of specified system events. Use this command to manage Pillar Axiom system informational, warning, or critical notifications.

You can create alerts so that you are notified when specific Pillar Axiom system events occur. You may want to display the details of an alert and make changes as needed. You can also test alerts to make sure that the specified email addresses are correct.

SYNTAX

alert -add -alert alert-name [-description descriptive-string]
  -recipients email-address-list
  -severity severity-list
alert-modify -alert alert-name [-description descriptive-string]
  [-recipients email-address-list]
  [-severity severity-list]
alert -delete -alert alert-name
alert -list [-details] [-alert alert-name]

OPTIONS

-create

Create alerts so that you are notified when specific events occur in the Pillar Axiom system. You can specify the types of system events that trigger alerts as well as designate the recipients who receive the alerts.

If you do not set up alerts, you can still monitor system events using the event log. Call-Home notifications are also independent of alerts and will be sent to Pillar World Wide Customer Support Center about issues in the Pillar Axiom system.

Valid options are:

- -alert
  Specifies the name of the new alert.
- -description
  Specifies a brief description of the alert.
- -recipients
  Specifies a list of recipients' email addresses, separated by commas, in which the system sends email notifications.
- -severity
Specifies a string used to describe the alert.

-modify

You can modify the way in which an administrator is notified about Pillar Axiom events. For example, you may want to change the event categories that trigger the alert, or you may need to change an email address.

Valid options are:

- -description
  Modifies the alert description.

- -recipients
  Modifies the email recipients.

- -severity
  Displays the alert severity.

-delete

Deletes an existing alert with the specified alert-name.

You can delete an existing alert. For example, you can do this if someone leaves the company and you no longer want event notifications to be sent to an inactive email account.

-list

Displays a list of all alerts names that are configured on the Pillar Axiom system.

Valid options are:

- -details
  Displays a list of email recipients and severity levels for all alerts.
  You can display the details of an alert and determine if any changes are needed.

- -alert
  Specifies a particular alert name to display.
axiom_login

Creates a secure connection to the Pillar Axiom system.

Once a user logs in to the Pillar Axiom system, a temporary file is created in the user's home directory to store the session ID and environment information. This file is used by the Pillar Axiom CLI to retrieve the session information needed to interact with the Pillar Axiom system.

All other Pillar Axiom CLI commands return an error that instructs you to run `axiom_login` if the system does not find usable credentials in either the system's environment variables or in the temporary file.

If there is an active session running on the Pillar Axiom system when the `axiom_login` command is run, the system ends the active session before the login proceeds.

The Pillar Axiom CLI is accessible through any scripting language available on the host operating system.

SYNTAX

```
axiom_login [-u admin-user [-p admin-password]] [axiom-system]
```

OPTIONS

- **-u**
  Specifies the administrative user account that you use to log into the system. If you do not specify an administrator account, the system prompts you for one.

- **-p**
  Specifies the password and host machine for the administrative account. If you do not specify a password, the system prompts you for one with character echoing disabled.

Valid parameters are:

- **admin-password**
  Identifies the password for the user account.

- **axiom-system**
  Identifies the Pillar Axiom system to log into. Specify the DNS-resolvable host name or dotted decimal IP address of the Pilot.

For example:

```
axiom_login -u admin001 -p password 127.0.0.1
```
**axiom_perf**

Displays performance data from a Pillar Axiom storage system.

You can display performance statistics for backups, logical volumes (filesystems or LUNs), or network attached storage (NAS) and storage area network (SAN) protocols. Performance statistics are affected by usage patterns and Quality of Service (QoS) settings. For example, if the QoS settings for a filesystem are configured for a large number of operations per second and only a few people are accessing the storage device, the performance statistics show fewer operations per second.

**SYNTAX**

```
axiom_perf -list [-network] [-fileserver name]
             [-filesystem fs-name]
             [-controlunit unit-name] [-protocol]
```

**OPTIONS**

- `-list`
  Displays the performance data of a Pillar Axiom system.
  Valid options are:
  - `-network`
    Displays network performance data only.
  - `-filesystem`
    Displays performance data for the specified filesystem only.
  - `-controlunit`
    Displays performance data for the specified Slammer control units only. The format of the unit-name is "Slammer n/CUy". For example, `/Slammer1/CU0` identifies control unit 0 on Slammer 1.
  - `-protocol`
    Displays protocol statistics only.
axiom_status

Manages the status and shutdown functions of a Pillar Axiom system.

The components listed by `axiom_status` include:

- Slammers (control units, fans, power supplies, batteries, network interface module, private interconnect module, and temperature)
- Bricks (disk drives, power supplies and fans, Enclosure Services (ES) module, and RAID controller)
- Pilots (control units)

**SYNTAX**

```
axiom_status -list [-details [-slammer slammer-name] [-brick brick-name] [-pilot]]
axiom_status -shutdown [-now | -delay (5/10)]
axiom_status -restart
axiom_status -restoreslammer -slammer slammer-name [-unit (0/1)]
axiom_status -replace -unit unit-name
axiom_status -beacon -unit unit-name [-stop]
```

**OPTIONS**

- `-list`

  Shows the status of a Pillar Axiom system and the state (normal, warning, critical, or failed) of each system component.

  Valid options are:
  - `-details`
    Provides additional details of each component, including serial number and revision number.
  - `-slammer`
    Specifies the name of the Slammer
  - `-brick`
    Specifies the name of the Brick.
  - `-pilot`
    Specifies the name of the Pilot.

- `-shutdown`

  Performs a graceful shutdown of Slammers and Bricks in the Pillar Axiom system. Once complete, manually restart the system.
Valid options are:

- **-now**
  
  Specifies an immediate shutdown.

- **-delay 5**
  
  Specifies a shutdown in 5 min.

- **-delay 10**
  
  Specifies a shutdown in 10 min.

The Pillar Axiom storage system is composed of many hardware components and software processes that have dependencies on other components and processes. To ensure that these dependencies are satisfied and the Pillar Axiom system is shut down in an orderly fashion, use the `Shutdown/Restart` option.

While the system is in a shutdown state, the only actions you can perform are to display system status and to restart the system.

- **-restart**
  
  Restarts the Pillar Axiom system automatically after the shutdown is complete.

- **-restoreSlammer**
  
  Fails back a recovered Slammer control unit.

- **-slammer**
  
  Indicates the Slammer that should fail back.

- **-unit**
  
  Identifies the control unit that should fail back.

Valid units are:

- Slammer: /Slammer1
- Control unit 0 PowerSupply: /Slammer1/CU0/PS1
- Control unit 0 FanModule: /Slammer1/CU0/FM1
- Control unit 0 Battery: /Slammer1/CU0/BA1
- Control unit 0 Memory: /Slammer1/CU0/MEM1
- Control unit 0 Motherboard: /Slammer1/CU0/MB1
- Control unit 0 NASNetworkInterfaceModule: /Slammer1/CU0/NASNIM1
- Control unit 0 SANNetworkInterfaceModule: /Slammer1/CU0/SANNIM
- Control unit 0 PrivateInterconnectModule: /Slammer1/CU0/PIM1
- Control unit 0 SCSIController: /Slammer1/CU0/SCSI1
- Control unit 0 Chassis: /Slammer1/CU0/CH
-replace

Specifies the replacement of a component in a Pillar Axiom system.

- unit

Identifies the component name using the same path syntax as the `axiom_status -list` command.

Valid units are:

- Slammer: /Slammer1
- Control unit 0 PowerSupply: /Slammer1/CU0/PS1
- Control unit 0 FanModule: /Slammer1/CU0/FM1
- Control unit 0 Battery: /Slammer1/CU0/BA1
- Control unit 0 Memory: /Slammer1/CU0/MEM1
- Control unit 0 Motherboard: /Slammer1/CU0/MB1
- Control unit 0 NASNetworkInterfaceModule: /Slammer1/CU0/NASNIM1
- Control unit 0 SANNetworkInterfaceModule: /Slammer1/CU0/SANNIM
- Control unit 0 PrivateInterconnectModule: /Slammer1/CU0/PIM1
- Control unit 0 SCSIController: /Slammer1/CU0/SCSI1
- Control unit 0 Chassis: /Slammer1/CU0/CH
- Brick: /Brick005
- Brick DiskDrive: /Brick005/Disk04
- Brick PowerSupplyFanModule: /Brick1/PSFM01
- Brick ESMODULE: /Brick1/ESM2
- Brick SpareDiskDrive: /Brick1/Spare01
- Brick RAIDController: /Brick1/CU0

-beacon

Blinks the LEDs of a Pillar Axiom system component so you can identify which FRU to replace.

Valid options are:

- unit
Identifies the component name using the path syntax used by `axiom_status -replace` described above.

- `--stop`

  Stops the LED blinking and returns all Pillar Axiom system indicator LEDs to their normal function.

**Note:** A Pillar Axiom system can beacon only one component at a time because blinking disables all other LEDs.
cifs

Manages the Common Internet File System (CIFS) configuration of a Pillar Axiom system.

CIFS is a protocol that allows network users in a Windows environment to share and access files that are stored on a Pillar Axiom system. The Pillar Axiom implementation of CIFS adheres to SNIA CIFS Technical Reference 1.0.

SYNTAX

```
cifs -add -fileserver name -name server-name [-comment comment]

[-wins wins-ip1[, wins-ip2, ...]] [-charset char-set]
-domain domain -authentication ntlm | activedirectory
[-kerberosonly | -nokerberosonly]
[-join anonymous | user=user, password=password, domain=auth-domain]
[-oplock | -nooplock] [-tcponly | -notcponly]
[-smbsigningonly | -nosmbsigningonly]
[-anonymous | -noanonymous]
[-accountmapping=none | all | domain=map-domain]
```

cifs -modify -fileserver name [-name server-name] [-comment comment]

```
[-wins wins-ip1[, wins-ip2, ...]] [-charset char-set]
[-domain domain] [-authentication ntlm | activedirectory ]
[-kerberosonly | -nokerberosonly]
[-join anonymous | user=user, password=password, domain=auth-domain]
[-oplock | -nooplock] [-tcponly | -notcponly]
[-smbsigningonly | -nosmbsigningonly]
[-anonymous | -noanonymous]
[-accountmapping=none | all | domain=map-domain]
```

cifs -delete -fileserver name

cifs -list [-details] [-fileserver name]
OPTIONS

- add

Adds CIFS configuration to the File Server name.

Valid options are:

- -name
  Specifies the NETBIOS name of the File Server.
- -comment
  Specifies a server comment to describe the File Server.
- -wins
  Lists up to three IP addresses of Windows Internet Name Servers.
- -charset
  Names the character set for the CIFS server. If you do not specify the character set, then the default is standard ASCII.
- -domain
  Specifies the CIFS domain for the File Server to join.
- -authentication
  Specifies whether to authenticate against a NTLM or Active Directory domains.
- -kerberosonly | -nokerberosonly
  Specifies whether to limit Active Directory authentication to be Kerberos only.
- -join
  Provides the information needed for the File Server to join the domain. If you specify "-join anonymous" or if you don't specify this option, cifs -add attempts to join the domain with anonymous access. If you specify "-join user=user,password=password,domain=auth-domain" the cifs -add command attempts to join the domain as the user auth-domain\user using the password password.
- -oplock
  Enables the use of opportunistic locking by the CIFS server.
- -nooplock
  Disables the use of opportunistic locking by the CIFS server.
- -tcponly
  Allows only TCP transport connections.
- -notcponly
  Allows both TCP and NETBIOS transport connections.
-smbsigningonly
  Allows connections from CIFS clients only if they use SMB signing for security.

-nosmbsigning
  Allows connections from CIFS clients both with and without SMB signing.

-anonymous
  Allows CIFS clients to connect anonymously.

-noanonymous
  Requires CIFS clients to authenticate upon connection.

-accountmapping
  Controls the mapping of accounts between NFS and CIFS. If set to "none" (the default), the CIFS and NFS servers perform no account mapping. If set to "all", CIFS does account mapping for all CIFS domains. If set to "domain=map-domain" CIFS does account mapping only for users in the map-domain.

-modify
  Modifies an existing CIFS server configuration.

-delete
  Deletes the CIFS configuration for a File Server. After performing cifs -delete, CIFS users no longer have access to the File Server. In addition, you can use the same options specified in cifs -add.

-list
  Lists the CIFS server names configured on the Pillar Axiom system.

Valid options are:
  -details
    Displays the server name, comment, WINS IP address, character set, domain, oplock option, TCP transport restriction, SMB signing option, anonymous option, and account mapping settings.

  -fileserver name
    Displays the CIFS configuration for the specified File Server only.
cifs_share

Manages CIFS shares on a Pillar Axiom storage system.

Common Internet File System (CIFS) is an enhanced version of the Microsoft Server Message Block (SMB) protocol, which allows client systems of Windows environments to access files on NAS appliances and gateway systems. A shared resource, or share, is a local resource on a server that is accessible to Windows clients on the network. On NAS appliances and gateway systems, it is typically a filesystem volume or a directory tree within a volume.

SYNTAX

cifs_share -add -fileserver name -filesystem fs-name
   -share share-name [-comment share-comment] [-path share-path]
cifs_share -modify -fileserver name -filesystem fs-name
   -share share-name [-comment share-comment] [-path share-path]
cifs_share -delete -fileserver name -filesystem fs-name
   -share share-name

cifs_share -list [-details] (-fileserver name
   [-filesystem fs-name
   [-share share-name]])

OPTIONS

-add

Adds a CIFS share to the specified File Server name.

Valid options are:

• -fileserver
  Specifies the name of the File Server to receive the new filesystem.

• -filesystem
  Specifies the name of the new filesystem to share.

• -share
  Specifies the name for the CIFS share.

• -comment
  Provides a descriptive comment for the CIFS share.

• -path
Lists the subdirectory of the filesystem to share relative to the root. You can specify the path with forward slashes (/) or backward slashes (\). If you do not specify a path, cifs_share uses "\".

-modify
Modifies an existing CIFS share.
Valid options are:
  ● -fileserver
    Specifies the name of the File Server to modify.
  ● -filesystem
    Specifies the name of the new filesystem to modify.
  ● -comment
    Modifies the share comment.
  ● -path
    Modifies the share path.

-delete
Deletes an existing CIFS share.

-list
Displays the names of CIFS shares on all File Servers configured on the Pillar Axiom system.
Valid options are:
  ● -details
    Displays the details of the CIFS shares including filesystem, path, and comment.
  ● -fileserver
    Displays only the CIFS shares that are configured on the specified File Server.
  ● -share
    Displays only the specified CIFS share's details.
clonefs

Manages point-in-time, modifiable snapshots of filesystems on a Pillar Axiom system.

A Clone FS is a point-in-time, read-write copy of a filesystem that you intend to snap (split) from the original filesystem for immediate access. A Clone FS retains the same QoS parameters as the source filesystem and consumes space on the system that was allocated for clones during filesystem creation. A Clone FS cannot be scheduled; it is an immediate operation. Clone FS provides a convenient method to branch from the source data without the need to do a full block-level copy.

SYNTAX

clonefs -add -sourcefileserver source-file-server
   -sourcefilesystem source-filesystem
   -fileserver clone-file-server -filesystem clone-name

clonefs -modify -fileserver file-server -filesystem clone-name
   [-newname new-name] [-maxsize max-size]

clonefs -delete -fileserver name -filesystem clone-name

clonefs -list [-details]
   [-fileserver file-server [-filesystem clone-name]]

OPTIONS

-add

Creates a partial copy block-level snapshot (or clone) of a filesystem.

Valid options are:

- -filesystem
  Specifies the name of the newly-created filesystem.

- -sourcefilesystem
  Specifies the File Server of the source filesystem.

- -fileserver
  Specifies the File Server to host the clone filesystem.

- -sourcefilesystem
  Specifies the source filesystem.

-modify

The clonefs -modify command is used to change the name or maxsize of a partial copy block-level snapshot (or clone) of a filesystem.
Valid options are:

- **-newname**
  
  Modifies the clone name of the filesystem.

- **-maxsize**
  
  Modifies the maxsize of the clone filesystem. This cannot be less than the current maxsize of the filesystem.

- **-delete**
  
  Deletes an existing filesystem clone.

- **-list**
  
  Shows the clone filesystems configured on a Pillar Axiom system.

Valid options are:

- **-details**
  
  Enables listing the size, incremental growth size, maximum size of, free space, priority, profile, volume group, number of copies, expected file size, expected access bias, expected I/O bias, and number of snapshots. Without `-details`, `clonefs -list` displays only clone filesystem names.

- **-fileserver**
  
  Limits the list to clone filesystems on the specified File Server.

- **-clonefilesystem**
  
  Further limits the list to a specific Clone FS.
clonelun

Manages a point-in-time, modifiable snapshot of a LUN on a Pillar Axiom system.

A Clone LUN is a point-in-time, read-write copy of a LUN that you can immediately use. A Clone LUN retains the same QoS parameters as the source LUN and consumes storage capacity from the Clone LUN storage space created for the source LUN. A Clone LUN cannot be scheduled; it is an immediate operation. Clone LUNs provide a convenient method to branch from the source data without the need to do a full block-level copy. Replaces the deprecated snaplun command.

SYNTAX

clonelun -add -sanlun lun-name -source source-lun
clonelun -modify -sanlun lun-name [-newname new-name] [-maxsize max-size]
clonelun -list [-details] [-sanlun lun-name] [-source source-lun]
clonelun -delete -sanlun lun-name

OPTIONS

- add

Creates a partial copy block-level snapshot of a LUN.

Valid options are:

- -sanlun
  Gives the name of the newly-created LUN when creating a block-level snapshot of a LUN.
- -source
  Gives the name of the LUN to the snapshot.

- modify

Modifies the name or maximum size of a partial copy block-level snapshot (or clone) of a LUN.

Valid options are:

- -sanlun
  Specifies the name of the Clone LUN to modify.
- -newname
  Specifies the new name of the Clone LUN.
- -maxsize
Adjusts the maximum size of the Clone LUN. This cannot be less than the current maxsize of the Clone LUN.

- **list**

Displays existing Clone LUNs.

Valid options are:
- **–source**
  Limits the listing of Clone LUNs to only those for a particular source LUN.
- **–sanlun**
  Requests listing a single SAN partial copy snapshot.
- **–details**
  Requests additional information for each cloned LUN.

- **delete**

Deletes an existing partial copy snapshot.
diskbackup

Manages disk backups of filesystems or LUNs on a Pillar Axiom storage system.

**SYNTAX**

diskbackup -add -backup lun-or-fs-name -source source-lun-or-fs
diskbackup -activate -backup backup-name
diskbackup -list [-details] [-source lun-or-fs-name]
[-backup backup-name]
diskbackup -delete -backup backup-name

**OPTIONS**

- **-add**
  Creates a disk backup of a filesystem or LUN.
  Valid options are:
  - **-backup**
    Specifies the name of the disk backup.
  - **-source**
    Specifies the name of the filesystem or LUN to backup.
  - **-activate**
    Makes a previously-created disk backup of a filesystem or LUN available to users.

- **-list**
  Lists existing disk backups.
  Valid options are:
  - **-source**
    Lists only the disk backups of the specified source filesystems or LUNs.
  - **-backup**
    Lists only the specified disk backup.
  - **-details**
    Displays additional details for each disk backup.

- **-delete**
  Deletes an existing disk backup.
ec_update

Manages software updates of a Pillar Axiom storage system.
To update the software, you must:
• Upload the software package. (Sometimes uploading is referred to as staging.)
• Specify the software and firmware components that you want to update.
• Install the specified components to complete the update.

SYNTAX
ec_update -add [-package package-file-name]
ec_update -list [-details]
ec_update -install (-all | [-brickfw] [-pilotos] [-pilotsw]
                   [-slammerprom] [-slammersw])

OPTIONS
- add
Installs a new version of software or firmware onto a Pillar Axiom storage system.
The -package option specifies the package to install.
- list
Lists the currently staged EC update package on a Pillar Axiom storage system.
The -details option lists the package and installed versions for Brick disk drive firmware, Brick firmware, Pilot operating system, Pilot software, Slammer PROM, and Slammer software.
- install
Installs the specified versions of software or firmware onto a Pillar Axiom storage system. Installs the requested portions of the staged EC update package on a Pillar Axiom storage system.
Valid options are:
• -all
  Installs all of the staged EC packages. If -all is not provided, then at least one of the alternative options must be included.
• -brickfw
  Specifies the Brick firmware package to install.
• -pilotos
• -pilotsw
Specifies the Pilot operating system package to install.
- `-pilotsw`

Specifies the Pilot software package to install.
- `-slammerprom`

Specifies the Slammer PROM package to install.
- `-slammersw`

Specifies the Slammer software package to install.
Displays the system events of a Pillar Axiom storage system.

Event log monitoring is an integral part of ensuring that the Pillar Axiom storage system is operating optimally.

If you typically filter the display of event log entries as you work, you may want to collect all logged events from the event log, as well as logs for the management interfaces (GUI and CLI). On occasion, the Pillar World Wide Customer Support Center may request that you collect all event information and send the file to Pillar World Wide Customer Support Center for analysis.

**SYNTAX**

```
event_log -list [-details] [-severity severity-level] [-after YYYY-MM-DDTHH:mm:SS.xx+-HH:mm]
```

**OPTIONS**

- **-list**
  Lists event names from the Pillar Axiom event log.

Valid options are:

- **-details**
  Displays details from each event.

- **-severity**
  Displays events within the specified severity (informational, warning, error, or critical) or higher.

  The Pillar Axiom system generates events and classifies them by severity. See *See also: Table 4: Pillar Axiom event severities* for more information about event severities.

- **-after**
  Displays events posted after the specified date and time.

  The format of date-time is *YYYY-MM-DDTHH:mm:SS.xx+-HH:mm* where:

  - **YYYY-MM-DD** designates a four-digit year, two-digit month, and two-digit day for the date.
  - **T** is a separator that designates the start of the time portion of the string.
  - **HH:mm:SS** designates hours, minutes, and seconds in values for a 24-hour clock.
  - **xx** designates a fraction of a second, to two decimal places.
  - **+-HH:mm** designates the time zone as an offset from Coordinated Universal Time (UTC) in hours and minutes. Include the + or − prefix as appropriate.
For example, `event_log -list -after 2006-08-25T16:30:00-08:00` would retrieve events of all severities that have occurred after 4:30 PM, August 25th, 2006 Pacific Time.

### Table 4 Pillar Axiom event severities

<table>
<thead>
<tr>
<th>Severity</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical</td>
<td>Access to data is compromised.</td>
</tr>
<tr>
<td>Error</td>
<td>Administrator action is required to prevent a hard error.</td>
</tr>
<tr>
<td>Warning</td>
<td>Administrator action is required to prevent a soft error from becoming a hard error or critical event.</td>
</tr>
<tr>
<td>Informational</td>
<td>A configuration change has been detected or another non-error event has occurred.</td>
</tr>
</tbody>
</table>
**fileserver**

Manages File Servers on a Pillar Axiom system.

A File Server is a NAS object that is assigned security, network, and protocol access attributes. The attributes apply to all filesystems that are associated with that specific File Server. A Pillar Axiom NAS system requires at least one File Server.

**SYNTAX**

```
fileserver -add -gateway gateway-ip -ip ip-address -port port-name

[-vlan vlan-tag] [-mtu mtu] [-netmask netmask] [-comment comment]

[-dnsdomain domain] [-nisserver nis-ip]

[-hostfile host-filename] [-passwdfile passwd-filename]

[-netgroupfile netgroup-file] [-groupfile group-file]

[-hostorder host-list] [-passwdorder passwd-list]
```

```
fileserver name
```

```
fileserver -modify [-gateway gateway-ip] [-ip ip-address]

[-port port-name] [-vlan vlan-tag] [-mtu mtu]

[-netmask netmask] [-comment comment] [-newfileserver new-name]

[-dnsdomain domain] [-nisserver dns-ip1 [-nisserver dns-ip2 ...]]

[-nisdomain nis-domain] [-nisserver nis-ip]

[-hostfile host-filename] [-passwdfile passwd-filename]

[-netgroupfile netgroup-file] [-groupfile group-file]

[-hostorder host-list] [-passwdorder passwd-list]
```

```
fileserver name
```

```
fileserver -delete -fileserver name
```

```
fileserver -list [-details] [-fileserver name1 [, name2 ...]]
```

**OPTIONS**

- -add
Adds a new File Server to the Pillar Axiom system. This command fails if the Pillar Axiom system already has a File Server with the given name.

Valid options are:

- **-gateway**
  Specifies the IP address, in dotted decimal format, of the default gateway that the File Server should use.

- **ip-address**
  Provides the IP address of the primary virtual interface of the port in dotted decimal format.

- **-port flag**
  Specifies the gigabit Ethernet port for the primary virtual interface specified as, for example, /Slammer1/CU1/Port0 to specify the Slammer, control unit 0 or 1, and ports 0, 1, 2, 3, 4, 5, 6, or 7.

- **-vlan**
  If specified, provides the VLAN tag to use on the port (a number from 1 to 4095). If you don't specify the -vlan option, the port is configured for untagged traffic.

- **-mtu**
  Specifies the maximum transfer unit for the port. If you don't specify the -mtu option, 1500 is used as the default.

- **-netmask**
  Specifies the netmask for the primary virtual interface. If you don't specify the value, 255.255.255.0 is used as the default.

- **-dnsdomain**
  Specifies the default DNS domain for looking up addresses.

- **-dnsserver**
  Specifies the IP address of a domain name server to use. You may specify up to three domain name servers for a File Server. If you do not provide DNS information, the Pillar Axiom system does not use DNS for host resolution.

- **-nisdomain**
  Specifies the NIS domain to use.

- **-nisserver**
  Specifies the IP address of the NIS server to use. If you don't specify the value, the Pillar Axiom system does not use NIS for host and user name resolution.

- **-hostfile**
Specifies the name of a file to upload to the Pillar Axiom system for host name resolution.

- **-passwdfile**
  Specifies a password file to upload to the Pillar Axiom system.

- **-netgroupfile**
  Specifies a netgroup file to upload.

- **-groupfile**
  Specifies an /etc/group file to upload. If you don't specify the value, the Pillar Axiom system does not use uploaded files for host, user, group, and netgroup resolution. The file formats conform to the UNIX files found in the /etc directory.

- **-hostorder and -passwdorder**
  Specify the services and the order to use them for host lookup and user name lookup, respectively.

- **host-list and passwd-list**
  Consists of a comma-separated list using the terms dns, file, and nis in the desired order of use. For example, to use dns first, then nis, specify dns,nis.

- **-modify**
  Modifies the parameter of an existing File Server.

  **Note:** You can change all of the options that can be specified in the fileserver -add command. In addition, the File Server can be renamed using the -new fileserver name option.

  The -dnsserver and -modify options delete the current list of DNS servers for the File Server and uses the one or more -dnsserver options you provide for the complete list of DNS servers. If you specify -hostfile, -passwdfile, -netgroupfile, or -groupfile with fileserver -modify, then the command uploads a new or updated copy of the specified file.

  **Note:** The fileserver -modify command fails if the Pillar Axiom system does not already have a File Server with the given name.

- **-delete**
  Deletes the File Server of the given name. This command fails if the Pillar Axiom system does not contain a File Server of the given name or if the File Server contains any filesystem.

  If a File Server is associated with any filesystems, you cannot delete the File Server. Those associated filesystems would be unusable, because you cannot change an existing association that a filesystem has with a File Server. You
create the association when you create a filesystem, but you cannot modify the association at a later time.

-\texttt{list}

Lists one or more File Servers. If you do not enter a specific File Server, \texttt{fileserver -list} displays information for all File Servers. You can limit the listing to specific File Servers by specifying the names in a comma-separated list with the \texttt{-fileserver} option.

The \texttt{-details} option lists the DNS configuration, NIS configuration, presence of uploaded host and password files, and host and password order.
filesystem

Manages filesystems on a Pillar Axiom storage system.

SYNTAX

filesystem -add -fileserver name -filesystem fs-name
     -maxsize max-size [[-size size] [-increment incr-size]]
     -priority premium | high | medium | low | archive
     [-profile normal | hightthroughput | oracleasm]
     [-volgrp volume-group] [-copies 1 | 2]
     [-filesize small | medium | large]
     [-accessbias sequential | random | mixed]
     [-iobias read | write | mixed]
     [(-enforcelimits | -noenforcelimits) -softlimit soft-limit
     -hardlimit hard-limit -graceperiod grace-period]
     [-createsnapfsschedule]
     [-clonecapacity clone-capacity]
     [-slammer slammer-node]
     [-storageclass satahd | fchd | slcssd | mlcssd]

filesystem -modify -fileserver name -filesystem fs-name
     [size size] [max-size max-size] [-increment incr-size]
     [-volgrp volume-group] [-priority premium | high | medium | low | archive]
     [-copies 1 | 2] [-clonecapacity clone-capacity]
     [-profile normal | hightthroughput | oracleasm]
     [-newname new-name]
     [-slammer slammer-node]
     [-storageclass satahd | fchd | slcssd | mlcssd]

filesystem -delete -fileserver name -filesystem fs-name

filesystem -list [-details] [-filesystem name [-filesystem fs-name]]
[volgrp  volume-group]

OPTIONS  -add

Adds a new filesystem referred to as the fs-name, to the specified File Server.

Valid options are:

- -size
  Specifies the initial size of the filesystem. The value for -size cannot exceed max-size.

- -maxsize
  Specifies the maximum size, in gigabytes, the filesystem can reach.
  Note: If -size is not specified, then it is set to max-size.

- -increment
  Specifies the growth increment. If you do not specify the -maxsize, then it is set to two times its size. If you do not specify -increment, then it is set to 10% of the maxsize value.
  Note: If -increment is not specified, then it is set to 10% of the max-size value for all systems released prior to version 3.0. For all other released versions, -increment is ignored.

- -priority
  Specifies the relative priority of the filesystem (premium, high, medium, low, or archive).

- -profile
  Specifies the performance profile for the filesystem (normal, highthroughput, and oracleasm). If no option is provided then normal is used as the default.

- -volgrp
  Specifies the volume group in which to allocate the filesystem. If no volume group is provided, the Pillar Axiom system puts the new filesystem in the top-level volume group.

- -copies
  Specifies the number of data copies to create (one or two). The triple copies parameter was removed in version 3.0.

- -filesize
  Specifies the expected size of files that you create on the filesystem. If no file size is provided, the Pillar Axiom system uses the default medium.

- -accessbias
  Specifies the expected access pattern to the filesystem. If no access bias is provided, the Pillar Axiom system uses the default value of mixed.
• -iobias
  Specifies the expected read/write bias on the filesystem. If no read/write bias is provided, the Pillar Axiom system uses the default value of mixed.

• -enforcelimits
  Enables quota enforcement on the root directory. If no option is provided, the Pillar Axiom system uses the default which is to not enforce a quota.

• -noenforcelimits
  Disables quota enforcement. If no option is provided, the Pillar Axiom system uses the default which is to not enforce a quota.

• -softlimit
  Specifies the soft limit, in MB, for the root quota. To specify an unlimited soft limit, enter 0.

• -hardlimit
  Specifies the hard limit, in MB, for the quota. To specify an unlimited hard limit, enter 0.

• -graceperiod
  Specifies the number of days the Pillar Axiom system can exceed the soft limit of the root directory's quota. To set an unlimited period, enter 0.

• -createsnapfsschedule
  Creates a schedule for filesystem snapshots.

• -slammer
  Indicates which Slammer should own the new filesystem. By default, the Pillar Axiom system chooses the Slammer automatically. The Slammer control unit (CU) is specified as /slammer name/control unit. The value for slammer-node must be the Slammer's name. The control unit can be either CU0 or CU1 (0 or 1 is acceptable). For example, /Slammer1/CU1 specifies Slammer1, control unit 1.

• -clonecapacity
  Specifies the size of extra space to set aside for the creation of clones of the filesystem using the snapfs command.

• -storageclass
  Specifies the type of physical storage in which to assign to the filesystem. Each storage class has distinct characteristics with regard to performance characteristics of data access. This allows you to explicitly manage volume placement within the overall system storage pool. This option can be omitted if the Pillar Axiom system is configured with only one type of storage class; however, if there are two or more storage classes on the Pillar Axiom system, the command will fail.

Valid options include:
○ satahd
  SATA hard drives.
○ fchd
  Fibre Channel hard drives.
○ slcssd
  SATA single-level cell solid state drives.
○ mlcssd
  SATA multi-level cell solid state drives.

- list
  Displays the filesystems configured on a Pillar Axiom system.

Valid options are:
  ○ -details
    Enables listing the size, incremental growth size, maximum size, free space, priority, profile, volume group, number of copies, expected file size, expected access bias, expected I/O bias, and number of snapshots. Without -details, filesystem -list Lists only filesystem names.
  ○ -fileserver
    Limits the filesystem list to those on the specified file server.
  ○ -filesystem
    Further qualifies the list to a specific filesystem.

-modify
Modifies the size, maximum size, volume group, priority, redundancy, name, slammer, profile, or the clone capacity of an existing filesystem.

The -newname option specifies the new name of the filesystem.

-delete
Deletes an existing filesystem.

Note: If you need to delete an existing filesystem, you can do so if the filesystem is not being accessed by users.

Note: You cannot delete a Pillar Axiom SecureWORMfs Compliance filesystem if it has protected files on it. To delete a non-empty Compliance Pillar Axiom SecureWORMfs filesystem, you must first downgrade it to Standard.

-list
Displays the filesystems configured on a Pillar Axiom system.

Valid options are:
- `--details`
  Displays the size, incremental growth size, maximum size, free space, priority, profile, volume group, number of copies, expected file size, expected access bias, expected I/O bias, and number of snapshots.

- `--filesystem`
  Displays only the filesystems that are configured on the specified File Server.

- `--filesystem`
  Displays only the specified filesystem.
fscopy

Creates a duplicate of an existing filesystem on a Pillar Axiom system.
The NFS exports and CIFS shares associated with the original filesystem are copied. Exports on the new filesystem are mountable from another host. Shares are renamed using the original name plus a number so that they can be on the same File Server.

SYNTAX

fscopy -add -sourcefileserver source-file-server
     -sourcefilesystem source-file-system
     -fileserver name -filesystem fs-name
     -maxsize max-size -increment incr-size
     -priority premium | high | medium | low | archive
     [-profile profile]
     -volgrp volume-group -copies 1 | 2
     -filesize small | medium | large
     -accessbias sequential | random | mixed
     -iobias read | write | mixed
     [-clonecapacity clone-capacity]
     [-storageclass satahd | fchd | slcssd | mlcssd]

OPTIONS

-add

Creates a duplicate of an existing filesystem. The duplicated filesystem is automatically detached from the source filesystem.

Valid options are:

• -sourcefileserver
  Specifies the source File Server of the source filesystem.
• -sourcefilesystem
  Specifies the filesystem source. The duplicated filesystem is automatically detached from the source filesystem.
• -fileserver
  Specifies the File Server with which the duplicate is associated.
• -maxsize
  Specifies the maximum size to which the duplicate filesystem can grow.
If you do not specify the `-maxsize`, it is set to two times its size.

- `-priority`

Specifies the relative priority of the duplicate filesystem (premium, high, medium, low, or archive).

- `-volgrp`

Specifies the volume group in which to allocate the filesystem. If you do not specify a volume group, the Pillar Axiom system puts the new filesystem in the top-level volume group.

- `-filesize`

Specifies the expected size of files that you create on the filesystem. If unspecified, the Pillar Axiom system uses the default of medium.

- `-accessbias`

Specifies the expected access pattern to the filesystem. If you do not specify the access bias, the Pillar Axiom system uses the default value of mixed.

- `-iobias`

Specifies the expected read/write bias on the filesystem. If you do not specify the read/write bias, the Pillar Axiom system uses the default value of mixed.

- `[-clonecapacity clone-capacity]`

Specifies the size of extra space to set aside for the creation of clones of the filesystem.

- `-storageclass`

Specifies the type of physical storage in which to assign to the filesystem. Each storage class has distinct characteristics with regard to performance characteristics of data access. This allows you to explicitly manage volume placement within the overall system storage pool. If this option is omitted, the storage class of the source filesystem will be used for the copy.

Valid options include:

- `satahd`
  SATA hard drives.

- `fchd`
  Fibre Channel hard drives.

- `s1cssd`
  SATA single-level cell solid state drives.

- `mlcssd`
  SATA multi-level cell solid state drives.
help

Displays a list of all supported commands as well as help for a specific command. To see a list of all commands, run `help`. To display help about a specific command, run `cmd -help` where `cmd` is the command name. For example, `fileserver -help` displays the help for the `-fileserver` command.

Help is available for the following commands:

- `admin_acct`
- `alert`
- `axiom_login`
- `axiom_perf`
- `axiom_status`
- `cifs`
- `cifs_share`
- `clonefs`
- `clonelun`
- `diskbackup`
- `ec_update`
- `event_log`
- `fileserver`
- `filesystem`
- `fscopy`
- `hostmap`
- `luncopy`
- `nas`
- `ndmp`
- `nfs`
- `nfs_export`
- `pilot_config`
- `quota`
- `route`
- `sanhost`
- `sanlun`
- `slammer`
- `snapfs`
- `snapfs_schedule`
- `storage_allocation`
• `sysinfo`
• `vif`
• `volgrp`
**hostmap**

Manages host mappings between Pillar Axiom LUNs and host machines, and displays configuration information for LUNs and SAN hosts.

**SYNTAX**

```
hostmap -add -sanlun lun-name
   (-host host-name | -wwn world-wide-name)
   -lun logical-unit-number
   [-mask port-path1 [, port-path2 ...]]

hostmap -modify -sanlun lun-name
   (-host host-name | -wwn world-wide-name)
   [-lun logical-unit-number]
   [-mask port-path1 [, port-path2 ...]|-unmask]

hostmap -list [-details] [-sanlun lun-name | availableluns]
   [-host host-name | -wwn world-wide-name]

hostmap -delete -sanlun lun-name
   [-host host-name[, host-name ...]| -wwn world-wide-name[, world-wide-name...]]
```

**Note:** Spaces are not allowed between the comma-separated values that specify the host names or the World Wide Names.

**OPTIONS**

- **add**

  Creates a LUN-to-host mapping for a LUN.

  Valid options are:
  
  - **-sanlun**

    Indicates the LUN. Use the **-host** option to identify a host running Pillar Axiom Path Manager (APM) or use **-wwn** to identify a host not running APM.

  - **-lun**

    Specifies the logical-unit-number to present the LUN to the host. If specified, one or more **-mask** options indicates the Pillar Axiom Fibre Channel ports that should not be visible to the host. The format of the port path is `/CUx/Porty`. For example, `/CU0/Port1` specifies control unit 0 and port 1.
-mask
Resets the set of masked ports.

-unmask
Removes all masked ports for the host.

-modify
Modifies an existing host mapping.

Valid options are:
- -mask
  Resets the set of masked ports.
- -unmask
  Removes all masked ports for the host.

-list
Displays host mappings.

Valid options are:
- -sanlun
  Restricts the report to a specified LUN.
- -availableluns
  Returns the list of available logical unit numbers either system wide or for a given host.
- -host or -wwn
  Restricts the listing to particular host machines.
- -details
  Without this option, hostmap -list lists either the LUNs and host machines for which the system has host mappings or the available LUN numbers. With the -details option, the hostmap -list command shows for each host mapping the:
  - LUN name.
  - host name or WWN.
  - logical unit number.
  - set of masked ports.

-delete
Deletes host mapping for a LUN. If specified, the -host or -wwn option restricts to deleting host mapping for a specific host. Otherwise, hostmap -delete deletes the host mapping for all hosts for the specified LUN.
luncopy

Creates a duplicate of an existing LUN on a Pillar Axiom system.

You can copy an existing LUN and give the new LUN different Quality of Service (QoS) metrics. This copying allows system resources to be maximized for the task at hand. For example, a copied volume that is used for reporting is assigned a lower performance priority and a higher read-centric access pattern than would the source volume.

SYNTAX

```
luncopy -add -sanlun lun-name -source source-lun-name
  -priority premium | high | medium | low | archive
[-volgrp volume-group] [-copies (1|2)]
[-accessbias sequential | random | mixed]
[-iobias read | write | mixed]
[-slammer slammer-path]
[-clonecapacity clone-capacity]
[-profile oracleasm | highthroughput | normal]
[-storageclass satahd | fchd | slcssd | mlcssd]
```

OPTIONS

- `add` Creates a duplicate of an existing LUN.

Valid options are:

- `–sanlun`
  Specifies the name of the newly-created LUN.

- `–source`
  Specifies the name of the source LUN in which to copy.

- `–profile`
  Indicates which QoS profile should be used for the LUN, either `oracleasm`, `highthroughput`, or `normal`. If no option is provided, the system uses `normal`.

- `–storageclass`
  Specifies the type of physical storage in which to assign to the LUN. Each storage class has distinct characteristics with regard to performance characteristics of data access. This allows you to explicitly manage volume placement within the overall system storage pool. If this option is omitted, the storage class of the source LUN will be used for the copy.
Valid options include:

- **satahd**
  SATA hard drives.
- **fchd**
  Fibre Channel hard drives.
- **slc ssd**
  SATA single-level cell solid state drives.
- **mlc ssd**
  SATA multi-level cell solid state drives.

The remaining parameters give quality of service parameters as for creating a LUN. Refer to the *Pillar Axiom Administrator's Guide* for details.
Manages NAS settings for the Pillar Axiom system.

**SYNTAX**

```
nas -modify
(-enablecurecovery | -noenablecurecovery)
nas -list [-details]
```

**OPTIONS**

- `modify`

Modifies the Pillar Axiom system’s NAS configuration.

Valid options are:

- `-enablecurecovery`
  
  Enables the automatic recovery operation when a previously-unavailable Slammer control unit (CU) becomes available. Enable this option if data path interruptions of up to 30 seconds for the recovery time are permitted.

- `-noenablecurecovery`
  
  Disables the automatic recovery option. Use this option only when you want to manually start the recovery operation.

**Note:** With Release 3.0, link aggregation options are deprecated. The specification of link aggregation settings is now performed using the `slammer -modify` command. The `-enablelinkaggregation` option has the default behavior of setting the link aggregation settings of all NAS Slammers to port01_port23. The `-noenablelinkaggregation` disables link aggregation on all NAS Slammers.

Deprecated form:

```
nas -modify
  (-enablelinkaggregation|-noenablelinkaggregation)
  (-enablecurecovery|-noenablecurecovery)

-list
```

Displays the NAS configuration of a Pillar Axiom system:

- Number of filesystems
- Capacity usage
- Capacity reserved for overcommitted filesystems
- Number of filesystem copies
- Capacity of the filesystem copies
At any time, you can display actual usage and compare it to the total system capacity and assigned capacity limits.

**Note:** A Pillar Axiom system uses binary units to calculate disk drive capacities. For example, 1 GB = 1024^3 bytes (sometimes referred to as 1 gibibyte, GiB).

`-details`

Displays detailed information about the NAS settings.
ndmp

Manages Network Data Management Protocol (NDMP) settings for the Pillar Axiom system.

NDMP is an industry-standard protocol that allows for the use of third-party backup applications to manage the backup and recovery of customer data. An NDMP user account, password, and access port are configured through the Pilot. Pillar Axiom systems support NDMP version 4.

Refer to the NDMP Integration Guide for NAS Systems.

**SYNTAX**

```
ndmp -add -fileserver name -user ndmp-user -password ndmp-password
    -retypepassword ndmp-password [-port port]

ndmp -modify [-fileserver name] [-user ndmp-user]
    [-password ndmp-password -retypepassword ndmp-password]
    [-port port]

ndmp -delete

ndmp -list [-details]
```

**OPTIONS**

- **-add**

Adds NDMP capability to a Pillar Axiom system.

Valid options are:

- **-fileserver**
  
  Specifies the File Server that controls the Ethernet data ports that NDMP utilizes.

- **-user**
  
  Specifies the NDMP user name.

- **-password**
  
  Specifies the NDMP password.

- **-retypepassword**
  
  Confirms that the password was entered correctly.

- **-port**
  
  Specifies the NDMP port number to use. If not specified, the Pillar Axiom system uses port 10000.
-modify
Modifies the NDMP configuration on a Pillar Axiom system.

Valid options are:

- **-fileserver**
  Specifies the File Server to control the data Ethernet ports that NDMP can use.

- **-user**
  Specifies the NDMP user name.

- **-password**
  Specifies the NDMP password.

- **-retypepassword**
  Confirms that the password was entered correctly.

- **-port**
  Specifies the NDMP port number to use.

-delete
Deletes the NDMP configuration from the system.

-list
Displays the NDMP configuration of a Pillar Axiom system.

Valid options are:

- **-details**
  Makes no difference in the output and is provided for consistency with other commands.

- **ndmp -details**
  Shows the File Server, NDMP user name, and configured port number.
nfs

Configures the Pillar Axiom system to support Network File System (NFS) exports.

**SYNTAX**

```
nfs -add -fileserver name [-port port-number]
```

```
[-charset charset-name]
[-nonnfsuid uid-number] [-nonnfsgid gid-number]
[-reservedports | -noreservedports]
[-chownroot | -nochownroot]
[-tcp connections | -notcp]
```

```
nfs -modify -fileserver name [-port port-number][-charset charset-name]
```

```
[-nonnfsuid uid-number] [-nonnfsgid gid-number]
[-reservedports | -noreservedports]
[-chownroot | -nochownroot]
[-tcp connections | -notcp]
```

```
nfs -delete -fileserver connections
```

```
nfs -list [-details] [-fileserver name]
```

**OPTIONS**

- **-add**

  Adds NFS capability to a Pillar Axiom system.

  Valid options are:
  
  - **-fileserver**
    
    Adds NFS configuration to the specified File Server.
    
  - **-port**
    
    Specifies the port that the File Server listens for the mount requests. If not specified, the File Server uses the standard port 2049.
  
  - **-charset**
    
    Specifies character set to use for file names. If not specified, the File Server uses the character set ISO8859-1.
  
  - **-nonnfsuid and -nonnfsgid**
    
    Specifies the user ID and group ID to use for requests from non-NFS access. If not specified, the Pillar Axiom system uses -1 for both values.
• **–reservedports**

  Specifies that NFS only allows mount requests from client machine TCP/IP ports less than 1024.

• **–noreservedports**

  Allows mount requests from any client port number. If you specify neither, the nfs -add command assumes –noreservedports.

• **–chownroot**

  Allows the root user to run the chown (change ownership) request.

• **–nochownroot**

  The –nochownroot option allows any user to run chown requests. If you specify neither option, nfs -add assumes –chownroot.

• **–tcp**

  Enables the TCP transport for the NFS protocol and limits the number of concurrent TCP connections allowed per Slammer control unit. The –notcp option disables the use of TCP for the NFS protocol. If you don’t specify either –tcp or –notcp, the nfs -add command assumes –tcp with an unlimited number of connections. In the implementation, unlimited connections is specified by setting the value to 9999.

• **–modify**

  Modifies the configuration of a previously-created NFS configuration for a File Server. The options have the same meaning for nfs -modify as they do for nfs -add.

• **–delete**

  Deletes the NFS configuration from a File Server, thereafter disallowing all NFS access to the File Server. The nfs -delete command also deletes all NFS exports for the named File Server.

• **–list**

  Displays the NFS configuration for the given File Server if you specify the –fileserver option or for all File Servers if you omit –fileserver.

**Valid options are:**

• **–fileserver**

• **nfs -list**, which shows:

  ○ Port number
  ○ Character set
  ○ Non-NFS user and group IDs
  ○ Reserved port option
  ○ Whether NFS allows chown from non-root users
  ○ Whether NFS accepts TCP connections
○ Number of allowed TCP connections

• -details

Provides no additional detail and is included for symmetry with the -list options of other commands.
nfs_export

Manages exports for Network File System (NFS) clients.

SYNTAX

nfs_export -add -fileserver name -filesystem fs-name
  [-path export-path] [-anonuid uid]
  [-access access-type] [-readonly | -noreadonly]
  [-root | -noroot]
nfs_export -modify -fileserver name -filesystem fs-name
  -path export-path [-anonuid uid]
  [-access access-type] [-readonly | -noreadonly]
  [-root | -noroot]
nfs_export -delete -fileserver name -filesystem fs-name
  -path export-path
nfs_export -list [-details]
  [-fileserver name [-filesystem fs-name [-path export-path]]]

OPTIONS

-add

Creates a new NFS export for the specified filesystem on the specified File Server name.

Valid options are:
  • -path
    Specifies the subdirectory in the filesystem to export, where forward slash (/) means to export the whole filesystem. If you do not specify the -path option, nfs_export defaults to forward slash (/). The -anonuid specifies the user ID to use for anonymous access. If you do not specify -anonuid, nfs_export uses -2.
  • -access
    Specifies the set of hosts allowed to use the export.
    The access-type can be one of:
      ○ all
        Allows any host to use the export.
      ○ netgroup=netgroup
Allows only hosts in the NIS netgroup netgroup to use the export.
  ○ host=host1[,host2,...]
  Allows only the listed hosts (by name or IP address) to use the export.
  ○ net=network/netmask
  Allows only hosts with IP addresses in the network described by the network and netmask IP addresses to use the export.
  ○ –readonly
  Allows read-only access to the filesystem.
  ○ –noreadonly
  Allows read/write access. If you specify neither of these two options, nfs_export -add exports the filesystem read/write.
  ○ –root
  Accepts and uses root credentials.
  ○ –noroot
  Denies root credentials, substituting the anonymous user ID. If you specify neither –root or –noroot, the default value is –noroot.

Note: The nfs_export command fails if the File Server name or filesystem fs-name is not specified.

-modify
Modifies an existing NFS export.

Valid options are:
  ● –anonuid option
    Specifies the anonymous userid.
  ● –access option
    Specifies the access type.
  ● –readonly or –noreadonly
    Toggles the read-only access attribute.
  ● –root or –noroot
    Toggles the root credential attribute.

-delete
Deletes an NFS export.

-list
Displays NFS exports.

Valid options are:
- **-details**
  Displays the options for each export (anonymous user ID, access type, read-only/read-write, and root access); otherwise, `nfs_export -list` displays only the File Server, filesystem, and export path.
- **-filesystem**
  Displays only the NFS exports in that File Server.
- **-filesystem**
  Displays only NFS exports for that filesystem.
- **-path**
  Displays only the NFS exports for the specific path in the filesystem.
**pilot_config**

Configures the Pilot control units, including names, IP addresses, and email addresses.

**SYNTAX**

pilot_config  - modify [-systemname *system-name*] [-dhcp | -nodhcp] 
[-addr *pilot-public-ip*] [-addrcu0 *cu0-ip*] [-addrcu1 *cu1-ip*] 
[-subnet *subnet-mask*] [-gateway *gateway-ip*] 
[-nameserver *dns-server1[, dns-server2]*] 
[-email *mail-server* | -noemail] 
[-callhome | -nocallhome] 

[(-callhomeserver *call-home-server* -directory *dir* -user *callhome-user*) 
| -pillarcallhome] 

pilot_config  -list [-details]

**OPTIONS**

-modify

Modifies the Pilot configurations.

Valid options are:

- `-systemname`
  Sets the name of the Pillar Axiom system.
  
- `-dhcp`
  Enables configuration of the Pilot IP addresses using the Dynamic Host Configuration Protocol.

- `-nodhcp`
  Disables use of DHCP and requires static specifications of IP addresses, subnet mask, gateway, and DNS servers.

- `-addr`
  Provides a static IP address for use by the Pilot. This is the address that management configuration options (GUI or CLI) should use.

- `-addrcu0` and `-addrcu1`
  Sets the static IP address of each Pilot control unit.

- `-subnet`
Sets the subnet for all the Pilot IP addresses. Use dotted decimal notation.

- gateway

Sets the default route gateway address for the Pilot. Use dotted decimal notation.

- nameserver

Provides the IP addresses of one or two domain name servers.

- email

Enables email alerts. Specify the hostname or dotted decimal IP address of the mail server to use for delivering email alerts.

Define an email server to receive alerts from the Pillar Axiom system and send the email messages to designated recipients. If you do not set the email server, the system does not send alerts to administrators of events that have occurred.

- noemail

Disables email alerts.

- callhome

Enables automatic transmission of system information to Pillar World Wide Customer Support Center.

The Call-Home feature notifies Pillar World Wide Customer Support Center about issues in the Pillar Axiom system. When a component operates in degraded mode or fails, the system automatically performs failover actions. Although a component failure does not cause downtime, manual intervention is sometimes required to repair or replace the failed component. The system sends a Call-Home message to initiate the repair or replacement process.

- nocallhome

Disables automatic transmission.

- list

Displays the Pilot's configuration.

The -details option provides no additional detail and is included for symmetry with the -list options of other commands.
**quota**

Manages quotas on filesystems. Quotas limit the amount of disk space a filesystem can use.

**SYNTAX**

```bash
quota -add -fileserver name -filesystem fs-name -path path
  -allowoffline | -noallowoffline
  (-allusers | -user user-name | -group group-name)
  [-enforcelimits | -noenforcelimits]
  -softlimit soft-limit -hardlimit hard-limit
  -graceperiod grace-period

quota -modify -fileserver name -filesystem fs-name -path path
  [-enforcelimits | -noenforcelimits]
  [-softlimit soft-limit] [-hardlimit hard-limit]
  [-graceperiod grace-period]

quota -delete -fileserver name -filesystem fs-name -path path
  -allowoffline | -noallowoffline

quota -download -fileserver name -filesystem fs-name -file download-file

quota -list [-details] [-fileserver name [-filesystem fs-name [-path path]]]
```

**OPTIONS**

- **-add**

Creates a new quota for the Pillar Axiom system.

Valid options are:

- **-fileserver**
  
  Specifies the File Server on which to create the quota.

- **-filesystem**

  Specifies the filesystem on which to create the quota.

- **-path**

  Specifies the full path of the directory that the quota covers.
• **-allowoffline**
  Specifies that the filesystem can be taken offline to create or later remove a directory level quota when the directory contains files and subdirectories.
  While the filesystem is offline, you cannot access the data.

• **-noallowoffline**
  The filesystem remains online and the quota operation is not performed until the directory is empty.
  You can use this option to force a filesystem back online to do a restore from backup if the filesystem went offline.

• **-allusers, -user, and -group**
  Specifies who the quota covers. Only one option can be specified.
  ○ **-allusers**
    Specifies that the quota covers all users storing data in the specified directory.
  ○ **-user**
    Specifies a single user that the quota covers.
  ○ **-user-name**
    Specifies a user name or a CIFS/NFS account name.
  ○ **-group**
    Specifies the group name of users that the quota covers.

• **-enforcelimits**
  Enables enforcing the quota.

• **-noenforcelimits**
  Disables enforcement of the quota.
  **Note:** If neither **-enforcelimits** or **-noenforcelimits** is supplied, then the default is to not enforce the quota.

• **-softlimit**
  Specifies the soft limit for the quota.

• **-hardlimit**
  Specifies the hard limit for the quota. To specify an unlimited quota, enter a 0 (zero) for the value.
  **Note:** The values for both **-hardlimit** and **-softlimit** are expressed in megabytes.

• **-graceperiod**
Specifies the number of days the system can exceed the soft limit. To set an unlimited period, enter 0 (zero).

-modify
Modifies an existing quota. The options have the same meaning as in the -add command above.

-delete
Deletes an existing quota.

Valid options are:

- -allowoffline
  Specifies that the filesystem can be taken offline to delete the quota when the directory contains files and subdirectories.
- -noallowoffline
  The filesystem remains online and the quota deletion is not performed until the directory is empty.

-download
Downloads a quota report file from the filesystem specified and stores it in the file download-file.

Valid options are:

- -fileserv
  Specifies the source File Server name for the download.
- -filesystem
  Specifies the source filesystem name for the download.
- -file
  Specifies the name of the file to download.

-list
Lists the current quotas.

The -details option displays the quota details (directory, user, group, enforce, soft limit, hard limit, grace period, quota used, time left, space used on directory). Otherwise, quota -list displays only the quota name.
route

Manages routing tables on the Pillar Axiom system to create and delete secondary routes for a File Server.

**SYNTAX**

```bash
route -add -fileserver name -destination dest-ip -netmask netmask
   -gateway gateway-ip

route -modify -fileserver name -destination dest-ip
   -netmask netmask
   -gateway gateway-ip [-newgateway new-gateway-ip]
   [-newdest new-dest-ip] [-newnetmask new-netmask]

route -delete -fileserver name -destination dest-ip
   -gateway gateway-ip

route -list [-fileserver name [-destination dest-ip
   -gateway gateway-ip]]
```

**OPTIONS**

- **-add**
  Adds a route to the File Server name.

Valid options are:

- **-destination flag**
  Specifies the destination IP address of the network or specific host that the route describes how to reach.

- **-netmask flag**
  Specifies the network mask paired with the destination to provide the significant data used for the match.

- **-gateway flag**
  Specifies the IP address of the router used to reach the destination. The `route -add` command fails if a route already exists with the specified `dest-ip` and `netmask`.

- **-modify**
  Modifies an existing route in the specified File Server name. The destination IP, netmask, or gateway can be modified. You must specify at least one of:

  - **-fileserver**
    Specifies the name of the File Server to be modified.
-destination
   Specifies the destination IP address to be modified.

-netmask
   Specifies the netmask to be modified.

This command fails if the File Server does not already have the specified route, or if no File Server exists with the provided name.

-delete

Deletes a route from a File Server.

The -gateway, -destination, and -netmask options specify the route to delete. This command fails if the File Server does not already have the specified route or if no File Server exists with the provided name.

-list

Displays routes in a Pillar Axiom system. If you specify route -list, the command shows all routes in all File Servers. If you specify -fileserver, the command lists all the routes in the specified File Server. If you further qualify with -destination and -netmask, the command shows only the specified route.
sanhost

Manages configuration settings on the Pillar Axiom system for SAN hosts.

SYNTAX

sanhost -modify

(-hbaport hba-port-wwn [-hbaportname hba-port-name] [-sanhostname sanhost-name]) | (-sanhostname sanhost-name -sanlun lun-name -loadbalancetype static | roundrobin)

sanhost -delete -sanhostname sanhost-name

sanhost -list [-details] [-name sanhost-name | world-wide-name]

OPTIONS

-modify

Modifies either an HBA port host or a Pillar host driver host. You must know what kind of host you want to modify and select either the -hbaport or -sanhostname alternatives.

Valid options are:

- -hbaport
  Allows you to change the hba-port-name or host name of an HBA port.

- -sanhostname/-sanlun/-loadbalancetype
  Allows you to change the load balance type for a specified SAN host and LUN.

-delete

Deletes the SAN host with name sanhost-name. An HBA port can't be deleted directly, although you could assign a SAN host name to the port, and then use this command to delete it. The HBA port eventually reappears after the Pillar Axiom system redisCOVERs it.

-list

Displays the Pillar SAN host and HBA hosts.

Valid options are:

- -name
  Identifies the specific SAN host by either its name or World Wide Name (WWN).

- -details
  Provides additional information for each SAN host. The details displayed depends on if the host is an HBA port host or a Pillar Axiom host. For
both hosts, the number of LUNs and HBA port details are provided. For Pillar Axiom hosts, the details include the operating system, OS version, IP address, LUN settings, and additional HBA port details.
sanlun

Creates and manages the LUNs on a Pillar Axiom system.

SYNTAX

```
sanlun -add -sanlun lun-name
   -maxsize maxsize [-size size] [-clonecapacity clone-capacity]
   -priority premium | high | medium | low | archive
   [-volgrp volume-group] [-copies 1 | 2 | 3]
   [-accessbias sequential | random | mixed]
   [-iobias read | write | mixed]
   [-slammer slammer-path]
   [-mapped | -unmapped]
   [-profile oracleasm | highthroughput | normal]
   [-storageclass satahd | fchd | slcssd | mlcssd]
sanlun -modify -sanlun lun-name
   [-maxsize max-size] [-size size] [-clonecapacity clone-capacity]
   [-priority premium | high | medium | low | archive]
   [-copies 1 | 2 | 3]
   [-accessbias sequential | random | mixed]
   [-iobias read | write | mixed]
   [-slammer slammer-path]
   [-mapped | -unmapped]
   [-profile oracleasm | highthroughput | normal]
   [-storageclass satahd | fchd | slcssd | mlcssd]
sanlun -delete -sanlun lun-name
sanlun -list [-details] [-sanlun lun-name] [-volgrp volume-group]
```

OPTIONS

- add
Create a new LUN with the name `lun-name`. The maximum size, in gigabytes, specified by the `-maxsize` option.

Valid options are:

- `-maxsize`
  If specified, determines the size to allocate for the new LUN, which can be less than that specified by `-maxsize`. If `-maxsize` is not provided, then its value is set to maxsize.

- `-clonecapacity`
  Specifies the size of extra space to set aside for creating clone LUNs.

- `-priority`
  Specifies the Quality of Service (QoS) priority of the LUN (premium, high, medium, low, or archive).

- `-volgrp`
  Specifies the volume group in which to put the LUN. If you do not specify a volume group, the Pillar Axiom system puts the new LUN in the top-level volume group.

- `-copies`
  Specifies the number of data copies to create. The default is one.

- `-accessbias`
  Specifies the expected access pattern to the LUN (sequential, random, or mixed). If you do not specify the access bias, the Pillar Axiom system uses the default value of mixed.

- `-iobias`
  Specifies whether you expect mainly reads, mainly writes, or have no expectation. The default value is mixed.

- `-slammer`
  Indicates the Slammer to which the LUN is assigned. By default, the Pillar Axiom system chooses the Slammer automatically.

- `-mapped`
  Specifies that the LUN is mapped to specific hosts.

- `-unmapped`
  Enables all hosts to have visibility to the LUN. If neither `-mapped` or `-unmapped` are provided, then `-mapped` is the default value.

- `-profile`
  Indicates which profile should be used for the LUN, either `oracleasm`, `highthroughput`, or `normal`. If no option is provided then `normal` is the default value.

- `-storageclass`
Specifies the type of physical storage in which to assign to the LUN. Each storage class has distinct qualities with regard to performance characteristics of data access. This allows you to explicitly manage volume placement within the overall system storage pool. This option can be omitted if the Pillar Axiom system is configured with only one type of storage class; however, if there are two or more storage classes on the Pillar Axiom system and the storage class is omitted, the command will fail.

Valid options include:

- **satahd**
  - SATA hard drives.
- **fchd**
  - Fibre Channel hard drives.
- **slcssd**
  - SATA single-level cell solid state drives.
- **mlcssd**
  - SATA multi-level cell solid state drives.

**-modify**

Modifies the maximum size, volume group, priority, or redundancy of an existing LUN.

**Note:** The parameters have the same meanings as `sanlun -add`. However, if specified, `-maxsize` cannot be less than the currently allocated size of the LUN and cannot exceed the LUN’s maxsize. The `-maxsize` option cannot be less than the current maxsize value.

You may need to modify the current Quality of Service (QoS) attributes for a LUN, such as increase the capacity or allocate space for Clone LUNs. You can also modify the mapping of a LUN as well as change Slammer and control unit (CU) to which the LUN is assigned.

**-delete**

Deletes an existing LUN.

**-list**

Displays the LUNs configured on a Pillar Axiom system. By default the `sanlun -list` command lists information for all LUNs. If you specify the `-details` option, the `sanlun -list` command lists the configuration details of each LUN, including:

- LUN name
- Size
- Maxsize
- Size of space set aside for clone LUNs
- Priority
- Number of copies
- Access bias
- I/O bias
- Assigned Slammer
**slammer**

Manages the Slammer settings for the Pillar Axiom system.

**SYNTAX**

```bash
slammer -modify -slammer slammer-name [-newname new-slammer-name]
```

```bash
[-linkaggregation aggregation-setting | -nolinkaggregation]
```

```bash
slammer -list [-details] [-slammer slammer-name]
```

**OPTIONS**

- `-modify`

Modifies the settings for a Slammer.

Valid options are:

- `-slammer`
  
  Specifies the name of the Slammer that is to be modified.

- `-newname`
  
  Renames the Slammer.

- `-linkaggregation`
  
  Modifies the link aggregation settings of the Slammer.

**Note:** Only NAS Slammers can have their link aggregation settings modified. Attempting to use link aggregation settings on a non-NAS Slammer results in an error.

The `-linkaggregation` option’s aggregation setting can have these possible values:

- `port0_port1`
- `port2_port3`
- `port4_port5`
- `port6_port7`
- `port0_port1_port2`
- `port4_port5_port6`
- `port0_port1_port2_port3`
- `port4_port5_port6_port7`
- `port01_port23`
- `port45_port67`
- `port012_port456`
- `port0123_port4567`
- `port01_port23_port45_port67`

See [Table 5: Slammer link aggregation port settings](#) for more information.

- `-nolinkaggregation`
Disables link aggregation on the Slammer.

-list

Displays one or more Slammers and their configurations. All of the Slammers are displayed if the -slammer option is omitted. Specifying the -slammer option lists the Slammer configuration for the Slammer with name slammer-name. By default, the slammer -list displays Slammer names. With the -details option, the command also lists the Slammer type (NAS or SAN), and its link aggregation settings.

Table 5 Slammer link aggregation port settings

<table>
<thead>
<tr>
<th>Setting</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>port0_port1</td>
<td>One aggregation set: ports 0 and 1</td>
</tr>
<tr>
<td>port2_port3</td>
<td>One aggregation set: ports 2 and 3</td>
</tr>
<tr>
<td>port4_port5</td>
<td>One aggregation set: ports 4 and 5</td>
</tr>
<tr>
<td>port6_port7</td>
<td>One aggregation set: ports 6 and 7</td>
</tr>
<tr>
<td>port0_port1_port2</td>
<td>One aggregation set: ports 0 through 2</td>
</tr>
<tr>
<td>port4_port5_port6</td>
<td>One aggregation set: ports 4 through 6</td>
</tr>
<tr>
<td>port0_port1_port2_port3</td>
<td>One aggregation set: ports 0 through 3</td>
</tr>
<tr>
<td>port4_port5_port6_port7</td>
<td>One aggregation set: ports 4 through 7</td>
</tr>
<tr>
<td>port01_port23</td>
<td>Two aggregation sets: ports 0 &amp; 1, and ports 2 &amp; 3</td>
</tr>
<tr>
<td>port45_port67</td>
<td>Two aggregation sets: ports 4 &amp; 5, and ports 6 &amp; 7</td>
</tr>
<tr>
<td>port012_port456</td>
<td>Two aggregation sets: ports 0, 1, &amp; 2 and ports 4, 5, &amp; 6</td>
</tr>
<tr>
<td>port0123_port4567</td>
<td>Two aggregation sets: ports 0, 1, 2, &amp; 3 and ports 4, 5, 6, &amp; 7</td>
</tr>
<tr>
<td>port01_port23_port45_port67</td>
<td>Four aggregation sets: ports 0 &amp; 1, ports 2 &amp; 3, ports 4 &amp; 5, and ports 6 &amp; 7</td>
</tr>
</tbody>
</table>
Manages filesystem snapshots on a Pillar Axiom system.

You can create an immediate Snap FS at any time, even if you have scheduled recurring Snap FSs. For example, you might want to create an immediate Snap FS right before you make significant changes to the data itself.

You can create a Snap FS of a SecureWORMfs filesystem for backup purposes, but you cannot restore a SecureWORMfs filesystem from a Snap FS. The system, however, uses a Snap FS of a SecureWORMfs filesystem in the event the SecureWORMfs is recovered using FSCK.

An immediate Snap FS consumes part of the filesystem's capacity.

**SYNTAX**

```
snapfs -add -fileserver name -filesystem fs-name -snap snap-name
snapfs -modify -fileserver name -filesystem fs-name -snap snap-name -newname new-snap-name
snapfs -delete -fileserver name -filesystem fs-name -snap snap-name
snapfs -list [-details] [-fileserver name [-filesystem fs-name [-snap snap-name]]]
snapfs -restore -fileserver name -filesystem fs-name -snap snap-name
```

**OPTIONS**

- **-add**
  Adds a filesystem snapshot.

  Valid options are:
  - **-fileserver**
    Specifies the name of the source File Server.
  - **-filesystem**
    Specifies the name of the source filesystem.
  - **-snap**
    Specifies the name for the newly added snapshot.
Changes the name or maxsize of a partial copy block-level snapshot (or clone) of a filesystem.

Valid options are:

- **--filesystem**
  Specifies the name of the File Server to be modified.

- **-filesystem**
  Specifies the name of the filesystem to be modified.

- **-snap**
  Specifies the name of the snapshot to be modified.

- **-newname**
  Specifies the new name of the snapshot.

- **-list**
  Displays filesystem snapshots, both those created explicitly with `snapfs -add` and those created by snapshot schedules. Also displays the status of completed Snap FS and how much disk space each Snap FS consumes.

Valid options are:

- **--details**
  Displays the snapshot type (hourly, daily, weekly, or ad hoc) and the date and time each snapshot was taken. If you do not specify **-details**, the `snapfs -list` command displays only the name of each snapshot.

- **--filesystem**
  Displays only snapshots for filesystems on the specified File Server.

- **-filesystem**
  Displays only the snapshots for the specified filesystem.

- **-snap**
  Displays only the specified snapshot.

- **-restore**
  Restores the configuration and content of the specified filesystem from the snapshot with the snap name.
**snapfs_schedule**

Manages Snap FS schedules on a Pillar Axiom system.

You can create replication schedules that in turn create a Snap FS of a filesystem at regular intervals.

A Snap FS schedule defines:
- Intervals at which a Snap FS is created.
- Maximum number of Snap FSs to create.

You can delete Snap FS schedules when they are no longer needed, or if you want to create a new schedule.

**SYNTAX**

```
snapfs_schedule -add -fileserver name -filesystem fs-name
   -schedule schedule-name
   -hourly | -daily | -weekly
   [-interval interval] [-keep number]
   [-start start-date-time]
```

```
snapfs_schedule -delete -fileserver name -filesystem fs-name
   -schedule schedule-name
```

```
snapfs_schedule -list [-details]
   [-fileserver name [-filesystem fs-name [-schedule schedule-name]]]
```

**OPTIONS**

- **-add**

  Creates a snapshot schedule for the specified filesystem fs-name.

  Valid options are:
  - **-schedule**
    
    Provides the name of the snapshot schedule. You must specify one of the options **-hourly**, **-daily**, or **-weekly** to select an hourly, daily, or weekly schedule.
  - **-interval**
    
    Specifies the frequency of the snapshot schedule. For example, **-hourly -interval 4** takes a snapshot every 4 hours.
  - **-keep**
Specifies the number of snapshots to keep before automatically deleting the oldest. By default, `snapfs_schedule -add` keeps up to the next time unit: enough hourly snapshots to fill a day, enough daily snapshots to fill a week, or enough weekly snapshots to fill a month.

- `-start`

  Specifies the date and time of the first snapshot for the schedule. By default, the schedule starts immediately.

- `-delete`

  Deletes the named snapshot schedule and all snapshots created by the schedule.

  You can delete a Snap FS schedule when your data replication requirements change.

- `-list`

  Displays snapshot schedules.

  You can display details about all Snap FS replication schedules at one time.
  
  - Schedule start time and recurrence frequency
  - Filesystem on which the Snap FS is based
  - Status of each scheduled Snap FS

  Valid options are:
  
  - `-details`
    
    Displays the type (hourly, daily, or weekly), interval, and number retained. Otherwise, `snapfs_schedule -list` only shows the snapshot schedule names.
  
  - `-filesystem`
    
    Displays only snapshot schedules for filesystems on the specified File Server.
  
  - `-filesystem`
    
    Displays only the snapshot schedules for the specified filesystem.
  
  - `-schedule`
    
    Displays only the specified snapshot schedule.
storage_allocation

Displays filesystem or LUN information for designated Bricks.

The storage_allocation command scans the Pillar Axiom system and downloads the system configuration information. That information determines the allocations displayed by this command. The system configuration information is downloaded to your home directory and is deleted once the command completes.

SYNTAX


[-filesystem name-1 [, name-2...]] | [-filesystem fs-name-1[, fs-name-2...]]

-sanlun lun-name-1[, lun-name-2...]

-brick brick-name-1[, brick-name-2...]

OPTIONS

-list

Displays the allocations of LUNs and filesystems to Bricks.

Valid options are:

- -details

Displays no additional detail and is included for symmetry with the -list options of other commands.

- -wwn

Displays the world wide names of the Bricks.

- -extents

Displays detailed information about the allocated extents.

- -configfile and config-file-name

Bypasses the normal process of collecting and downloading the system configuration information from a logged in Pillar Axiom system. Instead, config-file-name specifies the main (top level) system information tar file downloaded from the system. For example:

storage_allocation list -configfile SystemInfo.tar

The system information tar file must include the system configuration. This method is useful for analyzing Call-Home data or previously saved system configuration data.

- -csv
Directs the output into the specified file as comma-separated values.

- **-fileserver**
  Displays the Bricks that are hosting each filesystem served by the specified File Servers. Multiple File Servers may be specified in a comma-separated list.

- **-filesystem**
  Displays the Bricks hosting the specified filesystem. If multiple filesystems are specified, no filesystem values are permitted. Multiple filesystems may be specified in a comma-separated list.

- **-sanlun**
  Displays the Bricks hosting the specified LUN. When displaying the Brick allocations for either LUNs or filesystems, if either have snapshots or backups, the allocations for the snapshots or backups are displayed after the Brick allocations for the source LUN or filesystem. Multiple LUNs may be specified in a comma-separated list.

- **-brick**
  Displays the LUNs and filesystems that are hosted on the specified Brick. If no Brick name is specified, all Bricks are included.
sysinfo

Collects system information of a Pillar Axiom system.

SYNTAX

sysinfo -download -file download-file
sysinfo -list [-details]

OPTIONS

-collect

Starts the process of collecting system information.

Valid options are:

- -debuglogs

Requests Slammer and Pilot debug logs.
If a Pillar Axiom hardware component fails, the system writes debug logs so that the issue can be investigated. The Pillar World Wide Customer Support Center may request that you collect the debug logs and send them to Pillar Data Systems for analysis. The logs are not customer-readable.

- -eventlog

Requests the Pilot event log.
If you typically filter the display of event log entries as you work, you may want to collect all logged events from the event log, as well as logs for the management interfaces (GUI and CLI). On occasion, the Pillar World Wide Customer Support Center may request that you collect all event information and send the file to Pillar World Wide Customer Support Center for analysis.

- -inventory

Requests the inventory of system components.
You can collect an inventory of serial numbers for the Pillar Axiom system and the hardware components that are configured on the system. Pillar World Wide Customer Support Center may request that you collect the system inventory so that replacement components can be configured before they are shipped to your site.

- -config

Requests the system configuration.
You can collect information about the Pillar Axiom system configuration at any time.
-statistics

Requests system statistics.

The Pillar Axiom storage system generates performance statistics for filesystem backups, logical volumes, and network attached storage (NAS) and storage area network (SAN) protocols. The Pillar World Wide Customer Support Center may request that you collect performance statistics and transmit the data to Pillar World Wide Customer Support Center for analysis.

- systemconfig

Requests system configuration information from the Bricks.

-all

Requests collection of all the above information.

-download

Downloads collected system information requested with the `sysinfo -collect` command into the download.

-list

Displays the collected system information on a Pillar Axiom system.

The `-details` option provides no additional detail and is included for symmetry with the `-list` options of other commands.
**vif**

Manages virtual interface (VIF) ports between external network hardware and the Pillar Axiom system.

**SYNTAX**

```
vif -add -fileserver name -port port-name [-vlan vlan-tag]
   [-mtu mtu] [-netmask netmask] -ip ip-address
vif -modify -fileserver name [-vlan vlan-tag] [-mtu mtu]
   [-netmask netmask] -ip ip-address
vif -delete -fileserver name -ip ip-address
vif -list [-details] [-fileserver name [-ip ip-address]]
```

**OPTIONS**

- **-add**
  Adds a new VIF to a specified File Server.

Valid options are:

- **-port flag**
  Specifies the gigabit Ethernet port for the virtual interface. For example, `/Slammer1/CU1/Port0` specifies Slammer 1, control unit 1, and port 0.

- **-vlan**
  Provides the VLAN tag to use on the port (a number from 1 to 4095). If you don't specify the `-vlan` option, the `vif -add` command configures the port for untagged traffic.

- **-mtu**
  Specifies the maximum transfer unit limitation for the port. If you don't specify the `-mtu` option, the `vif -add` command uses 1500 as the default.

- **-netmask**
  Specifies the netmask for the VIF. If not provided, then the default of `255.255.255.0` is used.

- **-ip-address**
  Provides the IP address of the port in dotted decimal format. The `vif -add` command fails if the File Server name does not exist or if the specified File Server and Slammer Ethernet port already have the specified IP address.

- **-modify**
  Modifies an existing VIF on a specified File Server.
Valid options are:

- **-fileserver**
  Specifies the File Server to be modified.
- **-vlan**
  Specifies the new value for the VLAN tag for the VIF.
- **-mtu**
  Specifies the new value for the maximum transfer unit limitation for the VIF.
- **-netmask**
  Specifies the new value for the netmask for the VIF.
- **-ip**
  Specifies the new value for the IP address for the VIF.

**-delete**

Deletes the specified virtual interface from the File Server and Ethernet port. The `vif -delete` command fails if the specified VIF does not exist.

**-list**

Displays VIF information. With no extra parameters, `vif -list` lists all VIFs on the Pillar Axiom system.

Valid options are:

- **-fileserver**
  Displays virtual interfaces only in the specified File Server.
- **-ip**
  Displays only the virtual interfaces with the specified IP address in the specified File Server.
- **-details**
  Provides no additional detail and is included for symmetry with the `-list` options of other commands.
volgrp

Manages volume groups on a Pillar Axiom system.

A volume group is an object that is used to organize filesystems and LUNs.

**SYNTAX**

```
volgrp -add [-in container-FQN-name] [-limit capacity | -nolimit] -volgrp name

volgrp -modify [-limit capacity | -nolimit] -volgrp volgrp-FQN-name

volgrp -delete -volgrp volgrp-FQN-name

volgrp -list [-details] [-volgrp volgrp-FQN-name1 [, volgrp-FQN-name2 ...]]
```

**OPTIONS**

- **-add**

  Adds the volume group name to the system.

  Valid options are:

  - **-in**

    If specified, identifies the fully qualified name (FQN) of the containing volume group for the new volume group; if not specified, this command creates a top-level volume group under `/`.

  - **-limit**

    Specifies the maximum capacity for objects (filesystems and LUNs) in the volume group expressed in gigabytes (230 bytes).

    By default, the volume group can hold objects of unlimited size.

  - **-nolimit**

    Specifies unlimited size.

    Valid volume group names consist of letters and digits up to 14 characters long.

  - **-volgrp name**

    Specifies the FQN of the new volume group.

    **Note:** This command fails if the Pillar Axiom system already contains a volume group with the specified FQN.

- **-modify**

  Modifies the capacity of an existing volume group.
Valid options are:

- **–limit**
  
  Specifies the maximum capacity for filesystems and LUNs.

- **–nolimit**
  
  Removes the maximum capacity limit for filesystems and LUNs.

- **–volgrp**
  
  Specifies the FQN of the volume group to be modified.

**–delete**

Deletes the volume group name, where name is the FQN of the volume group to be deleted. The `volgrp –delete` command fails if the volume group contains any objects (filesystems or LUNs) or if the specified volume group name does not exist.

**–list**

Displays volume groups. With no FQNs specified, `volgrp –list` displays the FQNs of all volume groups.

You can limit the listing to specific volume groups by specifying their names. The names can be either fully qualified FQNs of a specific volume group, or an FQN that identifies the containing volume group. In this latter case, all volume groups found in the tree rooted in the specified containing volume group is listed.

By default, `volgrp –list` simply provides the FQN names of defined volume groups. **–details** also shows the capacity limit, parent volume group, and any background activity for each volume group.
APPENDIX A

System Management Summary

Pillar Axiom System Quantity Range Values

The table below defines the minimum and maximum ranges for objects in the Pillar Axiom storage system.

Note: A Pillar Axiom system uses binary units to calculate and display disk drive capacities and logical volume sizes:

- 1 MB = 1024^2 (1,048,576) bytes
- 1 GB = 1024^3 (1,073,741,824) bytes
- 1 TB = 1024^4 (1,099,511,627,776) bytes

Table 6 Quantity ranges

<table>
<thead>
<tr>
<th>Object</th>
<th>Quantity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>File Servers</td>
<td>Maximum:</td>
</tr>
<tr>
<td></td>
<td>4, for a NAS Slammer on a Pillar Axiom 300 system.</td>
</tr>
<tr>
<td></td>
<td>8, for a NAS Slammer on a Pillar Axiom 500 or Pillar Axiom 600 system.</td>
</tr>
<tr>
<td></td>
<td>Note: In multi-Slammer systems, virtual interfaces (VIFs) that are associated</td>
</tr>
<tr>
<td></td>
<td>with a File Server can be configured on multiple Slammers. The presence of</td>
</tr>
<tr>
<td></td>
<td>VIFs is what counts against the limit. Such a File Server is considered to</td>
</tr>
<tr>
<td></td>
<td>be present on each Slammer on which it has VIFs.</td>
</tr>
<tr>
<td>Note:</td>
<td>Virtual local area network (VLAN) tagging does not need to be enabled for</td>
</tr>
<tr>
<td></td>
<td>more than one File Server. If VLAN tagging is enabled, File Servers do not</td>
</tr>
<tr>
<td></td>
<td>require a unique VLAN tag.</td>
</tr>
<tr>
<td></td>
<td>Minimum: 1</td>
</tr>
<tr>
<td></td>
<td>Maximum: 32</td>
</tr>
<tr>
<td>Virtual interfaces (VIFs) for each File Server</td>
<td></td>
</tr>
<tr>
<td>Object</td>
<td>Quantity range</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>VIFs for each Slammer port</td>
<td>Maximum: 16</td>
</tr>
<tr>
<td><strong>Note</strong>: A particular virtual interface (VIF) may belong to any File Server</td>
<td></td>
</tr>
<tr>
<td>VLANs for each File Server</td>
<td>Minimum: 0</td>
</tr>
<tr>
<td></td>
<td>Maximum: 32</td>
</tr>
<tr>
<td>Network routes for each File Server</td>
<td>Minimum: 0</td>
</tr>
<tr>
<td></td>
<td>Maximum (default): 8</td>
</tr>
<tr>
<td></td>
<td>Maximum (static): 16</td>
</tr>
<tr>
<td>NIS configuration file size</td>
<td>Maximum: 50 MB</td>
</tr>
<tr>
<td><strong>Note</strong>: Size limit for each Network Information Service (NIS) file (/etc/passwd, /etc/group, and /etc/netgroup) that is uploaded to the Pilot.</td>
<td></td>
</tr>
<tr>
<td>Upload file size</td>
<td>Maximum: 650 MB</td>
</tr>
<tr>
<td>Volume groups</td>
<td>Minimum: 1</td>
</tr>
<tr>
<td></td>
<td>Maximum: 5000</td>
</tr>
<tr>
<td><strong>Note</strong>: A volume group can contain up to 100 nested groups. Nesting is limited to four levels. Also, the root volume (/Volumes) is always available.</td>
<td></td>
</tr>
<tr>
<td>Filesystems</td>
<td>Minimum: 1</td>
</tr>
<tr>
<td></td>
<td>Maximum (system): 1024</td>
</tr>
<tr>
<td></td>
<td>Maximum (NAS Slammer): 1024</td>
</tr>
<tr>
<td><strong>Note</strong>: Clone FSs factor into these limits.</td>
<td></td>
</tr>
<tr>
<td>Filesystem size</td>
<td>Minimum: 1 to 2 GB. The exact value depends on these factors</td>
</tr>
<tr>
<td></td>
<td>● Brick type (Fibre Channel or SATA)</td>
</tr>
<tr>
<td></td>
<td>● RAID geometry (RAID 5 or Distributed RAID)</td>
</tr>
<tr>
<td></td>
<td>● Strip size (1 MB or normal)</td>
</tr>
<tr>
<td></td>
<td>Maximum: System capacity</td>
</tr>
<tr>
<td><strong>Note</strong>: All capacity values must be in increments of 1 GB.</td>
<td></td>
</tr>
</tbody>
</table>
### Table 6 Quantity ranges (continued)

<table>
<thead>
<tr>
<th>Object</th>
<th>Quantity range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap FSs</td>
<td>Maximum (for a filesystem): 250 Max (for a Pillar Axiom system): 16,000</td>
</tr>
<tr>
<td>Pillar Axiom SecureWORMfs retention period</td>
<td>Minimum: 0 days to 1000 years Max: 0 days to 1000 years Default: 0 days to 1000 years</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Maximum must be greater than or equal to the minimum.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Default must be greater than or equal to the minimum and less than or equal to the maximum.</td>
</tr>
<tr>
<td>NFS exports</td>
<td>Maximum: 1000 for each File Server</td>
</tr>
<tr>
<td>NFS host entries</td>
<td>Maximum: 4000 for each File Server</td>
</tr>
<tr>
<td>CIFS shares</td>
<td>Maximum: 128 for each File Server</td>
</tr>
<tr>
<td>CIFS connections</td>
<td>Maximum for each NAS Slammer (specified memory is the total combined memory of both control units):</td>
</tr>
<tr>
<td></td>
<td>• 400 for 6 GB memory (Pillar Axiom 300 systems only)</td>
</tr>
<tr>
<td></td>
<td>• 1200 for 12 GB memory</td>
</tr>
<tr>
<td></td>
<td>• 6000 for 24 GB memory</td>
</tr>
<tr>
<td></td>
<td>• 12,000 for 48 GB memory (Pillar Axiom 600 systems only)</td>
</tr>
<tr>
<td>CIFS security groups</td>
<td>Maximum: 1024 for each Common Internet File System (CIFS) user</td>
</tr>
<tr>
<td>SAN LUNs</td>
<td>Maximum: 4096 visible for any given SAN Slammer</td>
</tr>
<tr>
<td></td>
<td>4096 visible across all SAN Slammers in a given system (1024 if all LUNs have non-zero clone repositories)</td>
</tr>
<tr>
<td></td>
<td>255 visible for each host</td>
</tr>
</tbody>
</table>
|                                             | **Note:** A visible (active) SAN LUN requires one virtual LUN (VLUN). A clone of a SAN LUN requires a VLUN for the metadata and another for the data repository. If that clone is active, a third VLUN is required, making a total of four VLUNs for the SAN LUN and its clone.
<table>
<thead>
<tr>
<th>Object</th>
<th>Quantity range</th>
</tr>
</thead>
</table>
| SAN LUN size | Minimum: 1 to 2 GB. The exact value depends on these factors  
- Brick type (Fibre Channel or SATA)  
- RAID geometry (RAID 5 or Distributed RAID)  
- Strip size (1 MB or normal)  
Maximum: System capacity  
**Note:** All capacity values must be in increments of 1 GB. |
| Pillar Axiom Path Manager (APM) | Maximum Pillar Axiom systems: 8 for each SAN host |
| APM data paths | Maximum: 32 to each LUN |
| APM FC HBA ports | Maximum: 32 for each SAN host |
| Clone LUNs | Maximum:  
- Number of available LUNs  
- 13 active at a time (for a single source) |
| iSCSI | Maximums for each iSCSI port:  
- 256 TCP connections  
- 256 iSCSI initiators  
- 512 simultaneous commands  
Maximum for each LUN: 32 persistent reservation registration keys |
| Administrator accounts | Minimum: 2  
Maximum: 23  
**Note:** Minimum provides for the Primary system administrator and system administrator |
| Administrator sessions | Maximum: 10 simultaneous  
**Note:** Two sessions are reserved for the Primary system administrator and system administrator. |
| NDMP sessions | Maximum: 10 concurrent |
Pillar Axiom System Data Type and Length Ranges

The table below defines the data types and length ranges for fields in the Pillar Axiom storage system.

### Table 7: Data type and length ranges

<table>
<thead>
<tr>
<th>Field</th>
<th>Length or Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Names for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Alerts</td>
<td>1 through 16 8-bit Unicode Transformation Format (UTF-8) printable characters.</td>
<td>Embedded spaces are permitted. Invalid characters:</td>
</tr>
<tr>
<td>- Brick storage enclosures</td>
<td></td>
<td>• Non-printable characters, including ASCII 0 through 31</td>
</tr>
<tr>
<td>- File Servers</td>
<td></td>
<td>• / (slash) and \ (backslash)</td>
</tr>
<tr>
<td>- Filesystems</td>
<td></td>
<td>• . and .. (dot and dot-dot alone)</td>
</tr>
<tr>
<td>- Pillar Axiom system</td>
<td></td>
<td>• Embedded tabs</td>
</tr>
<tr>
<td>- Schedules</td>
<td></td>
<td>Pillar Axiom processing:</td>
</tr>
<tr>
<td>- Slammer storage controllers</td>
<td></td>
<td>• Leading and trailing white space is stripped</td>
</tr>
<tr>
<td>- Volume groups</td>
<td></td>
<td>• Comparison is case sensitive</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Tip:</strong> Names of filesystems that you export to NFS users should contain only US-ASCII characters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note:</strong> You can have filesystems with the same name if the filesystems are not in the same volume group or File Server.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Names for LUNs</td>
<td>1 through 82 UTF-8 printable characters</td>
<td>Invalid characters:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Nonprintable characters, including ASCII 0 through 31</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• / (slash) and \ (backslash)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• . and .. (dot and dot-dot alone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Embedded tabs</td>
</tr>
<tr>
<td>Names for SAN hosts</td>
<td>1 through 63 UTF-8 printable characters</td>
<td></td>
</tr>
<tr>
<td>Names for:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- DNS domains</td>
<td>1 through 256 UTF-8 printable characters</td>
<td></td>
</tr>
<tr>
<td>- NIS domains</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 7 Data type and length ranges  (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Length or Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Snap FS name</td>
<td>1 through 26 UTF-8 printable characters</td>
<td>Invalid characters:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ / (slash) and \ (backslash)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ . and .. (dot and dot-dot alone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ Embedded tabs</td>
</tr>
<tr>
<td>Snap FS base (mount) name</td>
<td>8 through 33 UTF-8 printable characters</td>
<td>Invalid characters:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ / (slash) and \ (backslash)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ . and .. (dot and dot-dot alone)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ Embedded tabs</td>
</tr>
<tr>
<td>Administrator user name</td>
<td>1 through 16 UTF-8 printable characters</td>
<td>Case-sensitive value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Invalid characters:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ Embedded spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ / (slash)</td>
</tr>
<tr>
<td>Administrator password</td>
<td>6 through 16 UTF-8 printable characters</td>
<td>⚫ Case-sensitive value</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ Embedded spaces are permitted</td>
</tr>
<tr>
<td>Administrator login attempts</td>
<td>1 through 20 (integer)</td>
<td></td>
</tr>
<tr>
<td>Optional entries for administrator full names</td>
<td>0 through 40 UTF-8 printable characters</td>
<td>Embedded spaces are permitted.</td>
</tr>
<tr>
<td>Optional entries for telephone numbers</td>
<td>0 through 80 UTF-8 printable characters</td>
<td>Embedded spaces are permitted.</td>
</tr>
<tr>
<td>Alert descriptions</td>
<td>0 through 80 UTF-8 printable characters</td>
<td>Embedded spaces are permitted.</td>
</tr>
<tr>
<td>Email address (emailuser@host)</td>
<td>1 through 64 characters for email user</td>
<td>a-z A-Z 0-9 ! # $ % &amp; ' * + - / = ? ^ _ ` {</td>
</tr>
<tr>
<td></td>
<td>1 through 255 characters for host</td>
<td>a-z A-Z 0-9 - . are permitted, except that:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ 0-9 - . cannot be the first character.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>⚫ . - cannot be the last character.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>An IP address cannot be the host part of the email address.</td>
</tr>
</tbody>
</table>
Table 7 Data type and length ranges  (continued)

<table>
<thead>
<tr>
<th>Field</th>
<th>Length or Type</th>
<th>Notes</th>
</tr>
</thead>
</table>
| NDMP account user name | 1 through 16 UTF-8 printable characters | Case-sensitive value Invalid characters:  
  - Embedded spaces  
  - / (slash) |
| NDMP account password | 6 through 8 ASCII printable characters | Case-sensitive value |
| Names for CIFS:  
  - Servers  
  - Domains | 1 through 15 ASCII printable characters 33 through 126 | |
| Comments for CIFS servers | 1 through 44 ASCII printable characters 32 through 126 | Embedded spaces are permitted. |
| Names for CIFS shares | 1 through 80 ASCII printable characters 32 through 126 | Embedded spaces are permitted. Invalid characters:  
  - / (slash) and \ (backslash)  
  - : (colon)  
  - control character |
| Comments for CIFS shares | 0 through 256 ASCII printable characters 32 through 126 | Embedded spaces are permitted. |
| CIFS administrator (for domain controller):  
  - User name  
  - Password | 0 through 256 UTF-8 characters | Case-sensitive value Invalid characters:  
  - Embedded spaces  
  - / (slash) |
<p>| Directory paths for CIFS shares | 1024 bytes and start with a \ (backslash) | Path includes a filesystem name, which can consist of up to 40 UTF-8 printable characters, plus a NULL terminator. |
| Directory paths for NFS exports | UTF-8 characters up to 1024 bytes in length; start with a / (slash) | Path includes a filesystem name, which can consist of up to 40 UTF-8 printable characters, plus a NULL terminator. |</p>
<table>
<thead>
<tr>
<th>Field</th>
<th>Length or Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFS host name</td>
<td>UTF-8 characters up to 255 bytes in length</td>
<td>Host format:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● IP address in dotted-decimal format</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Subnet address with both the subnet and mask in dotted-decimal format</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Host name</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Asterisk (*), to export to all NFS clients (everyone)</td>
</tr>
<tr>
<td>IP addresses</td>
<td>0 through 255, in all four parts</td>
<td>IP version 4 (IPv4) dotted-decimal notation (xxx.xxx.xxx.xxx)</td>
</tr>
<tr>
<td>Virtual LAN (VLAN) ID (tag)</td>
<td>0 through 4094 (integer)</td>
<td>● 1 through 4094 denote that VLAN Tagging is enabled.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● 0 denotes that VLAN Tagging is disabled.</td>
</tr>
<tr>
<td>SNMP community string</td>
<td>0 through 255 ASCII printable characters 33 through 126</td>
<td>Invalid characters:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Embedded spaces</td>
</tr>
<tr>
<td></td>
<td></td>
<td>● Control characters</td>
</tr>
<tr>
<td>Chap Secrets</td>
<td>100 UTF-8 characters</td>
<td>Non-character (for example, integer) CHAP secret values are not supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHAP secrets should be more than 12 bytes if IPsec is not used on insecure network segments.</td>
</tr>
</tbody>
</table>
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