

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:

- `pdsccli`: 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 `pdsccli` 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 `pdsccli` 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 to 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 -xzf 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 `pdsccli`. For more information about the `pdsccli`, see the *Pillar Axiom CLI Reference Guide*.

Table 1 File names and descriptions

File name	Description
<code>cliSampleInput</code>	Files specifically used for <code>pdscli</code> and are not related to the Pillar Axiom CLI.
<code>cliSampleOutput</code>	
<code>CommandOutputFormatters</code>	Specifically used within the Pillar Axiom CLI, these files assist with display formatting.
<code>Help</code>	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. 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 <code>Help</code> folder (of the <code>root</code> directory where you extracted the utility).
<code>xml</code>	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.
<code>.login_message.txt</code>	Specifically used by the Pillar Axiom CLI. You can modify the contents of this file if you wish to see a different message displayed when you login. 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.
<code>axiomcli</code>	The executable file used to launch the Pillar Axiom Command Line Interface tool.

Table 1 File names and descriptions

File name	Description
pdscli	The executable file used to launch the Pillar Data Systems Command Line Interface tool.

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

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

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

Administrator role	Privileges
Primary System Administrator	Performs all configuration, management, and monitoring tasks. This account cannot be deleted or disabled.
Administrator 1	Performs all configuration, management, and monitoring tasks.
Administrator 2	Performs all tasks except: <ul style="list-style-type: none"> • Create and manage File Servers and administrator accounts. • Modify global, Small Network Management (SNMP), and Network Data Management Protocol (NDMP) settings. • Modify software or hardware configurations. • Shut down the system.
Monitor	Displays system information only; cannot modify the configuration. Can modify own administrator account attributes.
Support	Performs limited customer service-only functions; cannot modify the configuration. 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.

- `-retypepassword`

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 effect 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

-add

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`

- Brick: /Brick005
- Brick DiskDrive: /Brick005/Disk04
- Brick PowerSupplyFanModule: /Brick1/PSFM01
- Brick ESMModule: /Brick1/ESM2
- Brick SpareDiskDrive: /Brick1/Spare01
- Brick RAIDController: /Brick1/CU0

-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 ESMModule: /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]
    [-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 -sourcefilesystem 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 clonefilesystems 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 clonefilesystems 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`

- 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.

event_log

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

Severity	Explanation
Critical	Access to data is compromised.
Error	Administrator action is required to prevent a hard error.
Warning	Administrator action is required to prevent a soft error from becoming a hard error or critical event.
Informational	A configuration change has been detected or another non-error event has occurred.

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 -dnsserver dns-ip1 [, 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 -modify [-gateway gateway-ip] [-ip ip-address]
    [-port port-name] [-vlan vlan-tag] [-mtu mtu]
    [-netmask netmask] [-comment comment] [-newfileserver new-name]
    [-dnsdomain domain] [-dnsserver dns-ip1 [-dnsserver 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.
- `-nissserver`
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 `fileserv` `-add` command. In addition, the File Server can be renamed using the `-new fileserv 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 `fileserv -modify`, then the command uploads a new or updated copy of the specified file.

Note: The `fileserv -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 filesystems.

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.

`-list`

Lists one or more File Servers. If you do not enter a specific File Server, `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 `-fileserver` option.

The `-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 | highthroughput | 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] [-maxsize max-size] [-increment incr-size]
        [-volgrp volume-group] [-priority premium | high | medium
        | low | archive]
        [-copies 1|2] [-clonecapacity clone-capacity]
        [-profile normal | highthroughput | oracleasm]
        [-newname new-name]
        [-slammer slammer-node]
        [-storageclass satahd | fchd | slcssd | mlcssd]
filesystem -delete -fileserver name -filesystem fs-name
filesystem -list [-details] [-fileserver 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.
- `-fileserver`
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 -sourcefileservers source-file-server
      -sourcefilesystem source-file-system
      -fileservers 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:

- `-sourcefileservers`
Specifies the source File Server of the source filesystem.
- `-sourcefilesystem`
Specifies the filesystem source. The duplicated filesystem is automatically detached from the source filesystem.
- `-fileservers`
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.

- `slcssd`

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.
- slcssd
SATA single-level cell solid state drives.
- mlcssd
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.

nas

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.
- `-fileserver`
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

```
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:

- `-fileserver`

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

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

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

`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

Setting	Definition
port0_port1	One aggregation set: ports 0 and 1
port2_port3	One aggregation set: ports 2 and 3
port4_port5	One aggregation set : ports 4 and 5
port6_port7	One aggregation set : ports 6 and 7
port0_port1_port2	One aggregation set: ports 0 through 2
port4_port5_port6	One aggregation set: ports 4 through 6
port0_port1_port2_port3	One aggregation set: ports 0 through 3
port4_port5_port6_port7	One aggregation set: ports 4 through 7
port01_port23	Two aggregation sets: ports 0 & 1, and ports 2 & 3
port45_port67	Two aggregation sets: ports 4 & 5, and ports 6 & 7
port012_port456	Two aggregation sets: ports 0, 1, & 2 and ports 4, 5, & 6
port0123_port4567	Two aggregation sets: ports 0, 1, 2, & 3 and ports 4, 5, 6, & 7
port01_port23_port45_port67	Four aggregation sets: ports 0 & 1, ports 2 & 3, ports 4 & 5, and ports 6 & 7

snapfs

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.

-modify

Changes the name or maxsize of a partial copy block-level snapshot (or clone) of a filesystem.

Valid options are:

- `-fileserver`

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.

- `-fileserver`

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.

- `-fileserver`

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

```
storage_allocation -list [-details] [-wwn] [-extents]
[-configfile config-file-name] [-csv csv-file-name]
[-fileserver 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 -collect [-debuglogs] [-eventlog] [-inventory] [-config] [-statistics] [-systemconfig] [-all]`

`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

Object	Quantity range
File Servers	<p>Maximum:</p> <ul style="list-style-type: none"> 4, for a NAS Slammer on a Pillar Axiom 300 system. 8, for a NAS Slammer on a Pillar Axiom 500 or Pillar Axiom 600 system. <p>Note: In multi-Slammer systems, virtual interfaces (VIFs) that are associated with a File Server can be configured on multiple Slammers. The presence of VIFs is what counts against the limit. Such a File Server is considered to be present on each Slammer on which it has VIFs.</p> <p>Note: Virtual local area network (VLAN) tagging does not need to be enabled for more than one File Server. If VLAN tagging is enabled, File Servers do not require a unique VLAN tag.</p>
Virtual interfaces (VIFs) for each File Server	<p>Minimum: 1 Maximum: 32</p>

Table 6 Quantity ranges (continued)

Object	Quantity range
VIFs for each Slammer port	Maximum: 16 Note: A particular virtual interface (VIF) may belong to any File Server
VLANs for each File Server	Minimum: 0 Maximum: 32
Network routes for each File Server	Minimum: 0 Maximum (default): 8 Maximum (static): 16
NIS configuration file size	Maximum: 50 MB Note: Size limit for each Network Information Service (NIS) file (/etc/passwd, /etc/group, and /etc/netgroup) that is uploaded to the Pilot.
Upload file size	Maximum: 650 MB
Volume groups	Minimum: 1 Maximum: 5000 Note: A volume group can contain up to 100 nested groups. Nesting is limited to four levels. Also, the root volume (/volumes) is always available.
Filesystems	Minimum: 1 Maximum (system): 1024 Maximum (NAS Slammer): 1024 Note: Clone FSs factor into these limits.
Filesystem size	Minimum: 1 to 2 GB. The exact value depends on these factors <ul style="list-style-type: none"> • 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.

Table 6 Quantity ranges (continued)

Object	Quantity range
Snap FSs	Maximum (for a filesystem): 250 Maximum (for a Pillar Axiom system): 16,000
Pillar Axiom SecureWORMfs retention period	Minimum: 0 days to 1000 years Maximum: 0 days to 1000 years Default: 0 days to 1000 years Note: Maximum must be greater than or equal to the minimum. Note: Default must be greater than or equal to the minimum and less than or equal to the maximum.
NFS exports	Maximum: 1000 for each File Server
NFS host entries	Maximum: 4000 for each File Server
CIFS shares	Maximum: 128 for each File Server
CIFS connections	Maximum for each NAS Slammer (specified memory is the total combined memory of both control units): <ul style="list-style-type: none"> • 400 for 6 GB memory (Pillar Axiom 300 systems only) • 1200 for 12 GB memory • 6000 for 24 GB memory • 12,000 for 48 GB memory (Pillar Axiom 600 systems only)
CIFS security groups	Maximum: 1024 for each Common Internet File System (CIFS) user
SAN LUNs	Maximum: <ul style="list-style-type: none"> • 4096 visible for any given SAN Slammer • 4096 visible across all SAN Slammers in a given system (1024 if all LUNs have non-zero clone repositories) • 255 visible for each host 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 6 Quantity ranges (continued)

Object	Quantity range
SAN LUN size	Minimum: 1 to 2 GB. The exact value depends on these factors <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • Number of available LUNs • 13 active at a time (for a single source)
iSCSI	Maximums for each iSCSI port: <ul style="list-style-type: none"> • 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

Field	Length or Type	Notes
Names for: <ul style="list-style-type: none"> • Alerts • Brick storage enclosures • File Servers • Filesystems • Pillar Axiom system • Schedules • Slammer storage controllers • Volume groups 	1 through 16 8-bit Unicode Transformation Format (UTF-8) printable characters. UTF-8 is described in RFC 2279, which you can find online with any internet search engine.	Embedded spaces are permitted. Invalid characters: <ul style="list-style-type: none"> • Non-printable characters, including ASCII 0 through 31 • / (slash) and \ (backslash) • . and .. (dot and dot-dot alone) • Embedded tabs Pillar Axiom processing: <ul style="list-style-type: none"> • Leading and trailing white space is stripped • Comparison is case sensitive <p>Tip: Names of filesystems that you export to NFS users should contain only US-ASCII characters.</p> <p>Note: You can have filesystems with the same name if the filesystems are not in the same volume group or File Server.</p>
Names for LUNs	1 through 82 UTF-8 printable characters	Invalid characters: <ul style="list-style-type: none"> • Nonprintable characters, including ASCII 0 through 31 • / (slash) and \ (backslash) • . and .. (dot and dot-dot alone) • Embedded tabs
Names for SAN hosts	1 through 63 UTF-8 printable characters	
Names for: <ul style="list-style-type: none"> • DNS domains • NIS domains 	1 through 256 UTF-8 printable characters	

Table 7 Data type and length ranges (continued)

Field	Length or Type	Notes
Snap FS name	1 through 26 UTF-8 printable characters	Invalid characters: <ul style="list-style-type: none"> • / (slash) and \ (backslash) • . and .. (dot and dot-dot alone) • Embedded tabs
Snap FS base (mount) name	8 through 33 UTF-8 printable characters	Invalid characters: <ul style="list-style-type: none"> • / (slash) and \ (backslash) • . and .. (dot and dot-dot alone) • Embedded tabs
Administrator user name	1 through 16 UTF-8 printable characters	Case-sensitive value Invalid characters: <ul style="list-style-type: none"> • Embedded spaces • / (slash)
Administrator password	6 through 16 UTF-8 printable characters	<ul style="list-style-type: none"> • Case-sensitive value • Embedded spaces are permitted.
Administrator login attempts	1 through 20 (integer)	
Optional entries for administrator full names	0 through 40 UTF-8 printable characters	Embedded spaces are permitted.
Optional entries for telephone numbers	0 through 80 UTF-8 printable characters	Embedded spaces are permitted.
Alert descriptions	0 through 80 UTF-8 printable characters	Embedded spaces are permitted.
Email address (emailuser@host)	1 through 64 characters for email user	a-z A-Z 0-9 ! # \$ % & ' * + - / = ? ^ _ ` { } ~ . are permitted, except that . (dot) cannot be the first or last character.
	1 through 255 characters for host	a-z A-Z 0-9 - . are permitted, except that: <ul style="list-style-type: none"> • 0-9 - . cannot be the first character. • . - cannot be the last character. An IP address cannot be the host part of the email address.

Table 7 Data type and length ranges (continued)

Field	Length or Type	Notes
NDMP account user name	1 through 16 UTF-8 printable characters	Case-sensitive value Invalid characters: <ul style="list-style-type: none"> • Embedded spaces • / (slash)
NDMP account password	6 through 8 ASCII printable characters	Case-sensitive value
Names for CIFS: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • / (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): <ul style="list-style-type: none"> • User name • Password 	0 through 256 UTF-8 characters	Case-sensitive value Invalid characters: <ul style="list-style-type: none"> • Embedded spaces • / (slash)
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.

Table 7 Data type and length ranges (continued)

Field	Length or Type	Notes
NFS host name	UTF-8 characters up to 255 bytes in length	Host format: <ul style="list-style-type: none"> • IP address in dotted-decimal format • Subnet address with both the subnet and mask in dotted-decimal format • Host name • Asterisk (*), to export to all NFS clients (everyone)
IP addresses	0 through 255, in all four parts	IP version 4 (IPv4) dotted-decimal notation (xxx.xxx.xxx.xxx)
Virtual LAN (VLAN) ID (tag)	0 through 4094 (integer)	<ul style="list-style-type: none"> • 1 through 4094 denote that VLAN Tagging is enabled. • 0 denotes that VLAN Tagging is disabled.
SNMP community string	0 through 255 ASCII printable characters 33 through 126	Invalid characters: <ul style="list-style-type: none"> • Embedded spaces • Control characters
Chap Secrets	100 UTF-8 characters	Non-character (for example, integer) CHAP secret values are not supported. CHAP secrets should be more than 12 bytes if IPsec is not used on insecure network segments.

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