EMC Navisphere Command Line Interface (CLI)

REFERENCE

For Basic, Access Logix, MetaLUN, Reserved LUN Pool, iSCSI, LUN Migration, Domain and Security Commands

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Preface

As part of an effort to improve and enhance the performance and capabilities of its product line, EMC from time to time releases revisions of its hardware and software. Therefore, some functions described in this manual may not be supported by all revisions of the software or hardware currently in use. For the most up-to-date information on product features, refer to your product release notes.

If a product does not function properly or does not function as described in this manual, please contact your EMC representative.

Audience

This guide is part of the Navisphere® documentation set, and is intended for use by those who will use CLI commands to configure, manage, or obtain the status of EMC® CLARiiON® disk-array storage systems.

Readers of this guide are expected to be familiar with the following topics:

- The operating system running on the servers you will manage.
- Storage-system components and configurations.

For introductory information, refer to the appropriate configuration planning guide for your storage system.

Organization

This manual contains nine chapters, as follows.

Chapter 1	Introduces Navisphere and the CLI.
Chapter 2	Introduces **naviseccli, navicli** and **navicli.jar** commands.
Chapter 3	Explains the basic CLI commands; that is, those that are not specifically designed to manage optional features.
Chapter 4	Explains the storage group CLI commands for managing Access Logix™ .
Chapter 5	Explains the LUN expansion (metaLUN) CLI commands.
Chapter 6	Explains how to configure the reserved LUN pool and describes the CLI commands that you can use if SnapView is installed on your system.
Chapter 7	Explains the iSCSI commands.
Chapter 8	Explains the LUN migration commands.
Chapter 9	Explains the domain and security commands.
Appendix A	Lists the error codes you might receive from CLI commands.
Appendix B	Lists the commands not supported by Secure CLI.

Note: CLI commands for the EMC MirrorView™/Synchronous software are explained in the MirrorView/Synchronous CLI manual; CLI commands for the EMC MirrorView/Asynchronous software are explained in the MirrorView/Asynchronous CLI manual; CLI commands for the EMC SAN Copy™ software are explained in the SAN Copy CLI manual; and CLI commands for the EMC SnapView™ software (for both snapshots and LUN clones) are explained in the SnapView admsnap and CLI manual.

Related documentation

Related documents include:

For FC-series and C-series storage systems, refer to the most recent version of the *EMC Navisphere Command Line Interface (CLI) Reference* (P/N 069001038).

For the most current management and security content for CX3-series, CX-series and supported AX-series storage systems, refer to *EMC Navisphere Manager Administrator's Guide* (P/N 300-003-511). For FC-series and C-series storage systems management and security content, refer to the most recent versions of

- *EMC Navisphere Manager Administrator's Guide* (P/N 06900125).
- *EMC Navisphere Security Domains, Mulit-Domains and User Accounts* (P/N 069001124).

EMC MirrorView/Synchronous Command Line Interface (CLI) Reference (P/N 069001184)

EMC MirrorView/Asynchronous Command Line Interface (CLI) Reference (P/N 300-001-335)

EMC SAN Copy Command Line Interface (CLI) Administrator's Guide (P/N 069001189)

EMC SnapView admsnap and Command Line Interface (CLI) Administrator's Guide (P/N 069001181)

Conventions used in this guide

EMC uses the following conventions for notes, cautions, warnings, and danger notices.

Note: A note presents information that is important, but not hazard-related.

CAUTION

A caution contains information essential to avoid data loss or damage to the system or equipment. The caution may apply to hardware or software.

Typographical conventions

This manual uses the following format conventions:

This typeface	Indicates text (including punctuation) that you type verbatim, all commands, pathnames, filenames, and directory names. It indicates the name of a dialog box, field in a dialog box, menu, menu option, or button.
This typeface	Represents variables for which you supply the values; for example, the name of a directory or file, your username or password, and explicit arguments to commands.

`This typeface`	Represents a system response (such as a message or prompt), a file or program listing.
`[ ]`	Encloses optional entries.
|	Separates alternative parameter values; for example: *LUN-name* | *LUN-number* means you can use either the LUN-name or the LUN-number.

Finding current information

The most up-to-date information about the EMC Navisphere CLI is posted on the EMC Powerlink website. We recommend that you download the latest information before you run the CLI commands.

To access EMC Powerlink, use the following link:

http://Powerlink.EMC.com

After you log in, select **Support > Document Library** and find the following:

- *Navisphere Host Agent/CLI and Utilities Release Notes* (P/N 085090643)
- The latest version of this manual that is applicable to your software revision
- *EMC Installation Roadmap for CX3-Series, CX-Series, AX-Series, and FC-Series Storage Systems*, which provides a checklist of the tasks that you must complete to install your storage system in a storage area network (SAN) or direct connect configuration.

Where to get help

EMC support, product, and licensing information can be obtained as follows.

Product information — For documentation, release notes, software updates, or for information about EMC products, licensing, and service, go to the EMC Powerlink website (registration required) at:

`http://Powerlink.EMC.com`

Technical support — For technical support, go to EMC WebSupport on Powerlink. To open a case on EMC WebSupport, you must be a WebSupport customer. Information about your site configuration and the circumstances under which the problem occurred is required.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send a message to techpub_comments@EMC.com with your opinions of this guide.

1 About EMC Navisphere CLI

This manual includes content for CX3 UltraScale™ series (models 20, 40, and 80), CX-series, and AX-series storage systems. For FC-series and C-series storage systems, refer to the most recent version of the *EMC Navisphere Command Line Interface (CLI)* (P/N 069001038).

This chapter describes the EMC® Navisphere® storage-system management configurations and architecture. Major topics are:

- Terminology 1-2
- About EMC Navisphere software 1-5
- Storage-system configuration and management with the CLI . 1-13
- AX-series support 1-15

Note: EMC Navisphere CLI supports both shared and unshared storage systems. A shared storage system has the Access Logix™ option; an unshared storage system does not have it.

Terminology

Term	Meaning
Access Logix™ software	See **shared storage system**.
Agent	EMC Navisphere® Agent that runs on a server; see also Host Agent.
AX-series storage system	AX150SC, AX100SC, AX150SCi, AX100SCi, AX150, AX100, AX150i and AX100i storage systems, where AX150SC, AX100SC, AX150SCi and AX100SCi are single-SP storage systems; AX150, AX100, AX150i and AX100i are dual-SP storage systems.
CDE	EMC CLARiiON® Driver Extensions failover software.
CHAP	Challenge Handshake Authentication Protocol is an authentication mechanism used by iSCSI targets to authenticate initiators or by iSCSI initiators to authenticate targets (mutual CHAP).
CLI	EMC Navisphere Command Line Interface.
CX3-series storage system	CX3-series model 20, CX3-series model 40, and CX3-series model 80 storage systems.
CX3-series model 20	CX3-20, CX3-20c storage systems.
CX3-series model 40	CX3-40, CX3-40c storage systems.
CX3-series model 80	CX3-80 storage system.
CX-series storage system	CX200, CX300-series, CX400, CX500-series, CX600, CX700 storage systems.
domain	In the context of Navisphere software, a group of storage systems that you can manage from a single management application session. You can divide your storage systems into multiple domains as long as each storage system is in only one domain. Each domain has a directory that defines the storage systems in the domain.
EMC Navisphere Manager	The EMC Navisphere Manager application.
Event Monitor	EMC Navisphere Event Monitor.
FLARE™ software	Formerly known as Core or Base software.

Term	Meaning
HBA	Host bus adapter.
Host Agent	The EMC Navisphere Agent that runs on a storage-system server.
IQN	iSCSI Qualified Name is an iSCSI port worldwide name such as `iqn.1992-04.com.emc:cx.apm00034901792.a0.`
iSCSI	internet SCSI protocol that uses the Internet Protocol (IP) for communication between iSCSI initiators and iSCSI targets.
iSCSI initiator	An iSCSI device that initiates requests to iSCSI targets. such as a server that contains either NICs or iSCSI HBAs.
iSCSI target	An iSCSI device that responds to requests issued by initiators. For example, an iSCSI storage system is a target to iSCSI initiators.
managed Agent	Host Agent or SP Agent managed by EMC Navisphere management software.
managed host	A Host Agent that you selected to manage.
managed storage system	A storage system managed by EMC Navisphere Manager.
Manager	See **EMC Navisphere Manager**.
NAS	Network attached storage.
PowerPath	EMC PowerPath® failover software.
RAID group storage system	A storage system whose SPs are running FLARE software with RAID group functionality.
SAN	Storage area network.
secret	A password used for CHAP authentication in an iSCSI environment.
server or managed server	A host with a managed storage system.
shared storage system	A storage system with the EMC Access Logix™ option, which provides data access control (storage groups) and configuration access control. A shared storage system is always a RAID group storage system.

Term	Meaning
Single-SP system	A storage system that has one SP. See **AX-series storage system**.
SP	Storage processor.
SP Agent	The Navisphere Agent that runs on an SP.
Storage group	A collection of one or more LUNs that you select, and to which you can connect one or more servers.
Storage Management Server software	Software that runs in a storage system or portal server and lets a person manage it over a network.
unshared storage system	A storage system without the EMC Access Logix option.
Windows	Windows 2000, Windows Server 2003.

About EMC Navisphere software

The EMC Navisphere software suite is composed of the following components:

- Navisphere Storage System Initialization Utility
- Navisphere Host and SP Agents
- Navisphere Server Utility
- Navisphere Manager
- Navisphere Integrator
- Navisphere Storage Management Server
- Navisphere CLI
- Navisphere Analyzer

Navisphere Storage-System Initialization Utility

You must initialize the storage system in order to register the server HBAs and NICs with the storage system and have access to the storage system's data.

For CX3-series and CX-series Fibre Channel storage systems, use the utility to discover storage systems, and set network parameters (IP address, subnet mask, and default gateway). In addition, for CX3-series storage systems with iSCSI data ports, use the utility to set network parameters for these ports.

Note: For CX-series storage systems, an authorized service provider must install and run the Initialization Utility.

For AX-series storage systems, use the utility to discover storage systems, set network parameters (IP address, subnet mask, and default gateway), and create management user accounts. In addition, for AX150 iSCSI storage systems, use the utility to set network parameters for the storage system's iSCSI data ports.

Note: The Navisphere Initialization Utility runs on servers attached to CX3-series, CX700, CX500-series, CX300-series, and AX-series storage systems. CX3-series systems must be running FLARE OE 03.22.xxx.5.yyy or later. CX700, CX500-series, CX300-series, and AX100-series systems must be running FLARE OE 02.16.xxx.5.yyy or later. AX150-series systems must be running FLARE 02.20.xxx.5.yyy or later.

Navisphere Host and SP Agents

Agents relay configuration and status requests from Manager to CLARiiON® storage systems. Agents also periodically retrieve information from CLARiiON storage systems, and forward it on to Manager for update of the information it displays. Agents also monitor storage-system events and can notify personnel by email, page, or modem when any designated event occurs.

Host Agents reside on attached hosts. SP Agents reside on the storage processors (SPs), and are installed at the factory.

Navisphere Server Utility

Similar to the Host Agent, the Navisphere Server Utility registers the server's host bus adapter (HBA) or network interface card (NIC) with the attached CX3-series, CX-series, or AX-series storage system; however, unlike the Host Agent, the Server Utility does not:

- automatically retrieve information from storage systems. With the Server Utility, you must manually update the information by starting the utility or you can create a script to run the utility.

  Note: For Windows servers running version 6.20 or later, you can automatically update server information if the **Registration Service** feature remains enabled after installing the Server Utility.

- send LUN mapping information back to a CX3-series or CX-series storage system. This information will not display in the Manager UI or CLI. To see LUN mapping information in the Manager UI or CLI for a CX3-series or CX-series storage system, you must use the Host Agent instead of the Server Utility.

  Note: LUN mapping information is sent to AX-series storage systems. In Navisphere Manager, this information displays in the Manager UI or with the CLI **-lunmapinfo** command. In Navisphere Express, this information displays in the **Manage Virtual Disks** page.

- require network connectivity to the storage system.

  Note: If you are using the Server Utility to upload a high-availabilty report to the storage system, you must have network connectivity.

- require that you install the utility; you can run it from the CD. However, we recommend that you install it on the server. Some features are not available unless you install the Server Utility on the server.

With the Server Utility you can perform the functions listed below:

- Fibre Channel connections can determine if the server is configured for high availability (HA) by verifying that the server has at least one connection path to each storage-system SP, and that PowerPath® or some other failover software is running.
- Windows servers with Microsoft iSCSI initiators can use the utility to configure iSCSI connections - log on, log off, and remove an iSCSI target - and to configure mutual CHAP.
- AX-series storage systems running Navisphere Express can use the utility to manage snapshots. If you are managing your AX-series storage system with Navisphere Manager or if you have a CX-series storage system, you must use SnapView and the admsnap utility to manage snapshots. For more information on SnapView and admsnap, refer to the *EMC SnapView for Navisphere Administrator's Guide* and the *EMC SnapView Command Line Interfaces Reference*.

If you have the Host Agent installed but want to use some of the features of the Server Utility, you must install revision 6.22.20 or later of the Server Utility. The registration feature of the Server Utility will be disabled and the Host Agent will be used to register the server's HBAs to the storage system. Prior to revision 6.22.20 of the Server Utility, you could not install the Host Agent and Server Utility on the same server. However, you could install them on different servers that are connected to the same storage system.

Note: The Server Utility runs on servers attached to CX3-series, CX-series, and AX-series storage systems. CX3-series systems must be running FLARE OE 03.22.xxx.5.yyy or later. CX-series and AX100-series systems must be running FLARE 02.16.xxx.5.yyy or later. AX150-series systems must be running FLARE 02.20.xxx.5.yyy or later. Not all features are supported in all revisions of the Server Utility. Refer to the Server Utility's online help for information on which features are available.

Navisphere Manager

Manager is a centralized storage-system management tool for configuring and managing CLARiiON storage systems. It provides the following basic functionality:

- Discovery of CLARiiON storage systems
- Status and configuration information display
- Event management
- Storage configuration and allocation

Manager is a web-based user interface that lets you securely manage CLARiiON storage systems locally on the same LAN or remotely over the Internet, using a common browser. Manager resides on a storage system or a Windows Server 2003 or Windows 2000 server that is running the Storage Management Server software, and is downloaded to the browser when the Storage Management Server software is accessed.

Note: For an AX-series storage system, you must complete an upgrade from Navisphere Express to Navisphere Manager. Refer to the document for upgrading a storage system to Navisphere Manager and the *EMC Navisphere Manager Administrator's Guide.*

Navisphere Integrator

Integrator allows Navisphere managed storage systems to be discovered and monitored through the leading enterprise management platforms (EMP). Integrator also enables the launch of Manager from the EMP. Integrator supports the following EMPs:

- HP OpenView management software
- Tivoli NetView management software
- CA Unicenter TNG Framework

Navisphere Integrator is installed and executed on a Windows 2000 server that also hosts the EMP.

Navisphere Storage Management Server

The Storage Management Server software is provided with Manager, and is installed and executed on each SP in a CX3-series, CX-series, or AX-series storage system, or optionally on a Windows XP, Windows

server. A storage system with this software installed is a storage management server. A server with this software installed is called a server portal. All CX3-series, CX-series (excluding the CX200 and CX300), and AX-series storage systems leave the factory with the Storage Management Server software installed on the SPs.

The Storage Management Server software performs the following functions:

- Receives and responds to requests from Navisphere Manager
- Forwards requests to the local SP Agents for processing
- Forwards status and configuration updates to Navisphere Manager
- Replicates user and domain information to all storage systems in domain
- Authenticates user logins and authorizes user requests
- Logs all user logins and actions

Navisphere CLI

The CLI complements and can be used as an alternative to Manager. It provides a command line interface for storage-system management, including storage provisioning, status and configuration information retrieval, and control. You can use the CLI to automate management functions through shell scripts and batch files. CLI commands for many functions are server-based and are provided with the Host Agent. The remaining CLI commands are web-based and are provided with software that runs in the storage-system SPs. Navisphere CLI includes the Secure (on supported operating systems), Classic, and Java CLI functionalities. See Chapter 2, "About CLI commands."

Note: The Navisphere CLI is supported on CX3-series, CX-series, and AX-series storage systems.

For an AX-series system, you must install the Navisphere Manager enabler in order for Navisphere CLI to be operational. Refer to the document for upgrading a storage system to Navisphere Manager. Once you install the Navisphere Manager enabler, Navisphere Express is no longer operational. You cannot uninstall the Navisphere Manager enabler once you install it. You cannot use Navisphere Express and Navisphere Manager to co-manage an AX-series storage system.

The architecture of the Navisphere version 6.X Manager and CLI differ as follows:

- Manager is a web-based product that communicates with software called the Storage Management Server software that runs on SPs or Windows servers. The SPs and servers are grouped in entities called storage domains. When you log in to a storage system or server within the domain, Navisphere Manager provides a domain-based view in which you can manage your storage systems.
- Navisphere CLI 6.X is a command line interface that has some commands that are server-based and some that are web-based. Server-based commands communicate with the Host Agent. Web-based commands communicate with Storage Management Server software. In the CLI, you issue commands to individual storage systems through a command line structure.

The tradeoffs between Manager and the CLI are as follows:

Manager	CLI
Uses a user interface (UI) with online, context-sensitive help	Uses a command line interface with a single help file through which you find the topic you want
Requires user interaction	Uses command lines that you can type interactively or write into a shell script for automated operations

With the CLI, as with Manager, you can configure, control, and retrieve status from any managed storage system on the LAN. You can also use the CLI to automate disk-storage management functions by writing shell scripts or batch files.

Note: If you are running VMware ESX Server, you can run Navisphere CLI from ESX Server or a virtual machine (VM). If you run Navisphere CLI from ESX Server, all commands are available. If you run Navisphere CLI from a VM, commands that require the Navisphere Host Agent are not supported, since the Navisphere Host Agent is not supported on a VM. The following commands require the Navisphere Host Agent: lunmapinfo, register. For commands that you can issue to either an SP or Host Agent, such as getagent or remoteconfig, if you issue the command to a VM, only the SP agent type is supported.

Navisphere Analyzer

Analyzer 6.X is a web-based tool, using a common browser, that allows an administrator to graphically examine the performance characteristics of the logical and physical entities that make up a CLARiiON storage system. Analyzer supports immediate (real-time) data display, as well as the display of previously logged data. As a result, Analyzer lets you do immediate comparisons, long-term trend analysis, and off-site performance troubleshooting/analysis.

Like Manager, Analyzer resides on a storage system or a Windows 2000 server that is running the Storage Management Server software, and is downloaded to the browser when the Storage Management Server software is accessed.

Navisphere environments

You start Manager in a supported browser on a Windows or UNIX host by entering the IP address of an SP in the storage system with Manager installed on it. The Manager user interface (UI) is downloaded to the Windows or UNIX host and it runs within the browser. All requests from the UI go to the Storage Management Server software on the storage systems, which communicates with the SP Agent. The SP Agent, in turn, communicates with the FLARE or Access Logix™ software on the SPs.

Figure 1-1 shows a sample Manager environment with Fibre Channel storage systems and an iSCSI storage system in a storage domain with various servers.

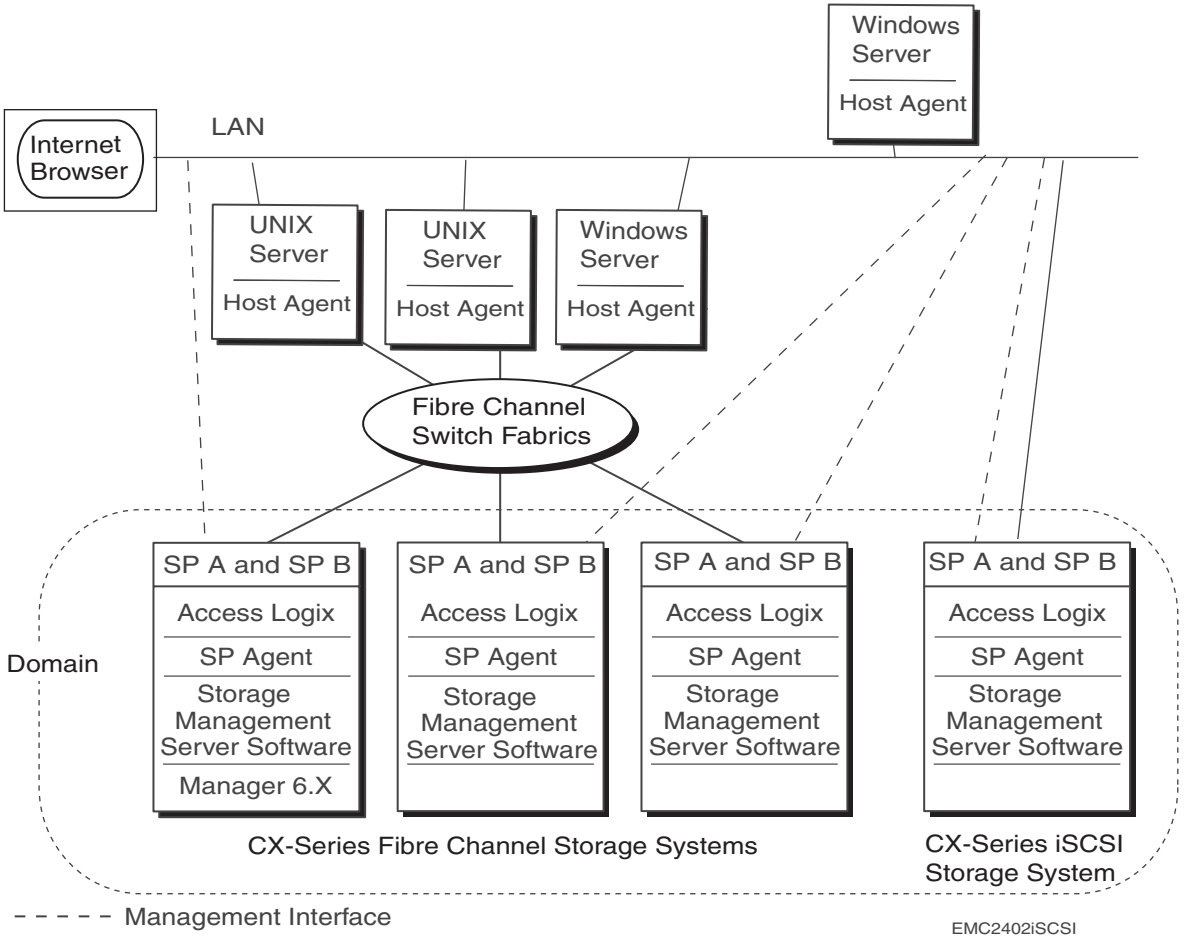

Figure 1-1 FC and iSCSI storage systems in an IP network

Storage-system configuration and management with the CLI

How you configure or manage storage systems with the CLI depends on whether the storage systems are shared or unshared.

Shared storage-system configuration and management

Before you can configure or manage shared storage systems with the CLI, you need to set up the Navisphere environment.

Note: Until you enable data access control for a shared storage system, any server connected to it can write to any LUN on it. To ensure that servers do not write to LUNs that do not belong to them, the procedures below assume that *either* just *one* server is physically connected to the shared storage system or that just *one* server has been powered up since the servers were connected to the storage system. You will use this server (called the configuration server) to configure the storage system.

To set up for management

1. Install the CLI on the host you want to manage, as explained in the EMC CLARiiON server support products installation guide for your operating system.
2. (Optional) Install Navisphere Manager on storage systems that you will manage. Manager has a different architecture from the CLI, as explained on page 1-9. For more convenience with certain operations, you should install Navisphere Manager.

To install optional software on a storage system

Install optional storage-system software, such as SnapView™ and/or SAN Copy™ software on the storage system, as explained in the pertinent software manual.

To set up the Host or SP Agent

Configure the SP Agent on each SP in the storage system, explained in the *Navisphere Manager Administrator's Guide*.

Configure the Host Agent on the server, explained in the EMC CLARiiON server support products installation guide for your operating system.

To configure a storage system with the CLI

For an unshared storage overview, see the section "Storage setup and management overview" on page 3-4.

For a shared storage overview, see the section "Shared storage setup and management overview" on page 4-2.

Configuring and managing remote mirrors

Since the CLI communicates with the SP Agent through one SP at a time, using the CLI to configure and manage a remote mirror is inefficient. We recommend that you use Navisphere Manager to do this because it can monitor both SPs on the primary and secondary storage systems and can also provide a more complete picture of the remote mirror configuration and status.

AX-series support

You can use Navisphere CLI with AX-series storage systems. The CLI provides a command line interface for which you can write shell scripts to automate operations.

You must upgrade your storage system to Navisphere Manager, before you can use Navisphere CLI with an AX-series storage system. Refer to the document for upgrading a storage system to Navisphere Manager.

Note: You cannot use Navisphere Express and Navisphere Manager to co-manage an AX-series storage system. Once you install Navisphere Manager on an AX-series storage system, Navisphere Express is no longer operational. You cannot uninstall Navisphere Manager once you install it.

EMC recommends that you always have at least one privileged user in the SP Agent configuration file.

In general, commands supported by CX3-series and CX-series systems are supported by AX-series systems. Because of some functionality differences, there are some commands that are unique to AX-series systems and others that are not available. See the following table.

Command	Supported on AX-series only	*Not* supported on AX-series	Some command switches only supported on AX-series	Some command switches *not* supported on AX-series
alpa				X
arraycommpath		X		
arrayname				X
baseuuid		X		
bind				X
cachecard	X			
chglun				X
chgrg				X
clearstats		X		
failovermode		X		
firmware		X		
getcrus			X	
getsniffer		X		
initializearray		X		
metalun				X
migrate		X		
ndu				X
remoteconfig				X
responsetest				X
sc_off		X		
setcache		X		
setsniffer		X		
setstats		X		
shutdown	X			
storagegroup				X
systemtype		X		

What next? Continue to the chapter listed below for the type of commands you want:

Basic, unshared storage	Chapter 3
Storage group, shared storage (Access Logix)	Chapter 4
LUN expansion (metaLUN)	Chapter 5
Reserved LUN pool	Chapter 6
Internet SCSI (iSCSI)	Chapter 7
LUN migration	Chapter 8
Domain and Security	Chapter 9

2 About CLI commands

This chapter explains the EMC Navisphere CLI commands **naviseccli**, **navicli**, and **navicli.jar**. Major topics are:

- About Secure CLI 2-2
- Getting started with Secure CLI 2-3
- naviseccli 2-6
- About Classic CLI 2-11
- LUN IDs, unique IDs, and disk IDs 2-12
- navicli 2-14
- About Java CLI 2-17
- Requirements for using Java CLI 2-17
- navicli.jar 2-19

About Secure CLI

Secure CLI is a comprehensive Navisphere CLI solution that provides one application and one security model for all CLI commands. Secure CLI combines key features of the existing Classic (see "About Classic CLI" on page 2-11) and Java CLI functionalities (see "About Java CLI" on page 2-17). Similar to Classic CLI, you do not need to install a JRE to run Secure CLI. Secure CLI implements the security features of Java CLI, providing role-based authentication, audit trails of CLI events, and SSL-based data encryption.

Note: Secure CLI is not supported on all operating systems. Refer to the *Host Agent/CLI and Utilities Release Notes*, available on Powerlink, for a list of supported operating systems. You must be running FLARE Operating Environment version 02.19.xxx.5.yyy or higher.

Secure CLI commands run in a command window. Each command consists of the **naviseccli** command (and switches) together with another subcommand (and its switches). The **naviseccli** command replaces **navicli** (Classic CLI) and **java-jar navicli.jar** (Java CLI) in the command line and, in general, preserves the original command syntax and output for script compatibility.

Note: For commands that originated in Classic CLI, some command output may be enhanced; for example, Secure CLI can retrieve and display information from peer SPs. For Classic CLI commands that produce multiple warnings and require multiple confirmations, Secure CLI provides a single summary of warnings and a single confirmation.

Secure CLI does not support commands targeted to Host Agents, such as **-lunmapinfo** (see "Navisphere Host and SP Agents" on page 1-6 for information on Host and SP Agents). For commands that you can issue to either an SP or Host Agent, such as **–getagent**, if you issue the command to a Host Agent, Secure CLI displays an error message. You must use Classic CLI to issue commands to Host Agents. For a list of commands that are not supported, see Appendix B.

Note: Secure CLI does not distinguish case of characters, so, regardless of the host operating system, you can use either uppercase, lowercase, or any combination of characters as you type commands.

If a Secure CLI command fails and the CLI does not generate its own error message, it displays an error message from the SP Agent. Secure CLI generates errors about command line syntax for commands and options and their values.

Secure CLI commands return 0 if the command is successful. To retain consistency with previous commands, if the command fails, Secure CLI returns 1 for commands that originated in Java CLI and 1 or greater for commands that originated in Classic CLI.

Getting started with Secure CLI

Before you begin to issue Secure CLI commands, you must create a Navisphere user account on the storage system. To create the required user accounts using Navisphere CLI, see "Domain and security commands" on page 9-1. For details on using Navisphere 6.X security, refer to the *EMC Navisphere Manager Administrator's Guide* (P/N 300-003-511).

You can also choose to configure a Navisphere 6.X security file to issue Secure CLI commands (see the next section, "Overview of using Navisphere 6.X security with Secure CLI") on the host. If you establish a security file, you do not need to include the switches **-user**, **-scope,** and **-password** (or the password prompt), in each command you issue.

Note: Establishing a security file to use commands that originated in Classic CLI ensures that other than the update from navicli to the naviseccli command, you do not need to modify any established scripts you may have. Secure CLI, unlike Classic CLI, requires the switches **-user**, **-scope**, and **-password** (or the password prompt) in each command line; you do not need to provide these switches in the command line if you establish a security file.

Overview of using Navisphere 6.X security with Secure CLI

A storage system will not accept a command from Secure CLI unless the user who issues the command has a valid user account on the storage system. You can specify a valid account username, password, and scope (global or local) for each command you issue, or, more conveniently, you can create a Navisphere security file.

Note: If you have an existing security file to issue Java CLI commands, you can use this to satisfy configuration requirements for the **ndu** *Preinstallation Validation Checks* functionality (see **ndu -install**); however, you must create a new security file for Secure CLI commands. The security files can co-exist; however, you cannot use a security file implemented for Java CLI commands to issue Secure CLI commands. The security file you create using Secure CLI implements a different architecture and additional enhancements, such as the **-user** and **-secfilepath** options.

The Navisphere security file is an encrypted file stored for each user on each host. You can add or delete a user security file using the **-AddUserSecurity** or **-RemoveUserSecurity** functions as arguments to the **naviseccli** command. You cannot copy a security file to another host. You must issue the **-AddUserSecurity** function on the host for which you want to create the security file.

When you create a security file, the username you use to log in to the current host is automatically stored in the security file, or you can specify an alternative username for the security file in the **-AddUserSecurity** request using the optional **-user** switch. If you omit the **-user** switch, the security file uses your current username.

For example, to add yourself to the security file on the current host, given the alternative username **altusername**, the password **mypass** and the scope **0** (global scope), type:

naviseccli -AddUserSecurity -password mypass -scope 0 -user altusername

Then, on this host, you can enter CLI commands to any storage system on which you have an account that matches the username **altusername**, with password **mypass** and global scope (**scope 0**).

Note: Username and password are case sensitive.

The security file is stored in your default home directory. With Secure CLI, you can specify an alternative file path using the optional **-secfilepath** switch.

Note: If you specify an alternative location for the security file, you must specify the file path in every subsequent CLI command you issue to ensure the CLI locates the security file.

To save the example used above to the alternative location "c:\altlocation\" type:

naviseccli -AddUserSecurity -password mypass -scope 0 -user altusername - secfilepath c:\altlocation

Then, for each subsequent command you issue, you must specify the **-secfilepath** switch with the security file path location "c:\altlocation\" in the command line.

naviseccli

Sends status or configuration requests to a storage system via command line

Description

The **naviseccli** command sends storage system management and configuration requests to a storage system via the Internet.

User access

Anyone that can log in to the host running Navisphere CLI 6.X or later.

Format

The **naviseccli** command is used as follows:

naviseccli -help
or
naviseccli

[**-address** *IPAddress* | *NetworkName* | **-h** *IPAddress* | *NetworkName*]
[**-AddUserSecurity**]
[**-f** *filename]*
[**-m**]
[-**nopoll** | **-np**]
[-**parse** | **-p**]
[-**password** *password*]
[-**port** *port*]
[**-q**]
[-**RemoveUserSecurity**]
[-**scope** 0 | 1]
[-**timeout** | **-t** *timeout*]
[-**user** *username*]
[**-v**]
[**-xml**]
CMD [*optional_command_switches*]

where the **naviseccli** switches are:

-**help**

Displays the help screen and does not start the **naviseccli** process. To start the **naviseccli** process, use one or more of the switches that follow instead.

-address *IPAddress* | *NetworkName* | **-h** *IPAddress* | *NetworkName*

Specifies the IP address or network name of the targeted SP on the desired storage system. The default, if you omit this switch, is **localhost**.

-AddUserSecurity

Directs the CLI to add user security information to the security file on this host. You must use the **-scope** switch to add scope information to the security file. You can use the -**password** switch or enter your password into the password prompt (see -**password**), to supply the required password information to the security file. The **-user** and **-secfilepath** switches are optional with this command.

Note: If you specify the -**user** switch, you can create an alternative username to your host login name in the security file you create on this host. If you use the -**secfilepath** switch, you can specify an alternative location to your default home directory, for the security file on this host. You must then use the -**secfilepath** switch in each subsequent command you issue.

-f *filename*

Specifies to store data in a file.

-m

Suppresses output except for values. This option is most useful when used as part of a script.

Note: Only supported for commands that originated in Classic CLI.

-nopoll | **-np**

Directs the feature provider not to issue a poll request. This switch significantly increases performance when dealing with large or multiple storage systems. The feature provider automatically polls unless this switch is specified.

Note: When the **-nopoll** switch is set, **get** commands may return stale data and **set** commands may erase previously changed settings. Use caution when the **-nopoll** switch is set.

-parse | -p

Directs the CLI to validate the command. The CLI verifies the command syntax and displays a message stating whether the command was valid. The CLI takes no other action.

-password *password*

Specifies the password on the storage system you want to log in to. The password is visible in the command line. Passwords are case sensitive.

If you want to mask the password, and you are not using a security file, you can omit this switch from the command line. The CLI then prompts you to enter a password. The information you enter into the password prompt is concealed.

Note: You can omit this switch if you are using a security file. See -**AddUserSecurity**.

-port *portnumber*

Sets the port number (type) of the storage system. The default is 443. If you choose to change the default port number, management port 2163 will be supported; however, you will need to specify the **-port** switch and number 2163 in every subsequent command you issue.

-q

Suppresses error messages. This switch is useful when included as part of a script.

Note: Only supported for commands that originated in Classic CLI.

-RemoveUserSecurity

Directs the CLI to remove user security information about the current user from the security file on this host.

-scope 0 | 1

Specifies whether the user account on the storage system you want to log in to is local or global. A **0** (default) indicates global; a **1** indicates local.

A global account is effective throughout the domain. When the administrator creates a global account, the software copies the definition of this account to the domain directory, which makes it accessible on all storage systems in the domain.

A local account is effective on only the storage systems for which the administrator creates the account. The user can log in to only those storage systems on which he or she has a local account.

-secfilepath *filepath*

Stores the security file in a file path location you specify. When you create a security file on a host using the **-addusersecurity** command, the security file is saved to your default home directory. If you want to store the security file in an alternative location, you can use the optional **-secfilepath** switch with the **-addusersecurity** command.

Note: If you use the **-secfilepath** switch to set up an alternative path for your security file, you must use this switch in every subsequent CLI command you issue to ensure the CLI locates the security file.

-timeout | **-t** *timeout*

Sets the timeout value in seconds. The default is 600 seconds.

-user *username*

Specifies the username on the storage system you want to log in to. Usernames are case sensitive. You can omit this if your username has been added to the security file.

Note: You can use this switch when establishing a security file, to specify an alternative username. See -**AddUserSecurity.**

-v

Enables verbose error descriptions. This is the default unless **-q** is specified.

Note: Only supported for commands that originated in Classic CLI.

-xml

Specifies command output in XML format. Use the **-o** (override switch) when specifying **-xml** on commands that require confirmation. Otherwise, the XML output will contain your confirmation string.

CMD

One of a set of commands used with the **naviseccli** command.

CMD switches

The *CMD* switches are described on the pages that follow.

Spaces in arguments

Normally, each argument to a CLI command consists of numbers, letters, and other valid printable characters for the operating system on which the CLI is running.

If a filename or other argument includes a space, you must enclose the entire string that includes the name in quotation marks (**"xx xx"**).

About Classic CLI

Classic CLI commands run in a command window. Each command consists of the **navicli** command (and switches) together with another subcommand (and its switches). The **navicli** command does nothing when executed by itself. However, when you use it in combination with the other commands described in this manual, you can configure and manage any storage system supported by Navisphere CLI version 6.X.

If a CLI command fails and the CLI does not generate its own error message, it displays an error message generated by the Host Agent or SP Agent. The CLI generates errors about command line syntax for commands and options and their values. CLI error codes appear in Appendix A.

LUN IDs, unique IDs, and disk IDs

In Navisphere, the term *LUN ID* or *LUN number* means the unique integer assigned to the LUN when it is bound. When you bind a LUN, you can select the ID number. If you do not specify one, the default for the first LUN bound is 0, the second 1, the third 2, and so on. The maximum number of LUNs supported (and thus the valid range of LUN IDs) depends on storage system and operating system. See the EMC Support Matrix on the Powerlink website for the number of LUNs supported with your configuration.

The term *unique ID* applies to storage systems, SPs, HBAs, and switch ports. It means the World Wide Name (WWN) or World Wide Port Name (WWPN), which is a number designed to be unique in the world.

Storage systems have 16-byte unique IDs; SPs, HBAs, LUNs, and switch ports have 32-byte unique IDs. In storage systems that use storage groups, the Access Logix™ software assigns the unique IDs. Generally, unique IDs are transparent to users, but sometimes you need to specify them in commands. You can discover the unique IDs by entering the appropriate CLI **list** or **get list** command for the operation you want to perform.

Disk IDs depend on the kind of storage system.

CX3-series and CX-series storage systems can have multiple back-end buses, and thus need a bus designator before the enclosure and disk designator:

bus-number enclosure-number disk-number (b e d for short)

For example, disk ID 000 (or 0_0_0) indicates the first bus or loop, first enclosure, and first disk, and disk ID 100 (1_0_0) indicates the second bus or loop, first enclosure, and first disk. A sample CX700 model storage system is shown in Figure 2-1 on page 2-13.

Note: AX-series storage systems have only one back-end bus (*bus-number*=0) and only one enclosure (*enclosure-number=0)*.

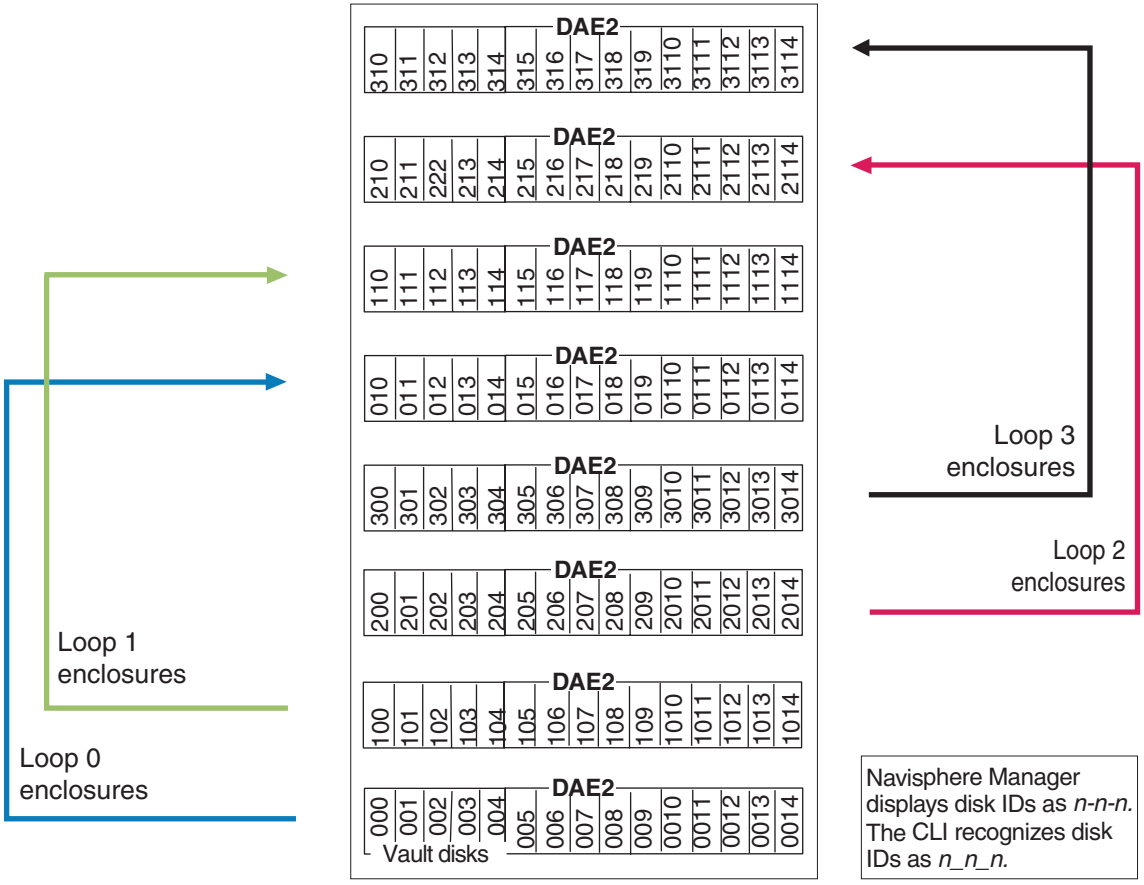

Figure 2-1 CX700 disk IDs

navicli

Sends status or configuration requests to the storage system via command line

Before you can use Navisphere CLI commands to configure a storage system (as opposed to receive storage-system configuration or status information), you must be a privileged user in either the Host or SP Agent connected to the storage system. For CX3-series, CX-series, or AX-series storage systems, you must be a privileged user in the SP Agent configuration file on each SP in the storage system, and to use the **navicli register** and **navicli lunmapinfo** commands, you must be a privileged user in the Host Agent configuration file.

Description

The **navicli** command sends storage-system management and configuration requests to an API (application programming interface) on a local or remote server.

User access

Anyone that can log in to the host running the Navisphere CLI.

Format

The **navicli** command is used as follows:

navicli -help
or
navicli [-f *filename*]**-h** *hostname*] [-**help**] [**-m**] [**-np**] [**-p**] [**-t** *timeout*] **-[v | q]** *CMD [optional-command-switches]*

where the **navicli** switches are:

-f *filename*

Specifies to store data in a file.

-h *hostname*

Specifies the hostname of the storage-system SP or server. For a CX3-series, CX-series, or AX-series storage system, each SP is a host; therefore the hostname is the IP address or network name of the destination SP.

-**help**

Displays the help screen and does not start the **navicli** process.

-**m**

Suppresses output except for values. This option is most useful when used as part of a script.

-np

Suppresses polling on initial contact with the Agent. This switch significantly increases performance when dealing with large or multiple storage systems. The Agent automatically polls unless this switch is specified.

Note: When the **-np** switch is set, **get** commands may return stale data and **set** commands may erase previously changed settings. Use caution when the **-np** switch is set.

-p

Parses the entered *CMD* without making a network call to the API. If the string does not parse correctly, an error message prints to **stderr**; otherwise a message verifying that the string parsed correctly prints to **stdout**.

-t *timeout*

Sets the timeout value. *timeout* specifies the value in seconds. The default timeout value is 240 seconds unless the **RaidAgentTimeout** environment variable (described on the following page) is set differently.The timeout value includes the time allowed for the entire command to execute (including CLI, Agent, and storage-system software execution time). The timeout applies to all commands except **firmware**.

-q

Suppresses error messages. This switch is useful when included as part of a script.

-v

Enables verbose error descriptions. This is the default unless **-q** is specified.

CMD

One of a set of commands used with the **navicli** command to configure and manage a storage system.

CMD switches

The *CMD* switches are described on the pages that follow.

Spaces in arguments

Normally, each argument to a CLI command is composed of numbers, letters, and other valid printable characters for the operating system on which the CLI is running. For example:

navicli -h server1 convertEMlog -pathname G:\logs\c4.log -20

If a filename or other argument (such as a storage group name) includes a space, you must enclose the entire string that includes the name in quotation marks (**"xx xx"**). For example, if the filename in the above were **c 4.log**, the valid command line would be:

navicli -h server1 convertEMlog -pathname "G:\logs\c 4.log" -20

About Java CLI

Java CLI is implemented in Java and its commands run in a command window. Each Java CLI command consists of the command **java -jar navicli.jar** and switches together with functions and function switches.

Note: Java CLI does not distinguish case of characters, so, regardless of the host operating system, you can use either uppercase, lowercase, or any combination of characters as you type commands.

If a Java CLI command fails and the CLI does not generate its own error message, it displays an error message from the Host Agent or SP Agent. Java CLI generates errors about command line syntax for commands and options and their values. Java CLI commands return 0 if the command is successful and 1 if the command fails.

Requirements for using Java CLI

Before you can use Java CLI commands, you must do the following:

1. Install a Java runtime environment (JRE). This is required for the **navicli.jar** command. For the latest JRE supported, see the *EMC Navisphere Manager and Manager Base Release Notes*.
2. Create a Navisphere user account on the storage system. To create the required user accounts using Navisphere CLI, see "Domain and security commands" on page 9-1. For details on using Navisphere 6.X security, refer to the *EMC Navisphere Manager Administrator's Guide* (P/N 300-003-511).

You can also choose to configure a Navisphere 6.X security file to issue Java CLI commands on the host (see the next section, "Overview of using the Navisphere 6.X security with Java CLI").

Overview of using the Navisphere 6.X security with Java CLI

A storage system will not accept a command from Java CLI unless the user who issues the command has a valid user account on the storage system. You can specify a valid account username, password, and scope (global or local) in each command line, or, more conveniently, you can add password and scope information to the Navisphere security file and omit the password and scope from the command line. The Navisphere security file is an encrypted file stored for each user on each host. You can add or remove a password or scope from the security file using the **-AddUserSecurity** or **-RemoveUserSecurity** functions as arguments to the **navicli.jar** command.

You can create a user account on the storage system using the CLI (see "Domain and security commands" on page 9-1). The username on the storage system must match the username you used to log in to this server. Your current username is always passed to the storage system; you cannot specify a username in the **-AddUserSecurity** request.

For example, to add yourself under your current username to the security file on the current host, given the password **mypass** and the scope 0 (global scope), type:

java -jar navicli.jar -AddUserSecurity -password mypass -scope 0

Then, on this host, you can enter CLI commands to any storage system on which you have an account that matches your current username with password **mypass** and global scope (**scope 0**).

Note: The password is passed to the storage system just as you typed it. It is case sensitive.

navicli.jar

Sends status or configuration requests to a storage system via command line

Description

The **java -jar navicli.jar** command sends storage-system management and configuration requests to a storage system via the Internet.

User access

Anyone that can log in to the host running Navisphere CLI 6.X or later.

Format

The **navicli.jar** command is used as follows:

java -jar navicli.jar -help
or
java -jar navicli.jar
or for NetWare
java -jar [**-ns** | **-nsac**] **navicli.jar -help**

[**-address** *address*]
[**-AddUserSecurity**]
[**-nopoll**]
[**-parse**]
[**-password** *password*]
[**-port** *port*]
[**-RemoveUserSecurity**]
[**-scope 0** | **1**]
[**-timeout** *seconds*]
[**-user** *username*]
[**-xml**]
CMD [*optional_command_switches*]

where the **navicli.jar** switches are:

-help

Displays the help screen and does not start the **navicli.jar** process. To start the **navicli.jar** process, use one or more of the switches that follow instead.

-address *address*

Specifies the IP address or network name of the targeted SP on the desired storage system. The default, if you omit this switch, is **localhost**.

-AddUserSecurity

Directs the CLI to add user security information to the security file on this host. You must use the **-password** *password* and **-scope** switches.

-nopoll

Directs the feature provider not to issue a poll request. This switch significantly increases performance when dealing with large or multiple storage systems. The feature provider automatically polls unless this switch is specified.

Note: When the **-nopoll** switch is set, **get** commands may return stale data and **set** commands may erase previously changed settings. Use caution when the **-nopoll** switch is set.

-ns | **-nsac**

For NetWare systems, creates a new screen for the Java application. One of these switches is needed with NetWare for CLI command output to appear on the screen. **-ns** creates a new screen for the Java application. **-nsac** also creates a new screen for the Java application, and automatically closes the screen when the application terminates.

-parse

Directs the CLI to validate the command. The CLI verifies the command syntax and displays a message stating whether the command was valid. The CLI takes no other action.

-password *password*

Specifies the password on the storage system you want to log in to. The password is case sensitive. You can omit this if you are using the security file.

-port *port*

Sets the port number (type) of the storage system. The default is 443.

-RemoveUserSecurity

Directs the CLI to remove security information about the current user from the security file on this host.

-scope 0 | 1

Specifies whether the user account on the storage system you want to log in to is local or global. A **0** (default) indicates global; a **1** indicates local.

A global account is effective throughout the domain. When the administrator creates a global account, the software copies the definition of this account to the domain directory, which makes it accessible on all storage systems in the domain.

A local account is effective on only the storage systems for which the administrator creates the account. The user can log in to only those storage systems on which he has a local account.

-timeout *seconds*

Sets the time-out value in seconds. The default is 600 seconds.

-user *username*

Specifies the username on the storage system you want to log in to. You can omit this if your username has been added to the security file.

-xml

Specifies command output in XML format. Use the **-o** (override switch) when specifying **-xml** on commands that require confirmation. Otherwise, the XML output will contain your confirmation string.

CMD

One of a set of commands used with the **navicli.jar** command**.**

The CLI will set the exit code before terminating. It sets the exit code to zero when the command executes successfully or to a value greater than zero when the command fails. Failures include command line parsing errors as well as errors encountered during the execution of the command.

CMD switches

The *CMD* switches are described on the pages that follow.

Spaces in arguments

Normally, each argument to a CLI command consists of numbers, letters, and other valid printable characters for the operating system on which the CLI is running.

If a filename or other argument includes a space, you must enclose the entire string that includes the name in quotation marks (**"xx xx"**).

What next? Continue to the chapter listed below for the type of commands you want:

Basic, unshared storage	Chapter 3
Storage group, shared storage (Access Logix)	Chapter 4
LUN expansion (metaLUN)	Chapter 5
Reserved LUN pool	Chapter 6
Internet SCSI (iSCSI)	Chapter 7
LUN migration	Chapter 8
Domain and Security	Chapter 9

3
Basic commands

This chapter explains each of the basic variations; that is, the CLI commands that are common to all CLARiiON disk-array storage systems. Command variations for storage groups (Access Logix™ option) are explained in the following chapter.

Note: CLI commands for the EMC MirrorView™ software are explained in the MirrorView CLI manual; CLI commands for the EMC MirrorView™/Asynchronous software are explained in the MirrorView/Asynchronous CLI manual; CLI commands for the EMC SAN Copy™ software are explained in the SAN Copy CLI manual; and CLI commands for EMC SnapView™ (for both snapshots and LUN clones) are explained in the SnapView admsnap and CLI manual.

The basic CLI command variations are also documented in the **mancli.txt** file.

Major topics are:

- Storage setup and management overview 3-4
- alpa -get 3-6
- alpa -set (not supported on AX-series) 3-8
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Storage setup and management overview

This section shows how you might configure and monitor a storage system using **naviseccli** or **navicli** commands. It shows commands with UNIX device names. The Windows device names would be drive letters. The storage system is a system, in which each SP is a host. For an overview showing storage systems with Access Logix, see Chapter 4. For storage systems without Access Logix:

1. Create four RAID groups.

   naviseccli -h ss1_spa createrg 0 0_0_0 0_0_1 0_0_2 0_0_3 0_0_4

   Creates RAID group 0 from disks 0 through 4 in the DPE enclosure. A new RAID group has no RAID type until it is bound.

   naviseccli -h ss1_spa createrg 1 0_0_5 0_0_6

   Creates RAID group 1 from disks 5 and 6 in the DPE enclosure.

   naviseccli -h ss1_spa createrg 2 0_0_7 0_0_8

   Creates RAID group 2 from disks 7 and 8 in the DPE enclosure.

   naviseccli -h ss1_spa createrg 3 0_0_9

   Creates RAID group 3 from disk 9 in the DPE enclosure.

2. Bind a LUN on each RAID group.

   naviseccli -h ss1_spa bind r5 0 -rg 0

   This command binds a LUN of type RAID 5 with LUN ID 0 on RAID group 0. The LUN occupies all space on RAID group 0, since the bind command did not include the **-cap s**witch. By default, read and write caching are enabled on the new LUN.

   naviseccli -h ss1_spa bind r1 1 -rg 1

   Binds a LUN of type RAID 1 (mirrored pair) with LUN ID 1 on RAID group 1. The LUN occupies all space on RAID group 1 and caching is enabled by default.

   naviseccli -h ss1_spa bind r1 2 -rg 2

   Binds a LUN of type RAID 1 (mirrored pair) with LUN ID 2 on RAID group 2. The LUN occupies all space on RAID group 2, and caching is enabled by default.

   naviseccli -h ss1_spa bind hs -rg 3

Binds a hot spare on RAID group 2. The hot spare has no LUN ID (it is not really a LUN) and occupies all space on RAID group 2.

3. Get SP memory information to prepare to set up the storage-system cache.

   naviseccli -h ss1_spa getsp -mem

   ```
   Memory Size For The SP:         930
   ```

   Each SP has the same amount of memory, so you need not issue this command for SP B.

4. Set up storage-system caching with 70% memory for write caching and 30% for read caching.

   naviseccli -h ss1_spa setcache -wcza 650 -wc 1 -p 8 -rcza 280 -rczb 280 -rc 1

   This command sets the write cache for SP A (applies to both SPs) to 650 MB, enables write caching, sets a write cache page size of 8 Kbytes, sets a read cache size for each SP of 280 MB, and enables read caching.

   For easy identification in the future, name the storage system.

   naviseccli -h ss1_spa arrayname users11

   ```
   Change the arrayname from xxx to users11? (y/n) y
   ```

   This command changes the name of the storage system to **users11.**

At this point, you can create file systems (run the appropriate host command) on the LUNs from the operating system and store data on them.

You can learn LUN device names using the **getagent** command and check status periodically using the **getsp**, **getdisk**, and/or **getlun** commands.

alpa -get

Displays the SCSI ID associated with an SP port

alpa command background

The CLI **alpa** commands (Arbitrated Loop Physical Address) get and set the port ID SCSI IDs on an SP. These IDs are required for I/O to the SP.

We suggest you use a unique SCSI ID for each SP port in your installation. For example, on the first storage system, for ports 0 and 1, you can specify SCSI IDs 0 and 1, respectively. On the second storage system, for the ports you can specify IDs 2 and 3 respectively, and so on.

Description

The **naviseccli** or **navicli alpa** command **-get** function lists ALPA information. The information includes the port ID, the SP ID (A or B), and the SCSI ID associated with the port. Issue the command to the SP for which this information is needed.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

alpa -get is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

alpa -get

Conventions and recommendations

If you really need to change an SP port ID, you can do so with the **alpa -set** function.

Example

naviseccli -h payroll_storage_spa alpa -get

```
Storage Processor:SP A
Port ID:          0
ALPA Value:       0
```

For SP A (SP hostname **payroll_storage_spa**), this command lists the SCSI ID associated with Port 0.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See above. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
VALID_VALUES_0_3
```

alpa -set (not supported on AX-series)

Updates the SCSI ID associated with an SP port

Description

The **naviseccli** or **navicli alpa** command with the **-set** switch updates the SCSI ID value for the given port on an SP.

CAUTION

The SP port ID SCSI IDs are initially set by EMC service personnel to work at your site. Do not change any value unless you are installing a new SP and need to change its SCSI IDs from the SP ship values of 0 and 1.

If you change any value, after you confirm, the SP will restart and use the new values.

The software will not let you select a SCSI ID out of range (0-126) or a duplicate ID on a storage system. — If you omit the **-o** (override) switch, then the CLI prompts for confirmation:

```
Changing the ALPA value of port port-id from old-SCSI-ID
to new-SCSI-ID (y/n)
```

To confirm, answer **y**; to take no action, answer **n**.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

alpa -set is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

alpa -set -sp a | b -portid *portid SCSI-ID* **[-o]**

where:

-sp a | b

Specifies the SP: A or B.

-portid *portid SCSI-ID*

Specifies the new SCSI ID to associate with the port. Port IDs range from 0 through 3 (CX3-series and CX-series). Valid port SCSI IDs range from 0 through 126.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

See the cautions above**.**

Example

naviseccli -h ss1_SPA alpa -set -sp a -portid 1 1
```
This operation will cause a storage system reboot!
Do you wish to continue(y/n)? y
```

For SP A, this command changes the SCSI ID associated with Port 1 to 1.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See above. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
VALID_VALUES_0_126
VALID_VALUES_0_3
```

arraycommpath (not supported on AX-series)

Sets a communication path to a storage system that has no LUNs bound, or removes such a path (non-Access Logix only)

Description

The **naviseccli** or **navicli arraycommpath** command creates or removes a communication path between the server and storage system. Generally this command is needed when you want to configure a storage system that has no LUNs bound.

This command works for storage systems without Access Logix only. For storage systems with Access Logix, use the command **storagegroup sethost -arraycompath** (see Chapter 4).

The CLI will not issue a confirmation request first if you include the **-o** switch.

CAUTION

Do not issue this command unless you know the appropriate value for the type of failover software running on the attached servers. The command is designed for transition from one type of failover software to another. Changing the arraycommpath mode to the wrong value will make the storage system inaccessible.

To discover the current setting of **arraycommpath**, use the command without an argument.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

arraycommpath is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

arraycommpath [0 | 1] [-o]

where:

0

Disables a communication path.

1

Enables a communication path.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa arraycommpath 0

```
WARNING: Previous arraycommpath setting will be
lost!
DO YOU WISH TO CONTINUE? (y/n) y
```

This command disables the communication path between server and storage system. In this example, the confirmation message shows that the change, if confirmed, will cause the previous setting to be lost.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
Valid values are 0 or 1
```

arrayname

Renames a storage system

Description

The **naviseccli** or **navicli arrayname** command changes the name of a storage system. If you omit a storage-system name, the command returns the current storage-system name (in the format host-device or array name).

Note: AX-series storage system names cannot exceed 32 characters in length.

The CLI prompts for confirmation as follows.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

arrayname is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

arrayname *NewArrayName*

where:

NewArrayName Specifies the new name for the storage system.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa arrayname users11

```
Change the arrayname from ss1 to users11? (y/n) y
```

This command changes the name of the storage system to **users11.**

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

If the version of FLARE software running on the SP does not support this command, a `Not Supported` error message is printed to **stderr**.

backendbus -analyze (CX3-series only)

Displays speed and state information for each back-end bus and the devices on the back-end bus

Description

The **naviseccli backendbus** command with the **-analyze** function, displays the current and maximum back-end bus speeds for each back-end bus on the storage system, and each device (enclosures, disks, and link control cards (LCCs)) on the back-end bus. It also lists state information that includes whether a device on the bus is limiting and whether the storage system meets conditons required for a reset (see the list of conditions later in this section).

The current speed indicates the speed a bus or device is currently running at; the maximum speed indicates the highest speed a bus or device is capable of running at. If a device is limiting, it has a maximum speed lower than the maximum speed of the back-end bus. If you have a limiting device, a reset will *not* occur when you issue **backendbus -resetspeed**.

When you run **backendbus -analyze**, a summary analysis appears for each back-end bus to indicate whether a reset operation will be successful for the back-end bus. One of the following summary results will appear for each back-end bus:

Summary analysis [1]	Description
Speed *may* change on rescan	A speed-related fault exists on the back-end bus (see **Description** section).The CLI cannot determine whether a reset will occur.
Speed *will* change on rescan	A reset will occur.
Speed *will not* change on rescan	There are limiting devices on the back-end bus. A reset will *not* occur.

[1] If a limiting device or speed-related fault exists on the back-end bus, a listing of the limiting devices and speed-related faults appear before the summary analysis. Devices with speed-related faults appear as "Devices Requesting Bypass."

A speed-related fault can occur when you add a device to a back-end bus that has a maximum speed lower than the current speed of the bus. A device with a speed-related fault appears with unknown speed values; therefore, the CLI cannot determine if a reset will occur.

Note: If you issue the **backendbus -resetspeed** command, and a device with a speed-related fault exists on the bus, the reset could decrease the back-end bus speed (downgrade).

Your system must meet required conditions before you can issue a reset. See the following table for the list of conditions.

Condition	Description (pass criteria)
Analyze Speed Rule	The summary analysis for the back-end bus, displayed in **backendbus -analyze**, indicates that a reset *will* or *may* occur.
System Faults Rule	*No* system faults can exist.
Active Sessions Rule	*No* active SnapView, MirrorView, or SAN Copy sessions.
Transitions Rule	*No* active transitions such as, LUN binds, LUN expansions, RAID group expansions, disk equalization.
I/O Rate Rule	*No* active I/O.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

backendbus -analyze is used with **naviseccli** (described on page 2-6) as follows.

backendbus -analyze

Conventions and recommendations

Run **backendbus -analyze** before you issue **backendbus -resetspeed**.

Example

The following example displays current and maximum back-end bus speeds for each back-end bus on the specified storage system and the devices on the back-end bus.

naviseccli -h ss1_spa backendbus -analyze

Output

```
Bus 0 - Current Speed: 2Gbps. Maximum speed: 4Gbps.
Device            Current       Max       Limiting    Type
-                  Speed       Speed
-------------------------------------------------------------
Bus 0 Enclosure 0   2           4           No         DAE3P
-------------------------------------------------------------
LCC A               2           4           No
LCC B               2           4           No
-------------------------------------------------------------
Disk 0              2           2           Yes       Fibre Channel
Disk 1              2           4           No        Fibre Channel
Disk 2              2           4           No        Fibre Channel
Disk 3              2           4           No        Fibre Channel
Disk 4              2           4           No        Fibre Channel
Disk 5              2           4           No        Fibre Channel
Disk 6              2           4           No        Fibre Channel
Disk 7              2           4           No        Fibre Channel
Disk 8              2           4           No        Fibre Channel
Disk 9              2           4           No        Fibre Channel
Disk 10             2           4           No        Fibre Channel
Disk 11             2           4           No        Fibre Channel
Disk 12             2           4           No        Fibre Channel
Disk 13             2           4           No        Fibre Channel
Disk 14             2           4           No        Fibre Channel

Bus 1 - Current Speed: 2Gbps. Maximum speed: 4Gbps.
Device            Current       Max       Limiting    Type
-                  Speed       Speed
-------------------------------------------------------------
Bus 1 Enclosure 1   2           4           No         DAE3P
-------------------------------------------------------------
LCC A               2           4           No
LCC B               2           4           No
-------------------------------------------------------------
Disk 0              2           2           Yes       Fibre Channel
Disk 1              2           4           No        Fibre Channel
Disk 2              2           4           No        Fibre Channel
Disk 3              2           4           No        Fibre Channel
Disk 4              2           4           No        Fibre Channel
Disk 5              2           4           No        Fibre Channel
Disk 6              2           4           No        Fibre Channel
Disk 7              2           4           No        Fibre Channel
Disk 8              2           4           No        Fibre Channel
Disk 9              2           4           No        Fibre Channel
Disk 10             2           4           No        Fibre Channel
Disk 11             2           4           No        Fibre Channel
Disk 12             2           4           No        Fibre Channel
Disk 13             2           4           No        Fibre Channel
Disk 14             2           4           No        Fibre Channel
-------------------------------------------------------------
```

```
Bus 0 is currently running at 2Gbps.
Limiting Devices:
Bus 0 Enclosure 0 Disk 0
Speed will not change on rescan

Bus 1 is currently running at 2Gbps.
Limiting Devices:
Bus 1 Enclosure 1 Disk 0
Speed will not change on rescan

Analyze Speed Rule...Failed  No loop will change speed on rescan.
System Faults Rule... Passed
Active Sessions Rule... Passed
Transitions Rule... Passed
I/O Rate Rule... Passed
```

backendbus -get -speeds (CX3-series only)

Displays back-end bus speed information for the back-end buses on a storage system

Description

The **naviseccli backendbus** command with the **-get -speeds** function, displays the current and available back-end bus speeds, for the back-end buses on a storage system. You can target a specific back-end bus and display only information for that bus, or you can display back-end bus speed information for all buses on the storage system.

The current speed indicates the speed the bus is currently running at; the available speed(s) indicates the speed(s) available to the back-end bus. If the current speed is less than the maximum available speed, you can run the **backendbus -analyze** command to verify if there are limiting devices on the back-end bus. If a device is limiting, it has a maximum speed lower than the maximum speed of the back-end bus. If you have a limiting device, a reset will not occur when you issue **backendbus -resetspeed**.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

backendbus -get -speeds is used with **naviseccli** (described on page 2-6) as follows.

backendbus -get -speeds [*backend bus number*]

where:

backend bus number

Specifies the back-end bus for which you want to display bus speed information.

Conventions and recommendations

Use **backendbus -analyze** to display speed information for each device on a back-end bus.

Example

The following example displays current and available bus speed information for back-end bus number 2:

naviseccli -h ss1_spa backendbus -get -speeds 2

Output

```
Bus 2:

Current Speed: 2Gbps.
Available Speeds:
2Gbps.
4Gbps.
```

backendbus -get -sfpstate (CX3-series only)

Displays the current condition of each back-end SFP

Description

The **naviseccli backendbus** command with the **-get -sfpstate** function, displays the current condition of each back-end SFP, which is a small form-factor pluggable (SFP) optical modular transceiver. You can target a specific back-end bus and display information for only that bus, or you can display back-end bus information for all buses on the storage system.

The SFP states are Online, Faulted, and Removed. Online indicates that the back-end SFP is functioning normally; Faulted indicates an unsupported or faulted SFP; and Removed indicates that it does not exist.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

backendbus -get -sfpstate is used with **naviseccli** (described on page 2-6) as follows.

backendbus -get -sfpstate [*backend bus number*]

where:

backend bus number

Specifies the back-end bus for which you want to display bus information.

Conventions and recommendations

Use **backendbus -analyze** to display speed information for each device on a back-end bus.

Example

The following example displays the current condition for each back-end SFP.

naviseccli -h ss1_spa backendbus -get -sfpstate

Output

```
Bus 0:

SPA SFP State: Faulted
SPB SFP State: Online
```

backendbus -get -all (CX3-series only)

Displays the bus speeds and SFP state

Description

The **naviseccli backendbus** command with the **-get -all** function displays the bus speeds and the current condition of each back-end SFP, which is a small form-factor pluggable (SFP) optical modular transceiver for the back-end buses on a storage system. You can target a specific back-end bus and display information for only that bus, or you can display back-end bus information for all buses on the storage system.

The current speed indicates the speed the bus is currently running at; the available speed(s) indicates the speed(s) available to the back-end bus. If the current speed is less than the maximum available speed, you can run the **backendbus -analyze** command to verify if there are limiting devices on the back-end bus. If a device is limiting, it has a maximum speed lower than the maximum speed of the back-end bus. If you have a limiting device, a reset will not occur when you issue **backendbus -resetspeed**.

The SFP states are Online, Faulted, and Removed. Online indicates that the back-end SFP is functioning normally; Faulted indicates an unsupported or faulted SFP; and Removed indicates that it does not exist.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

backendbus -get -all is used with **naviseccli** (described on page 2-6) as follows.

backendbus -get -all [*backend bus number*]

where:

backend bus number

Specifies the back-end bus for which you want to display bus information.

Conventions and recommendations

Use **backendbus -analyze** to display speed information for each device on a back-end bus.

Example

The following example displays the bus speed and current condition for each back-end SFP.

naviseccli -h ss1_spa backendbus -get -all

Output

```
Bus 0:

Current Speed: 2Gbps.
Available Speeds:
2Gbps.
4Gbps.


SPA SFP State: Faulted
SPB SFP State: Online
```

backendbus -resetspeed (CX3-series only)

Resets the back-end bus speeds for a storage system

Description

The **naviseccli backendbus** command with the **-resetspeed** function, resets the back-end bus speed for the buses on the storage system. When you execute **backendbus -resetspeed**, if the back-end bus is eligible for a reset and the storage system meets the conditions required for a back-end bus speed reset, the reset occurs. See Conventions and Recommendations for the steps you should take before issuing **backendbus -resetspeed**.

Note: This is a disruptive operation and can take several minutes to complete. During this time the storage system will be offline and no I/O will be performed.

Before you execute a reset, run **backendbus -analyze** to verify the current and maximum speeds of each back-end bus and device to determine if limiting devices exist, which will prevent a reset, and to verify that your storage system meets the conditions required for a reset.

To verify whether the back-end bus speed reset occurs, capture the output from **backendbus -analyze** or **backendbus -get -speeds** before you execute the reset, to compare to the reset back-end bus speed values after you issue the reset.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

backendbus -resetspeed is used with **naviseccli** (described on page 2-6) as follows.

backendbus -resetspeed

Conventions and recommendations

Steps to take before issuing a reset	
1	Run **backendbus -analyze** to verify the following: • back-end bus and device speed information • no limiting devices exist on the back-end bus • storage system meets required conditions
2	Save the output from **backendbus -analyze** or **backendbus -get -speeds**, to compare the bus speed in the saved output to the bus speed after you initiate **backendbus -resetspeed**,

Example

The following example resets the the back-end bus speeds for the specified storage system.

naviseccli -h ss1_spa backendbus -resetspeed

```
WARNING: the command you are about to execute requires
that the array be completely shutdown. During this period
of time all IO to attached application hosts will be
suspended. All affected applications must be quiesced
before proceeding to avoid data unavailability and
possible data loss. This operation will take several
minutes to complete.

Are you sure you want to proceed? (y/n)?
```

Output

None if the command succeeds; status or error information if it fails.

baseuuid (CX-series only)

Gets or sets the storage-system unique unit identifier (UUID) base for use by a server running Tru64.

Description

The **naviseccli** or **navicli baseuuid** command gets or sets the base of the unique unit ID as required for servers in a Tru64 cluster. The Tru64 operating system uses the UUID (which it creates by combining the base and an offset which is the storage-system LUN ID) to manage the LUNs in a cluster. You can also use the UUID to manage the LUN.

To discover the UUID base, use the command without an argument.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

baseuuid is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

baseuuid [*uuid-base-value*]

where:

uuid-base-value Specifies the UUID base.

Conventions and recommendations

None

Examples

naviseccli -h ss1_spa baseuuid

```
Base UUID of the array: 12345
```

naviseccli -h ss1_spa baseuuid 34

```
Base UUID of the array is set to 34.
```

These commands get, then set the UUID base of the storage system containing the SP **ss1_spa**.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

If the version of FLARE software running on the SP does not support this command, a `Not Supported` error message is printed to **stderr**.

bind

Creates a LUN within an existing RAID group

Description

The **naviseccli** or **navicli bind** command, when executed on RAID group storage systems, binds a LUN within an existing RAID group. You can create a RAID group with the **createrg** command (page 3-47).

Ensure that you address the **bind** command to the SP that you want to own the LUN.

Note: As soon as a LUN is bound on a CX-series storage system running FLARE or Access Logix version 02.04.x.xx.5.xxx or lower, you should start a background verify on the LUN with ASAP priority and set the sniffer rate for the LUN to 5. You can perform both these operations with the **setsniffer** command (see the *Examples* section of the command). You should not send data to the LUN until the background verify operation is complete. The background verify operation will eliminate any latent soft media errors prior to use of the LUN.

Note: As soon as a LUN is bound on a CX-series storage system running FLARE or Access Logix software version 02.05.x.xx.5.xxx or higher, a background verify runs automatically unless you disabled it with the **-noinitialverify** switch.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

bind is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

bind *raid-type* [*lun*] **-rg** *rgID*
[**-aa** *auto_assignment*] [**-cap** *capacity*] [**-elsz** *stripe-element-size*]
[**-noinitialverify**][**-offset** *logical-block-address*] [**-pl** *placement*]
[**-r** *rebuild-priority*] [**-rc** *read-cache*] [**-sp** **a**|**b**] [**-sq** *size-qualifier*]
[**-v** *verify-priority*] [**-wc** *write-cache*]

where:

raid-type

Specifies the RAID type for the LUN.

r0 = RAID 0
r1 = RAID 1
r3 = RAID 3
r5 = RAID 5
r1_0 = RAID 1/0
id = individual disk
hs = hot spare

Note: AX-series systems support only RAID 1/0 (r1_0), RAID 5 (r5), and Hot Spare (hs) raid types. Only one hot spare is supported.

lun

Specifies a decimal number to assign to the LUN (valid range is shown on page 2-12). If not specified, the lowest available number (the default value) is assigned to the LUN.

-rg *rgID*

The RAID group identification number. The RAID group must already exist. You can create a RAID group with the **createrg** command (page 3-47).

rgID specifies a number between 0 and the maximum number of RAID groups supported by the RAID group storage system.

The optional switches are:

-aa *auto_assignment* (Not supported on AX-series)

Enables or disables auto-assignment functionality for the LUN. *auto_assignment* specifies functionality as follows:
0 = Disables auto-assignment
1 = Enables auto-assignment (the default)

-cap *capacity*

Sets the capacity of usable space in the LUN. (The default is full space available.)

-elsz *stripe-element-size* (Not supported on AX-series)

Note: Use this option only at the direction of CLARiiON Performance Engineering.

-noinitialverify (Not supported on AX-series)

Does not perform an initial background verification. When this switch is not present, the bind performs an initial background verification on the newly bound LUN and eliminates any latent soft media errors.

-offset *logical-block-address* (Not supported on AX-series)

Sets the LUN's starting Logical Block Address (LBA) to begin at *an offset location* on the RAID group, such that the user data is aligned with a stripe boundary. Enter the LBA at which user data starts in the host file system and the storage system will compute the correct offset automatically. The default is the lowest available disk address. Use a decimal, not hexadecimal, number. Hexadecimal numbers are not allowed. You can use the **getlun -offset** switch to learn the offset of an existing LUN.

-pl *placement* (Not supported on AX-series)

Places a LUN in a RAID group. *placement* specifies which algorithm to use as follows:
bf = best fit algorithm (the default)
ff = first fit algorithm

-r *rebuild-priority* (Not supported on AX-series)

Sets the rebuild priority: the priority at which to reconstruct data on either a hot spare or a new disk module that replaces a failed disk module in a LUN. This priority determines the resources that the SP devotes to rebuilding instead of to normal I/O activity. It applies to all RAID LUNs except RAID 0. Valid values are ASAP, High, Medium, and Low. The default is ASAP. A rebuild priority of ASAP rebuilds the disk module as quickly as possible, but degrades response time somewhat. If your site requires fast response time and you want to minimize degradation to normal I/O activity, you can extend the rebuild over a longer period of time by specifying the Low rebuild priority.

Note: You cannot change the rebuild priority for a LUN that is in the process of rebuilding. You can change the value, but it will have no effect.

The time it takes to actually rebuild a LUN can vary significantly, especially for a RAID 1/0 LUN, since a RAID 1/0 LUN with n disk modules can continue functioning with up to as many as n/2 failed drive modules and only one drive at a time is rebuilt.

Note: The rebuild priority properties are unavailable for RAID 0, Disk, or Hot Spare LUN.

-rc *read-cache* (Not supported on AX-series)

Enables or disables read cache functionality for this specific LUN. *read-cache* values:

0 = Disables read cache
1 = Enables read cache (the default)

-sp a | **b**

Sets the default owner of the LUN: SP A or SP B. The default is the current SP.

-sq *size-qualifier*

Sets the default size qualifier. *size-qualifier* specifies the qualifier as follows:

mb = megabytes
gb = gigabytes (the default)
tb = terabytes
sc = stripe count
bc = block count

Note: AX-series systems support only megabyte (mb) and gigabyte (gb) size qualifiers.

-v *verify-priority* (Not supported on AX-series)

Sets the priority at which the data on each LUN is verified if an SP fails and is replaced during I/O operations. *verify-priority* specifies the priority. Valid values are ASAP, High, Medium, and Low. A lower priority verifies LUN data more slowly and has less impact on overall system performance. The default is High.

Note: The verify priority properties are unavailable for RAID 0, Disk, or Hot Spare LUN.

-wc *write-cache* (Not supported on AX-series)

Enables or disables the storage-system write cache for this specific LUN. *write-cache* values:
0 = Disables write cache
1 = Enables write cache (the default).

Conventions and recommendations

The following table identifies the parameters you must configure for each RAID type you bind.

LUN parameters for different RAID types

RAID type	Bind parameters
RAID 5, RAID 1/0	LUN number Rebuild time Stripe size Read and/or write caching
RAID 3	LUN number Rebuild time
RAID 1	LUN number Rebuild time Read and/or write caching
RAID 0	LUN number Stripe size Read and/or write caching
Disk (individual disk unit)	LUN number Read and/or write caching
Hot Spare	LUN number

To allow for good choices of available disk modules, bind LUNs in this order:

First - RAID 1/0
Second - RAID 5, RAID 3, and RAID 0
Third - RAID 1
Fourth - Individual units and Hot Spares

Before you start binding disk modules, read the restrictions and recommendations in the following table.

Restrictions and recommendations for binding disks into LUNs

LUN to bind	Restrictions and recommendations
Any LUN	You can bind only unbound disk modules. All disk modules in a LUN must have the same capacity to fully use the modules' storage space.
RAID 5*	You must bind a *minimum* of three disk modules and *no more than* sixteen disk modules. We recommend you bind five modules for more efficient use of disk space.
RAID 3	You must bind *exactly* five or nine disk modules. Select 5 drives for quicker rebuild times or 9 drives for more effiecient use of space. **IMPORTANT** For RAID 3, write caching is only supported on a CX3-series or CX-series storage system running FLARE version 02.06.xxx.x.xxx or higher. For a storage system other than a CX3-series or CX-series running FLARE version 02.06.xxx.x.xxx or higher, write-caching is not supported; therefore, when binding RAID 3 LUNs, the **-wc** *cache-flags* switch will not apply. When you check status on a RAID 3 LUN, write caching will appear disabled.
RAID 1	You must bind *exactly* two disk modules.
RAID 0	You must bind a *minimum* of three disk modules, and *no more than* sixteen disk modules.
RAID 1/0	You must bind a *minimum* of 2 disk modules, and an even number of modules, but *no more than* 16 modules. Navisphere Manager pairs modules into mirrored images in the order in which you select them. The first and second modules you select are a pair of mirrored images; the third and fourth modules you select are another pair of mirrored images; and so on. The first module you select in each pair is the primary image, and the second module is the secondary image.
Individual disk unit	None
Hot Spare	You *cannot* bind certain disk modules as a hot spare on a storage system with Fibre Channel disks. For more information about such disk modules, refer to the configuration planning guide for your system. The capacity of a disk module bound as a hot spare must be at least as great as the capacity of the largest disk module that it might replace. **IMPORTANT** The **-c** *cache-flags* switch does not apply to a hot spare. When you check status on a hot spare, caching always appears disabled.

* You can bind one less module per LUN than you will eventually use. However, the LUN will operate in a degraded mode until a module is installed in the empty slot and the storage system integrates it into the LUN.

You can enable either read or write caching, both read and write caching, or neither type of caching for any type of LUN except for a hot spare. For caching to occur, storage-system caching must also be enabled (page 3-28 for RAID group storage systems). Whether you

should use caching for a specific LUN depends on the RAID type. Recommendations for caching with different RAID types follow.

Caching recommendations for different RAID types

RAID type	Write caching	Read caching
RAID 0	Acceptable	Recommended
RAID 1	Acceptable	Recommended
RAID 1/0	Acceptable	Recommended
RAID 3*	Recommended	Recommended
RAID 5	Highly recommended	Recommended
Disk	Acceptable	Recommended
Hot Spare	Not Allowed	Not Allowed

* For RAID 3, write caching is only supported on a CX3-series or CX-series storage system running FLARE version 02.06.xxx.x.xxx or higher. Read caching is only supported on a CX3-series or CX-series.

Note: LUNs cannot use write caching until you enable the storage-system write cache (page 3-176). LUNs cannot use read caching until you enable the read cache for the SP that owns the LUN (page 3-28 for RAID group storage systems). When binding RAID 1/0 LUNs, the order in which you select modules is important. The first module you select is the first part of the mirror's primary image and the second module is the first part of the mirror's secondary image; the third module is the second part of the primary image, the fourth module is the second part of the secondary image; and so on for any other modules in the LUN. In other words, the first and second modules selected are a pair of peer image parts, the third and fourth modules are another pair of peer image parts, and so on.

When a LUN is assigned to an SP, its state becomes assigned, and the state of its disk modules become enabled when you use the SP that owns the LUN as the communications path to the chassis.

If you need to change the Description (RAID type) or Stripe Size parameters, you must unbind the LUN (page 3-200), and then rebind it with the correct parameters. If you need to change the maximum rebuild time, read cache state, or write cache state, use the **chglun** command (page 3-37).

Examples

naviseccli -h ss1_spa createrg 0 0_0_1 0_0_2 0_0_3 0_0_4 0_0_5

This command creates RAID group 0 from the five specified disks (disks 0 through 4 in the DPE enclosure). The new RAID group has no RAID type until it is bound (next).

naviseccli -h ss1_spa bind r5 0 -rg 0

This command binds a LUN of type RAID 5 with LUN ID 0 on RAID group 0. The LUN occupies all space on RAID group 0, since the bind command did not include the **-cap s**witch. By default, read and write caching are enabled on the new LUN.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

There is no output. Errors are printed to **stderr**.

cachecard -initialize (AX-series (single-SP) only)

Initializes the cache memory card

Description

The **naviseccli** or **navicli cachecard** command with the **-initialize** function lets you initialize the cache memory card.

The **cachecard -initialize** command can be issued under any of the following circumstances:

- a different cache memory card is installed on the storage system
- live data is on the cache memory card
- a LUN with an offline (cache dirty) condition exists on the storage system

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

cachecard -initialize is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

cachecard -initialize [-o]

where:

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa cachecard -initialize

For this example, a different cache memory card is installed on the storage system.

```
The cache memory card currently installed in this storage
system is not the same as the one previously installed in
this storage system. In order for this storage system to
function properly, the current cache memory card must be
initialized on this storage system.

Do you want to initialize Cache Memory Card now?  (y/n)?
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output None if the command succeeds; status or error information if it fails.

cachecard -list (AX-series (single-SP) only)

Lists the state information of the cache memory card

Description

The **naviseccli** or **navicli cachecard** command with the **-list** function lists the state information of the cache memory card. The memory size and hardware state of the cache memory card is displayed.

You can choose to display only the memory size by specifying the **-size** switch or display only the hardware state by specifying the **-hwstate** switch. Without these switches, the memory size and hardware state display.

The possible hardware states are listed in the following table:

Hardware state	Meaning
OK	The power on the main SP is on and the cache memory card battery is fully charged. The cache memory card is in normal operation.
Not present	The cache memory card is not present.
Faulted	The cache memory card has hardware faults.
Battery charging	The power on the main SP is on and the battery is charging on the cache memory card.
In wrong array	The cache memory card is from the wrong storage system.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli,** anyone that can log in to the host running the Navisphere CLI.

Format

cachecard -list is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

cachecard -list [-size] [-hwstate]

where:

-size

Specifies to display only the total memory size of the cache memory card (MB).

-hwstate

Specifies to display only the hardware state of the cache memory card.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa cachecard -list

This command displays all state information (memory size and hardware state) of the cache memory card.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

```
Total Memory:    512MB
Hardware State:  Ok
```

chglun

Changes parameters on a currently bound LUN

Description

The **naviseccli** or **navicli chglun** command changes parameters on a currently bound LUN. You must use at least two switches with **chglun** and one of the switches must be the LUN number **-l** *lun*.

To change a metaLUN, use the **naviseccli** or **navicli.jar metalun** command with the **-modify** switch, as described on page 5-22.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

chglun is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

chglun -l *lun*
[-**a** *auto-assign*] [-**c** *cache-type*] [-**d** *default-owner*] [-**dp**] [-**i** *idle-thresh*]
[-**mp** *max-prefetch-blocks*] [-**name** *newname*]
[-**pc** *max-prefetch-IO*] [-**pd** *min-prefetch-size*] [-**pf** *prefetch-type*]
[-**pm** *pf-size/mult*] [-**r** *rebuild-priority*] [-**rt** *retain-prefetch-data*]
[-**sm** *prefetch-segmnt-size/mult*] [-**t** *idle-delay-time*]
[-**v** *verify-priority*] [-**w** *write-aside*]

where:

-**l** *lun*

Specifies which LUN to change. *lun* specifies the LUN number. This switch is required.

The optional switches are:

-**a** *auto-assign* (Not supported on AX-series)

Enables or disables automatic reassignment of LUN ownership to an active SP if an SP failure occurs.
auto_assign specifies functionality as follows:
0 = Disables auto-assignment for specified LUN
1 = Enables auto-assignment for specified LUN

-c *cache-type* (Not supported on AX-series)

Enables either read or write caching, both read and write caching, or neither type of caching for the LUN. For caching to occur, storage-system caching must also be enabled. Whether or not you should use caching for a specific LUN depends on the RAID type. See the caching recommendations for different RAID types on page 3-31.

cache-type specifies the type of caching used as follows:

none = no caching
read = read caching
write = write caching
rw = read and write caching

-d *default-owner* (Not supported on AX-series)

Changes the default owner of the LUN. *default-owner* specifies ownership as follows:
0 = Changes ownership of the LUN to SP A
1 = Changes ownership of the LUN to SP B

-dp (Not supported on AX-series)

Sets the default prefetch values.

-i *idle-thresh* (Not supported on AX-series)

Sets the maximum number of I/Os that can be outstanding to a LUN and still have the LUN be considered idle. *idle-thresh* specifies the maximum number of I/Os. Used to determine cache flush start time. Legal *idle-thresh* values range from 0 through 254.

-mp *max-prefetch-blocks* (Not supported on AX-series)

Sets the maximum number of disk blocks to prefetch in response to a read request. *max-blocks* specifies the maximum number.

-name *newname*

Sets the LUN name. *newname* specifies the new name for the LUN. This switch applies only to storage systems running a version of FLARE software that supports storage group commands. The LUN name is displayed in the UI and has no other purpose. You cannot use the LUN name as a CLI command argument. You can assign the same name to multiple LUNs.

Note: The **-name** switch applies only to shared storage systems.

-pc *max-prefetch-IO* (Not supported on AX-series)

Sets the maximum number of outstanding I/Os that the LUN can have and still perform prefetching.
max-IO specifies the maximum number of I/Os.
Valid values are 0 through 100.

-pd *min-prefetch-size* (Not supported on AX-series)

Sets the prefetch disable size. *min-size* specifies, in blocks, the size of the smallest read request for which prefetching is disabled. Prefetching is disabled for all read requests whose size is equal to or larger than *min-size*. Valid values are 0 through 65534.

-pf *prefetch-type* (Not supported on AX-series)

Sets or disables the prefetch type as follows:
0 = Disables prefetch
1 = Constant length prefetch type
2 = Variable length prefetch type

-pm *pf-size*-or-*multiplier* (Not supported on AX-series)

Sets the amount of data or the prefetch multiplier prefetched for one host read request as follows:

For constant length prefetching: 0-2048.
For variable length prefetching: 0-32

If *prefetch-type* (see below) is set to constant length, *pf-size*-or-*multiplier* specifies the number of blocks to prefetch. The valid range is 0-2048 blocks.

If *prefetch-type* is set to variable length, *pf-size*-or-*multiplier* specifies the multiplier used to determine the amount of data to prefetch. The valid range is 0-32. For example, if the value is 8, the amount of data to prefetch is 8 times the amount of data requested.

The default value for *pf-size*-or-*multiplier* is 4.

-r *rebuild-priority* (Not supported on AX-series)

Sets the rebuild priority. *rebuild-priority* specifies the priority at which to reconstruct data on either a hot spare or a new disk module that replaces a failed disk module in a LUN. It applies to all RAID types LUNs except RAID 0 and individual disks. Valid values are ASAP, High, Medium, and Low. The default is ASAP. The priority that you specify determines the amount of resource that the SP devotes to rebuilding instead of to normal I/O

activity. The default value is adequate for most situations. A rebuild priority of ASAP rebuilds the disk module as quickly as possible, but degrades response time significantly. If your site requires fast response time and you want to minimize degradation to normal I/O activity, you can extend the rebuild over a longer period of time by specifying the Low rebuild priority.

Note: It is not possible to change the rebuild priority for a LUN that is in the process of rebuilding. You can change the value, but it will have no effect.

The time it takes to actually rebuild a LUN can vary significantly, especially for a RAID 1/0 LUN, since a RAID 1/0 LUN with n disk modules can continue functioning with up to as many as n/2 failed drive modules and only one drive at a time is rebuilt.

-rt *retain-prefetch-data* (Not supported on AX-series)

Enables or disables retaining prefetch data functionality. *retain-prefetch-data* specifies functionality as follows:
0 = Disables retaining prefetch data functionality
1 = Enables retaining prefetch data functionality

-sm *prefetch-segment-size/mult* (Not supported on AX-series)

Sets the segment size for data prefetched for one host read request as follows:

If **-pf** *prefetch-type* is set to constant length, *segmnt-size/mult* specifies the size of the segment in blocks. Valid range: 0-2048 blocks.

If **-pf** *prefetch-type* is set to variable length, *segmnt-size/mult* specifies the multiplier used to determine the segment size. Valid range: 0-32.

-t *idle-delay-time* (Not supported on AX-series)

Sets the amount of time that a LUN must be below the *idle-thresh* (see below) in order to be considered idle. *idle-delay-time* specifies the delay time in 100 ms units. For example, 5 equals 500 ms. Once a LUN is considered idle, any dirty pages in the cache can begin flushing. Legal *idle-delay-time* values range from 0 through 254.

-v *verify-priority* (Not supported on AX-series)

Sets the priority at which to verify data on a LUN if an SP fails and is replaced during I/O operations. *verify-priority* specifies priority level. Valid values are ASAP, High, Medium, and Low. The lower the priority, the slower the LUN is rebuilt and the lesser the impact on overall system performance. The default is Low.

-w *write-aside* (Not supported on AX-series)

write-aside specifies, in blocks, the largest write request size that will be written to cache. Write requests greater than the *write-aside* value are written directly to disk, bypassing write cache. Valid values are 16 through 65534.

Conventions and recommendations

Caching recommendations for different RAID types

RAID type	Write caching	Read caching
RAID 0	Acceptable	Recommended
RAID 1	Acceptable	Recommended
RAID 1/0	Acceptable	Recommended
RAID 3*	Recommended	Recommended
RAID 5	Highly recommended	Recommended
Disk	Acceptable	Recommended
Hot Spare	Not Allowed	Not Allowed

*For RAID 3, write caching is only supported on a CX3-series or CX-series storage system running FLARE version 02.06.xxx.x.xxx or higher. Read caching is only supported on a CX3-series or CX-series system.

Note: LUNs cannot use write caching until you enable the write cache (page 3-176). LUNs cannot use read caching until you enable the read cache for the SP that owns the LUN. When binding RAID 1/0 LUNs, the order in which you select modules is important. The first module you select is the first part of the mirror's primary image and the second module is the first part of the mirror's secondary image; the third module is the second part of the primary image, the fourth module is the second part of the secondary image; and so on for any other modules in the LUN. In other words, the first and second modules selected are a pair of peer image parts, the third and fourth modules are another pair of peer image parts, and so on. Any change to the rebuild time takes effect as soon as the operation completes.

Example **naviseccli -h ss1_spa chglun -l 3 -c write -r high**

Change LUN 3 to enable write caching and rebuild with high priority.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output There is no output. Errors are printed to **stderr**.

chgrg (RAID group)

Changes properties of a RAID group

Description

The **naviseccli** or **navicli chgrg** command changes the properties of a specified RAID group. You must use one and only one of the optional switches with **chgrg** and must specify the RAID group identification number, *rgID*.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

chgrg is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

chgrg *rgID* [**-defrag**] [**-expand** *disks*] [**-lex** *expansion*] [**-pri** *priority*] [**-rm yes** | **no**] [**-trespass** *sp*]

where:

rgID

Is the RAID group identification number. *rgID* specifies a number between 0 and the maximum number of RAID groups supported by the RAID group storage system.

The optional switches are

-defrag (Not supported on AX-series)

Starts defragmenting the specified RAID group.

-expand *disks*

Expands the RAID group *rgID* onto the disk(s) specified at a given priority, and may expand LUNs.

disks specifies the physical disks to bind. The order in which you specify the disks has no significance. See Section "LUN IDs, unique IDs, and disk IDs" on page 2-12 to verify the format for specifying disks.

-lex *expansion* (Not supported on AX-series)

Available only when the **-expand** *disks* switch is used. Not available for storage systems that support metaLUNs. *expansion* specifies functionality as follows:

yes = Enables LUN expansion for the specified RAID group
no = Disables LUN expansion for the specified RAID group (the default)

-**pri** *priority* (Not supported on AX-series)

Sets the priority for defragmenting or expanding the specified RAID group. *priority* specifies the process priority as follows:
high = high priority
medium = medium priority
low = low priority

-**rm** **yes** | **no** (Not supported on AX-series)

Enables or disables the removal of the specified RAID group after the last LUN in it has been unbound (**unbind** command). *remove* specifies the functionality as follows:
yes = Removes the RAID group
no = Does not remove the RAID group (the default)

-**trespass** *sp* (Not supported on AX-series)

Trespasses all LUNs in the RAID group to the specified storage processor. *sp* specifies the SP as follows:
a = SP A
b = SP B

Conventions and recommendations

None

Example

naviseccli -h ss1_spa chgrg 2 -trespass a

This command trespasses all LUNs in RAID group 2 to SP A.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

None

clearlog

Clears the SP's error log

Description

The **naviseccli** or **navicli clearlog** command deletes the contents of the SP's unsolicited error log.

The command clears only the log of the SP you specify with the **-h** switch in the command.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

clearlog is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

clearlog

Conventions and recommendations

None

Example

naviseccli -h ss1_spa clearlog

```
unsolicited error log cleared
```

This command deletes the SP logs of the storage system.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Confirmation message.

clearstats (not supported on AX-series)

Resets the SP's statistics logging

Description

The **naviseccli** or **navicli clearstats** command resets statistics logging on the SP. If statistics logging is on, it is turned off, and then back on. If statistics logging is off, it is turned on, and then off.

The command affects only the log of the SP you specify with the **-h** switch in the command.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

clearstats is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

clearstats

Conventions and recommendations

None

Example

naviseccli -h ss1_spa clearstats

```
Statistics successfully cleared, statistics logging
disabled.
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Confirmation message.

createrg (RAID group)

Creates a RAID group

Description

The **naviseccli** or **navicli createrg** command creates a RAID group on the specified disks. When you create a RAID group, it has no RAID type. The new group is assigned the RAID type of the first LUN you bind on the group.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

createrg is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

createrg *rgID* *disks* [**-pri** *priority*] [**-rm** **yes** | **no**]

where:

rgID

Is the RAID group identification number. *rgID* specifies a number between 0 and the maximum number of RAID groups supported by the RAID group storage system.

disks

Specifies the physical disks included in this RAID group. In a RAID 1/0 or RAID 1 configuration, you can manually select the disks for the RAID group in such an order as to determine the primary and secondary image. For example, for a 1/0 RAID group, the first two disks you list in the command form a pair of mirrored images, and the next two disks form another pair of mirrored images, and so on.

See Section "LUN IDs, unique IDs, and disk IDs" on page 2-12 to verify the format for specifying disks.

Note: The disks in a RAID group must be either all Fibre Channel disks or all ATA disks.

The optional switches are:

-pri *priority*

Sets the priority for expanding or defragmenting the specified RAID group. *priority* specifies the process priority as follows:
high = high priority
medium = medium priority
low = low priority (the default)

-rm yes | no

Enables or disables the removal of the specified RAID group after the last LUN in it has been unbound (**unbind** command). *remove* specifies the functionality as follows:
yes = Removes the RAID group
no = Does not remove the RAID group (the default)

Conventions and recommendations

None

Example

naviseccli -h ss1_spa createrg 4 0_1 0_2 0_3 0_4 0_5 -pri high

This command creates RAID group 4 from the five specified disks, and sets the priority for the expansion/defragmenting processes to high.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

None

failovermode (not supported on AX-series)

Changes the type of trespass as needed for failover software (non-Access Logix only)

Description

The **naviseccli** or **navicli failovermode** command enables or disables the type of trespass needed for failover software. Use this command with certain types of failover software if suggested in the *EMC Installation Roadmap for CX3-series, CX-series, AX-Series, and FC-Series Storage Systems*, which is on the EMC Powerlink website.

The CLI may prompt for confirmation of some changes you specify unless you use the **-o** (override). To change the setting, enter **y**.

This command works for storage systems without Access Logix only. For storage systems with Access Logix, use the command **storagegroup sethost -failovermode** (see Chapter 4).

Changing the failover mode setting will ask for confirmation unless you include the **-o** switch.

CAUTION

Do not issue this command unless you know the appropriate value for the type of failover software running on the attached servers. The command is designed for transition from one type of failover software to another. Changing the failover mode to the wrong value will make the storage system inaccessible.

To discover the current setting of **failovermode**, use the command without an argument.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

failovermode is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

failovermode [0 | 1 | 2 | 3] [-o]

For information about when to use these failover modes, refer to the *EMC Installation Roadmap for CX3-series, CX-series, AX-Series, and FC-Series Storage Systems*, which is on the EMC Powerlink website.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa failovermode 0

```
WARNING: Previous Failovermode setting will be
lost!
DO YOU WISH TO CONTINUE? (y/n) y
```

For ss1_spa, this command enables failover mode 0.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
Command not Supported
Valid values are 0 to 3
```

faults -list

Lists status information for faulted components on the storage system

Description

The **naviseccli faults** command with the **-list** function, provides status information for faulted hardware components, such as enclosures, disks, power supplies, storage processors, standby power supplies, as well as MirrorView/Asynchronous replication software sessions.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

faults -list is used with **naviseccli** (described on page 2-6) as follows:

faults -list

Conventions and recommendations

None.

Example

The following example lists the faulted hardware components and MirrorView software sessions on the storage system.

naviseccli -h ss1_spa faults -list

Output

```
Faulted Subsystem:  APM00043806491


Enclosure SPE : Faulted
Enclosure SPE Power B : Faulted
Bus 0 Enclosure 0 : Faulted
Bus 0 Enclosure 0 Disk 7 : Removed
Bus 0 Enclosure 0 Disk 8 : Removed
Bus 0 Enclosure 0 Disk 9 : Removed
Bus 0 Enclosure 0 Power B : Faulted


FAR Mirror Faults Status Report
50:06:01:60:90:60:00:14:09:00:00:00:00:00:00:00:
Asynchronous mirror is faulted
50:06:01:60:90:60:00:14:06:00:00:00:00:00:00:0050:06:01:
60:90:60:03:99: Asynchronous mirror image is fractured
```

```
50:06:01:60:90:60:00:14:0B:00:00:00:00:00:00:00:
Asynchronous mirror is faulted

50:06:01:60:90:60:00:14:07:00:00:00:00:00:00:00:
Asynchronous mirror is faulted

50:06:01:60:90:60:00:14:08:00:00:00:00:00:00:0050:06:01:
60:90:60:03:99: Asynchronous mirror image is fractured

50:06:01:60:90:60:00:14:01:00:00:00:00:00:00:00:
Asynchronous mirror is faulted

50:06:01:60:90:60:00:14:11:00:00:00:00:00:00:00:
Asynchronous mirror is faulted

50:06:01:60:90:60:00:14:12:00:00:00:00:00:00:0050:06:01:
60:90:60:03:99: Asynchronous mirror image is fractured
```

firmware (not supported on AX-series)

Updates the disk firmware

Description

The **naviseccli** or **navicli firmware** command updates the disk firmware.

To update an SP's FLARE software, use the **navicli ndu** command. To update disk firmware, use the **firmware** command as described here.

Note: After downloading firmware, the CLI prompts you if a reboot is necessary. In general, downloaded firmware is updated only after the storage system reboots. However, depending on what is included in the firmware file a reboot may or may not be necessary.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

firmware is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

firmware *filename* [**-c**] [**-d** *disks*] [**-w**] [**-o**]

where:

filename

Specifies the full pathname of the new firmware image on the destination server. This image contains the microcode. If the full pathname is not entered, the current working directory is added to the beginning of the filename.

The optional switches are:

-c

Specifies a client side download. Indicates that the firmware file resides on a client (the default is no). For example, if you are running the CLI from a machine that is not the storage system server, you can still download firmware if you specify this flag.

-d *disks*

Downloads disk vendor firmware to specified disks.

disks specifies the physical disks whose firmware will be updated. The order in which you specify the disks has no significance. See Section "LUN IDs, unique IDs, and disk IDs" on page 2-12 to verify the format for specifying disks.

-o

Executes the command without prompting for confirmation.

-w

Initiates a warm reboot after the firmware is downloaded. A warm reboot performs the same functions as a reboot except that the powerup diagnostics are not executed. In systems that use caching, the caches are re-initialized. A warm reboot executes in under 50 seconds.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa firmware /tmp/mcode.rev -o

Downloads **mcode.rev**, which is located in the **tmp** directory.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

A warning message appears before the command is issued to the storage system, if a reboot is necessary. Errors are printed to **stderr**.

flashleds

Turns the LEDs for disks in a specific enclosure or bus on or off

Description

The **naviseccli** or **navicli flashleds** turns on the LEDs in a specific disk-array enclosure (DPE, iDAE, or DPE) or Fibre Channel bus. The command can help you identify disks in an enclosure or bus.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

flashleds is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

flashleds -e *enclosure-number* **[-b** *bus-number*] **[on | off]**

where:

-e *enclosure-number*

Specifies the disk-array enclosure. In each storage system, if there is a DPE or iDAE, it is enclosure 0. DAEs are numbered sequentially on each bus ascending from 1 (for DPE/iDAE storage systems) or ascending from 0 (for other storage-system types.

-b *bus-number*

Specifies the bus-number.

on | off

Turns the LEDs on or off. If you omit this switch, the command turns the LEDs on.

Conventions and recommendations

None

Examples

naviseccli -h ss1_sp1 flashleds -e 1 -b 0 on

naviseccli -h ss1_sp1 flashleds -e 1 -b 0 off

These commands turn on, then off the LEDs for the storage system that holds SP **ss1_spa**. For that storage system, it specifies enclosure 1, bus 0.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output There is no output. Errors are printed to **stderr**.

getagent

Gets device names and configurations

Description

The **naviseccli** or **navicli getagent** command returns the names of devices that the destination Navisphere Agent controls. The command also displays descriptions of each device with which the Navisphere Agent is configured to communicate. If you type the **getagent** command without switches, the CLI displays all values. With switches, the CLI displays only the values.

Each SP is a host (-h switch) to which you address the command. The command displays information for the Agent running in the SP (the SP Agent). Values for irrelevant display fields appear as NA.

Note: If you are running VMware ESX Server and issuing this command to a virtual machine (VM), it cannot target the Host Agent because the Navisphere Host Agent is supported only on ESX Server.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getagent is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getagent [-cabinet] [-desc] [-mem] [-model] [-name] [-node] [-os] [-peersig] [-prom] [-rev] [-scsiid] [-serial] [-sig] [-spid] [-type] [-ver]

The optional switches are:

-cabinet

Returns a description of the cabinet type.

-desc

Returns an ASCII description of the device (taken from the Navisphere agent configuration file).

-mem

Returns, in MB, the size of the SP's memory. Each SP in the storage system must have the same amount of memory to make full use of the memory. Total memory can be 8, 16, 32, or 64 MB.

-model

Returns the model number of the SP.

-name

Returns the name of the device (taken from the Navisphere agent configuration file).

-node

Returns the device's location in the file system.

Note: Use the returned device name when you specify the device in a **-**command line.

-os

Displays the operating system.

-peersig

Returns the signature of the peer SP.

-prom

Returns the revision of the SP's PROM code. Each SP in the storage system should be running the same revision of PROM code. PROM code is updated automatically when you update an SP's FLARE software and choose the reboot option.

-rev

Returns the microcode revision number of the FLARE software that the SP is running. Each SP in the storage system will be running the same revision of FLARE software. You can update an SP's FLARE software.

-scsiid

Returns the SCSI ID of SP host connection. The SCSI ID number for the SP is determined by switch settings on the SP. For information on these switch settings, see the storage-system installation and maintenance manual.

-serial

Returns the serial number of the storage system.

-sig

Returns the unique SP signature.

-spid

Returns the SP identifies (A or B).

-type

Returns the model type (deskside or rackmount).

-ver

Returns the version of the agent that is running.

Conventions and recommendations

None

Example

This example issues the **getagent** command to storage system ss1_spa.

naviseccli -h ss1_spa getagent

Sample output follows.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output that shows the devices controlled by one Agent. Actual output varies depending on the switches you use with the **getagent** command.

Note: For a host that is managing a legacy storage system, the output may vary depending upon whether or not the host is in a storage group.

Output from an SP Agent

```
Agent Rev:       6.1.0 (8.4)
Name:            K10
Desc:
Node:            A-WRE00021400494
Physical Node:   K10
Signature:       588114
Peer Signature:  588069
Revision:        2.01.1.01.4.001
SCSI Id:         0
Model:           600
```

```
Model Type:      Rackmount
Prom Rev:        2.12.00
SP Memory:       2048
Serial No:       WRE00021400494
SP Identifier:   A
Cabinet:         xPE
```

getall

Gets comprehensive storage-system information.

Description

The **naviseccli** or **navicli getall** command returns an extensive list of storage-system information, including:

- Agent and host information
- Storage-system (array) information
- HBA or switch information
- SP information
- Cache information
- Disk information
- LUN information
- RAID group information
- Storage group information
- SnapView information
- SANCopy information
- Drive type for enclosures, disks, RAID groups, and LUNs

The **getall** command is a superset of the **getagent** command. If you type the **getall** command without switches, the CLI displays all values. With switches, the CLI displays only the values specified.

Note that the **getall** command and any of its arguments return all information pertinent to the current Navisphere release. The amount of this information may change (usually it increases) with each new Navisphere release. This may affect your custom command scripts that use **getall**.

The command displays information for the Agent running in the SP (the SP Agent). Values for irrelevant display fields appear as NA.

Some information is not displayed if the feature is not activated or not supported. For example, sancopy items are displayed only if SANCopy software is installed and activated.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getall is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getall [-host] [-array] [-hba] [-sp] [-cache] [-disk] [-drivetype] [-lun] [-reserved] [-rg] [-sg] [-snapviews] [-sancopy]

-host

Displays only information about the host and the Agent that manage the storage system. This is a composite of information displayed by the **getagent**, **remoteconfig**, and **ndu** commands.

-array

Displays only information about the storage system and its hardware components such as fan and link control card (LCC). This is a composite of information displayed by the **getarrayuid**, **arrayname**, **getcrus**, and **initialiazearray** commands.

-hba

Displays only information about each switch, HBA and port etc. This is a composite of information displayed by the **alpa**, **port**, **register**, and **getloop** commands.

-sp

Displays information about this SP only. This is a composite of information displayed by the **getsp**, **getcontrol**, **networkadmin**, and **getsptime** commands.

-cache

Displays information about the cache. This is a composite of information displayed by the **getcache** and **getconfig** commands.

-disk

Displays only information about disks and enclosures in the storage system. This is the same information displayed by the **getdisk** command.

-drivetype

Displays the drive type of the LUN.

-lun

Displays only information about each logical units (host and array) in the array. This is a composite of information displayed by **getsniffer**, **storagegroup**, and **getlun** commands.

-reserved

Displays the reserved LUN pool information.

-rg

Displays only information about RAID groups. This is the same information displayed by **getrg** command.

-sg

Displays only information about storage groups. This is the same information displayed by the **storagegroup** command.

-snapviews

Displays only information about **snapview**. This is the same information displayed by the **snapview** command.

-sancopy

Displays only information about **sancopy**. This is the same information displayed by the **sancopy** command.

Output formats

Agent/Host information (same as returned by command getsp)

Server IP Address:	10.15.22.176	Server/SP IP address
Agent Rev:	5.3.0 (5.0)	Revision of the agent.
Agent/Host Information ----------		
Desc:	MY_K10	ASCII description of device.
Node:	A-F20011000207	Device name or location in file system of device. Use this value when specifying the command line device name.
Physical Node:	K10	
Signature:	196618	Unique signature of SP
Peer Signature:	176166	Unique signature of peer SP
SCSI Id:	0	SCSI id of SP host connection
SP Identifier:	A	SP Identifier (A or B)
Model:	4700-2	Model number of SP
Model Type:	Rackmount	Model Type (deskside, rackmount)
Prom Rev:	5.94.00	Prom revision.
SP Memory:	817	SP memory in megabytes.
Serial No:	F20011000207	Serial number of device.
Cabinet:	DPE	cabinet type (DPE)
Installed packages:		
Name of the software package:	Base	Package name
Revision of the software package:	01_89_35	Package revision
Commit Required:	NO	YES / NO
Revert Possible:	NO	YES / NO
Active State:	YES	YES / NO
Dependent packages:	MirrorView 01_89_25, Navisphere 5.3.0	Dependency information
Required packages:	Navisphere >5.2.0.0.0, Base <01_89_99, Base >01_80_00,	Required package revision information
Is installation completed:	YES	YES / NO
Is this System Software:	NO	YES / NO

Storage-system information (-array switch) (same information is returned by commands getcru and initializearray -list)

```
Array Information
-----------------

Array Name:  Array_2
    Array UID:
   50:06:01:60:20:04:A0:CF
Array Name: Storage_2                                  Storage-system name
Array UID:50:06:01:60:20:04:A0:CF                      Storage-system
                                                       16-byte unique
                                                       identification number

DAE/SP Bus 0 Enclosure 0                               Customer Replaceable
Bus 0 Enclosure 0 Fan A State: Present                 Unit (CRU)
Bus 0 Enclosure 0 Fan B State: Present                 information
Bus 0 Enclosure 0 Power A State: Present
Bus 0 Enclosure 0 Power B State: Present
SP A State:                  Present
SP B State:                  Present
Bus 0 Enclosure 0 SPS A State: Present
Bus 0 Enclosure 0 SPS B State: Present
Bus 0 Enclosure 0 LCC A State: Present
Bus 0 Enclosure 0 LCC B State: Present
Bus 0 Enclosure 0 LCC A Revision: 3
Bus 0 Enclosure 0 LCC B Revision: 3
Bus 0 Enclosure 0 LCC A Serial #: F4001020156
Bus 0 Enclosure 0 LCC B Serial #: N/A
DAE Bus 0 Enclosure 1
Bus 0 Enclosure 1 Fan A State: Present
Bus 0 Enclosure 1 Power A State: Present
Bus 0 Enclosure 1 Power B State: Present
Bus 0 Enclosure 1 LCC A State: Present
Bus 0 Enclosure 1 LCC B State: Present
Bus 0 Enclosure 1 LCC A Revision: 3
Bus 0 Enclosure 1 LCC B Revision: 0
Bus 0 Enclosure 1 LCC A Serial #: F4001080137
Bus 0 Enclosure 1 LCC B Serial #: N/A
```

(The CRU display continues for each enclosure on bus 0, then for each enclosure on bus 1)

```
Raid Group ID:          223                            Information about the
Logical Units Used:     223                            PSM LUN (created at
List of disks:                              Bus 0      system installation)
   Enclosure 0 Disk 2
    Bus 0 Enclosure 0 Disk 3
    Bus 0 Enclosure 0 Disk 4
    Bus 0 Enclosure 0 Disk 5
    Bus 0 Enclosure 0 Disk 6
```

HBA or Switch information

HBA Information ----------	
Information about each HBA:	
HBA UID: 01:02:03:04:05:06:07:08:09:0A:0B:0C:0D:0E:01:12	HBA 32- byte unique identification number
Server Name: navi2280.us.dg.com	Server name.
Server IP Address: 12.34.56.78	Server IP Address.
HBA Model Description:	If any
HBA Vendor Description:	If any
HBA Device Driver Name:	If any
Information about each port of this HBA:	
SP Name: SP A	SP (A or B)
SP Port ID: 0	Can be 0 through 3.
HBA Devicename: N/A	Name in file system if available
Trusted: NO	YES or NO
Logged In: NO	YES or NO
Defined: YES	YES or NO
Initiator Type: 0	Can be 0 through 3
StorageGroup Name: Server1_SG	Storage group(s) on this port

(HBA and HBA port listings continue here.)

Information about each SPPORT:	
SP Name: SP A	A or B
SP Port ID:0	0 to 3
SP UID: 50:06:01:60:20:04:A0:CF:50:06:01:60:40:04:A0:CF	32- byte unique ID number of SP
Link Status: Down	Up or Down
Port Status: DISABLED	Enabled or Disabled
Switch Present: NO	YES or NO
ALPA Value: 0	0 to 255
Speed Value: 1	Speed of 1 or 2 Gbs

(SP B and SP B port information appears here.)

SP Information --------------		
Storage Processor:	SP A	A or B
Storage Processor Network Name: Storage Processor IP Address: Storage Processor Subnet Mask: Storage Processor Gateway Address:	naviqa22176 10.15.22.176 255.255.255.0 10.15.22.1	Network information
System Fault LED:	OFF	Status of fault LED.
Statistics Logging:	ON	Serve for performance monitoring
System Date: Day of the week: System Time:	08/15/2001 Wednesday 08:37:	SP clock information
Max Requests: Average Requests: Prct Busy: Prct Idle: Hard errors: Read_requests: Write_requests: Total Reads: Total Writes: Blocks_read: Blocks_written: Sum_queue_lengths_by_arrivals: Arrivals_to_non_zero_queue: Hw_flush_on: Idle_flush_on: Lw_flush_off: Write_cache_flushes: Write_cache_blocks_flushed: Internal bus 1 busy ticks: Internal bus 1 idle ticks: Internal bus 2 busy ticks: Internal bus 2 idle ticks: Internal bus 3 busy ticks: Internal bus 3 idle ticks: Internal bus 4 busy ticks: Internal bus 4 idle ticks: Internal bus 5 busy ticks: Internal bus 5 idle ticks: Controller busy ticks: Controller idle ticks:	1 4294967295 0 0 0 0 0 0 0 0 0 0 0 0 31 0 0 0 4294967295 4294967295 0 0 0 0 0 0 0 0 20787 1617657	Performance information (recorded only if Statistics logging is on)
(SP B information appears here.)		

SP cache information (same as returned by commands getcache and getcontrol)

```
Cache Information
-----------------

System Buffer (spA):                 58 MB
System Buffer (spB):                 58 MB
SP Read Cache State                  Enabled
SP Write Cache State                 Enabled
Cache Page size:                     2
Write Cache Mirrored:                YES
Low Watermark:                       40
High Watermark:                      60
SPA Cache pages:                     60657
SPB Cache pages:                     0
Unassigned Cache Pages:              0
Read Hit Ratio:                      29
Write Hit Ratio:                     0
Prct Dirty Cache Pages =             0
Prct Cache Pages Owned =             49
SPA Read Cache State                 Enabled
SPB Read Cache State                 Enabled
SPA Write Cache State                Enabled
SPB Write Cache State                Enabled
SPS Test Day:                        Saturday
SPS Test Time:                       21:00
SPA Physical Memory Size =           817
SPA Free Memory Size =               399
SPB Physical Memory Size =           817
SPB Free Memory Size =               409
SPA Read Cache Size =                110
SPA Write Cache Size =               250
SPA Optimized Raid 3 Memory Size =   0
SPB Read Cache Size =                100
SPB Write Cache Size =               250
SPB Optimized Raid 3 Memory Size =   0
```

Disk information (same as returned by getdisk) HBA information

```
All Disks Information
---------------------

Bus 0 Enclosure 0 Disk 0
Vendor Id:             SEAGATE
Product Id:            ST336704 CLAR36
Product Revision:      3A90
Lun:                   0 1 2 3
Type:                 0: RAID5 1: RAID5 2: RAID5
   3: RAID5
Hot Spare:             0: NO 1: NO 2: NO 3: NO
Prct Rebuilt:         0: 100 1: 100 2: 100 3: 100
Prct Bound:           0: 100 1: 100 2: 100 3: 100
Private:               0: 577536 1: 577536 2:
   577536 3: 577536
State:                 Enabled
Serial Number:         3CD0K5D1
Sectors:               2097152 (1074)
Capacity:              37180
Bind Signature:        0xbd4d, 0, 0
Hard Read Errors:      0
Hard Write Errors:     0
Soft Read Errors:      0
Soft Write Errors:     0
Read Retries:          0
Write Retries:         0
Remapped Sectors:      0
Number of Reads:       28175
Number of Writes:      2747
Number of Luns:        4
Raid Group ID:         0
Clariion Part Number: DG118031735
Request Service Time: 0 ms
Read Requests:         28175
Write Requests:        2747
Kbytes Read:           3265949
Kbytes Written:        2777
Stripe Boundry Crossing: 0
Queue Max:         1
Queue Avg:         0
Prct Idle          0
Prct Busy          0
```

(Information appears here for additional disks on Bus in this enclosure, then on other bus 0 enclosures, then on bus 1 and each bus 1 enclosure.)

LUN information (same information as returned by command getlun)

```
All logical Units Information
-----------------------------
LOGICAL UNIT NUMBER 0
Name                          LUN 0
UID:
   60:06:01:F9:02:6C:00:00:CC:F3:8F:5F:A5:
   8D:D5:11
Is Private:                   NO
Snapshots List:               None
MirrorView Name if any:       Not Mirrored
Dual Simultaneous Access:     N/A
Prefetch size (blocks) =           0
Prefetch multiplier =              4
Segment size (blocks) =            0
Segment multiplier =               4
Maximum prefetch (blocks) =        512
Prefetch Disable Size (blocks) = 129
Prefetch idle count =              40
Variable length prefetching YES
Prefetched data retained     YES

Read cache configured according to
 specified parameters.
Bus 0 Enclosure 0 Disk 0  Enabled
Bus 0 Enclosure 0 Disk 1  Enabled
Bus 0 Enclosure 0 Disk 7  Enabled
Bus 0 Enclosure 0 Disk 8  Enabled
Bus 0 Enclosure 0 Disk 9  Enabled

Total Hard Errors:            0
Total Soft Errors:            0
Total Queue Length:           0
RAID-3 Memory Allocation:     0
Minimum latency reads N/A
```

Read cache information

Hard read and write errors

Soft (correctable) errors

```
Read Histogram[0] 0
Read Histogram[1] 0
```
(Read Histogram 2 through 10 information appears.)

Performance information (recorded only if Statistics logging is on)

```
Write Histogram[0] 0
Write Histogram[1] 0
```
(Write Histogram 2 through 10 information appears.)

```
Read Requests:              0
Write Requests:             0
Blocks read:                0
Blocks written:             0
Read cache hits:            0
Read cache misses:          0
Prefetched blocks:          0
Unused prefetched blocks:   0
Write cache hits:           0
Forced flushes:             0
Read Hit Ratio:             0
Write Hit Ratio:            0

RAID Type:                  RAID5
RAID Group ID:              0
State:                      Bound

Stripe Crossing:            0
Element Size:               128
Current owner:              SP B
Offset:                     0
Auto-trespass:              DISABLED
Auto-assign:                DISABLED
Write cache:                ENABLED
Read cache:                 ENABLED
Idle Threshold:             0
Idle Delay Time:            20
Write Aside Size:           1023
Default Owner:              SP B
Rebuild Priority:           ASAP
Verify Priority:            Low
Prct Reads Forced Flushed:  0
Prct Writes Forced Flushed: 0
Prct Rebuilt:               100
Prct Bound:                 100
LUN Capacity(Megabytes):    1024
LUN Capacity(Blocks):       2097152
```

RAID type
Group ID
State

(Listing for additional LUNs appears here.)

LUN pool information (same as returned by command reserved -lunpool -list)

```
Name of the SP:                          SP A
Total Number of LUNs in Pool:            9
Number of Unallocated LUNs in Pool:      4
Unallocated LUNs:                        14, 24, 23, 22
Allocated LUNs:                          16, 17, 18, 20, 21
Total size in GB:                        4.488281
Unallocated size in GB:                  1.292969
Used LUN Pool in GB:                     0.017639
% Used of LUN Pool:                      0.393005
Chunk size in disk blocks:               128
```

RAID group information (same as returned by command getrg)

All RAID Groups Information ----------	
RaidGroup ID: 0	Raid group Identification Number.
RaidGroup Type: r5	Raid type.
RaidGroup State: Explicit_Remove Valid_luns	Valid states are Invalid, Explicit_Remove, Valid_luns, Expanding, Defragmenting, Halted, and Busy..
List of disks: Bus 0 Enclosure 0 Disk 0 Bus 0 Enclosure 0 Disk 1 Bus 0 Enclosure 0 Disk 7 Bus 0 Enclosure 0 Disk 8 Bus 0 Enclosure 0 Disk 9	Disks used in the Raid group.
List of luns: 0 1 2 3	LUNs currently in RAID group.
Max Number of disks: 16	Max disks allowed in RAID group.
Max Number of luns: 32	Max LUNs allowed in storage system
Raw Capacity (Blocks): 343391320	Raw capacity in disk blocks.
Logical Capacity (Blocks): 274713056	Logical capacity in blocks.
Free Capacity (Blocks,non-contiguous): 266324448	Free (unbound and non-contiguous) capacity of RAID group in blocks,.
Free contiguous group of unbound segments: 266324448	Displays free contiguous group of unbound segments in blocks.
Defrag/Expand priority: Medium	May be High, Medium, or Low.
Percent defragmented: 100	Percent complete of defragmenting.
Percent expanded: 100	Displays if lun expansion enabled for this RAID group.
Disk expanding onto: N/A	Displays disks expanding onto or N/A for not expanding.
Defrag/Expand priority: Medium	May be High, Medium, or Low.
Percent defragmented: 100	Percent defragmented
Lun Expansion enabled: NO	Whether LUN expansion is enabled for this RAID group.
Legal RAID types: r5	Displays legal RAID types for luns to be bound on the RAID group.

Storage group information (similar to that returned by storagegroup -list)

Storage Group Name: Group1	User defined storage group name
Storage Group UID: 28:D0:64:D0:BF:90:D5:11:80:1D:08:00:1B:41:07:5B	32- byte unique identification number.
HBA/SP Pairs:	HBA UID, SP,and SP Port of storage group
HBA UID SP Name SPPort ------- ------- ------ 20:00:00:00:C9:20:E2:1C:10:00:00:00:C9:20:E2:1C SP B 1	
HLU/ALU Pairs: HLU Number ALU Number ---------- ---------- 0 11 1 12 2 4	Host LUN number (HLU) and actual LUN number (ALU).
Shareable: NO	YES or NO

SnapView information from -snapviews switch (same as returned by commands snapview -listsnapableluns, -listsessions, and -listsnapshots)

`Snapviews Information`
`----------`
`*** List of LUNs that can be snapped***`	

`Name LUN n`	List of LUN numbers for every LUN that can be a source LUN
`Name of the session: sess4_5`	Session name
`Number of read requests serviced by the Reserved LUN Pool:`	Number
`Total number of read requests on the snapview logical unit:`	Numbers
`Number of reads from the TLU:`	Number
`Number of write requests in the session:`	Number
`Number of write requests to Reserved LUN Pool that triggered a COW:`	Number
`Total number of writes requests on the snapview target logical unit:`	Number
`Number of write requests larger than the chunk size:`	Number
`List of Target Logical Units: LUN 4 LUN 5`	LUN numbers
`snap Logical Units Name:`	LUN name
`snap Logical Units UID:`	32-byte unique ID
`Session in simulation:`	YES, NO, or Not Supported
`Session in persistance:`	YES or NO
`Session creation time:`	Date and Time
The following items display for every snapshot, active or inactive	
`*** Info of SnapView Snapshots ***`	
`SnapView logical unit name: snap4`	LUN name

SnapView logical unit ID: 60:06:01:60:16:64:08:00:10:54:78:F7:7B:E4:D7:11	32-byte unique ID
Target Logical Unit: 4	LUN ID (same for source and snapshot)
State:	Current state; for example, Active
*** Info of Reserved SnapView Sessions and Snapshots ***	
Session Name: SANCopy_isc2to12	Session name assigned at session start
Target Logical Unit: 2	LUN ID (same for source and snapshot)
SnapView logical unit name: SANCopy_isc2to12	LUN name

Example **naviseccli -h ss1_spa getall**

Output See above.

getarrayuid

Gets the storage-system unique ID

Description

The **naviseccli** or **navicli getarrayuid** command displays the unique ID (UID) of the storage system that contains the current SP. For a Fibre Channel storage system this is the storage system WWN. For an iSCSI storage system this is also the WWN, but iSCSI also has a target name, the "iqn" identifier, which is a unique identifier. A storage system with an iSCSI and Fibre Channel combination controller shows both types of IDs.

The SP, HBA, and switch ports also have unique IDs. If you specify one or more SPs (*sphosts*), then the CLI displays the unique ID of the storage systems containing those SPs. Knowing the UID of an SP's storage system is useful with MirrorView mirroring commands and for other operations.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getarrayuid is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getarrayuid [**-iscsi** | **-all**] [*sphostnames*]

The optional switches are:

sphostnames

Are the hostnames of one or more SPs, separated by spaces or commas. If you omit *sphostnames*, then the CLI displays the UID of the SP specified with the **-h** switch.

-iscsi

Returns the iSCSI target name (iqn) for the storage system on a combo storage system.

-all

Returns both the storage system WWN and the iSCSI target name (iqn).

Note: If you do not specify any switches, **getarrayuid** returns the storage system WWN on a storage system with an iSCSI and Fibre Channel combination controller, as well as on an iSCSI-only storage system.

Example **naviseccli -h ss1_spa getarrayuid -all**

```
Host name    Array UID
Cps42199     50:06:01:60:77:02:C7:A7
1.2.3.4      iqn. 1992-04.com.emc:cx.hk192200422
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output The UID of the storage system that holds the SP (see above).

getcache

Gets cache environment information

Description

The **naviseccli** or **navicli getcache** command returns information about the SP's caching environment.

An SP's read cache is automatically enabled on powerup if its size is valid. The write cache is automatically enabled on powerup if the cache size is valid and the storage system has the following components:

- Two SPs
- A fully charged Standby Power Supply (SPS)
- Disk modules in 0:0 through 0:8

Caching statistics are meaningful only if the SP's write cache is enabled.

User Access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getcache is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getcache [-asys] [-bsys] [-bbutd] [-bbutt] [-hacv] [-high] [-low] [-mirror] [-page] [-pdp] [-ppo] [-rm3a] [-rm3b] [-rsta] [-rstb] [-rsza] [-rszb] [-spa] [-spb] [-state] [-ucp] [-wst] [-wsz]

The optional switches are:

-asys

Returns the size of SP A's memory buffer (system buffer space, excludes cache).

-bsys

Returns the size of SP B's memory buffer.

-bbutd

Returns the day of the week to perform the Standby Power Supply (SPS) self-test.

-bbutt

Returns the time of the day to perform the SPS self-test.

-hacv (CX3-series and CX-series storage systems only)

Checks whether the HA cache vault is enabled or disabled. HA cache vault determines the availability of storage-system write caching when a single drive in the cache vault fails. When the HA cache vault is enabled, write caching is disabled if a single vault disk fails. When disabled, write caching is not disabled if a single disk fails.

-high

Returns the write cache high watermark. The high watermark is the percentage of dirty pages, which, when reached, causes the SP to begin flushing the cache.

-low

Returns the write cache low watermark. The low watermark is the percentage of cache dirty pages that determines when cache flushing stops. When the write cache low watermark is reached during a flush operation, the SP stops flushing the cache.

-mirror

Returns the write cache mirrored status. Always enabled for fibre.

-page

Returns the size, in Kbytes, of a cache page. This size can be 2, 4, 8, or 16 Kbytes. The default size is 2 Kbytes.

-pdp

Returns the percentage of dirty pages currently in cache, that is, pages that have been modified in the SP's write cache, but that have not yet been written to disk. A high percentage of dirty pages means the cache is handling many write requests.

-ppo

Returns the percentage of pages owned by the SP.

-rm3a

Returns the amount of memory, in MB, reserved for the optimized RAID 3 data buffers on SP A.

-rm3b

Returns the amount of memory, in MB, reserved for the optimized RAID 3 data buffers on SP B.

-rsta

Returns the current internal state of the read cache on SP A.

-rstb

Returns the current internal state of the read cache on SP B.

-rsza

Returns, in MB, the amount of read cache memory SP A is allowed to use.

-rszb

Returns, in MB, the amount of read cache memory SP B is allowed to use.

-spa

Returns the total number of pages in SP A, each page with the cache page size you selected when setting up storage-system caching. This number equals the cache size divided by the cache page size, minus space for checksum tables. If the storage system has two SPs and both are working, they divide the total number of pages between them. If an SP is idle for a long period or fails, the active SP may increase its share of pages.

-spb

Returns the total number of pages in SP B, each page with the cache page size you selected when setting up storage-system caching. This number equals the cache size divided by the cache page size, minus space for checksum tables. If the storage system has two SPs and both are working, they divide the total number of pages between them. If an SP is idle for a long period or fails, the active SP may increase its share of pages.

-state

Returns the current state of the SP's read or write cache. The possible read cache states are Enabled, Disabling, and Disabled. An SP's read cache is automatically enabled on powerup if the cache size is a valid number and the SP has at least 8 MB of memory. The possible write cache states are Enabled or Disabled, and several transition states, such as Initializing, Enabling, Disabling, Dumping, and Frozen.

-ucp

Returns the number of unassigned cache pages (owned by neither A nor B).

-wst

Returns the current internal state of the storage system's write cache.

-wsz

Returns the write cache size for the storage systems (which are always equal).

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getcache

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output. Actual output varies depending on the switches you use with the **getcache** command.

```
SP Read Cache State                    Enabled
SPA Write Cache State                  Disabled
SPB Write Cache State                  Disabled
Cache Page size:                       2
Write Cache Mirrored:                  YES
Low Watermark:                         60
High Watermark:                        90
SPA Cache pages:                       0
SPB Cache pages:                       0
Unassigned Cache Pages:                0
Read Hit Ratio:                        0
Write Hit Ratio:                       0
Prct Dirty Cache Pages =               0
Prct Cache Pages Owned =               0
SPA Read Cache State                   Enabled
SPB Read Cache State                   Enabled
SP Write Cache State                   Disabled
SPS Test Day:                          Friday
SPS Test Time:                         14:00
SP A Physical Memory                   128
SP B Physical Memory                   128
SP A Free Memory                       72
SP B Free Memory                       72
SPA Read Cache Size =                  62
SPB Read Cache Size =                  64
SPA Write Cache Size =                 0
SPB Write Cache Size =                 0
SPA Optimized Raid 3 Memory Size =     12
SPB Optimized Raid 3 Memory Size =     12
```

getconfig

Returns storage-system type configuration information

Description

Displays storage-system type configuration information. If you omit switches, it displays all configuration type information. You can set configuration information with **setconfig**.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getconfig is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getconfig [**-ptype**] [**-que**] [**-rer**] [**-tn**] [**-pg8**] [**-rep**]

where:

-ptype

Displays the storage-system package type.

-que

Displays the setting on how queue full status is handled. `Yes` means that the FLARE software will return device status to the operating system as busy, instead of queue full, when the device queue is full.

-rer

Displays the number of recovered errors.

-tn

Displays the state of the Target Negotiate bit.

-pg8

Displays SCSI mode page 8 information.

-rep

Displays periodic error report information: the number of reported errors or N/A.

Conventions and recommendations

Use the **getsp** command to display SP revision and signature information.

Example **naviseccli -h ss1_spa getconfig**

```
Sub-System Package Type:20
Queue Full Status:          DISABLED
Recovered Errors:           DISABLED
Target Negotiate:           Unknown
Mode Page 8:                DISABLED
Periodic Error Report:      N/A
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output See above.

getcontrol

Gets SP performance information

Description

The **naviseccli** or **navicli getcontrol** command returns information about the SP performance.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getcontrol is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getcontrol [**-allib**] [**-arv**] [**-busy**] [**-cbt**] [**-date**] [**-day**] [**-flush**] [**-idle**] [**-read**] [**-rw**] [**-sc**] [**-sf**] [**-sl**] [**-time**] [**-write**]

The optional switches are:

-allib

Returns the idle and busy ticks for all buses.

-arv

Returns the number of times a user request arrived while at least one other request was being processed.

-busy

Returns the percentage of time the SP is busy.

-cbt

Returns the controller idle and busy ticks.

-date

Returns the SP's system date.

-day

Returns the SP's system day.

-flush

Returns the number of times that flushing was turned on by the high watermark, the low watermark, and the Idle unit. This also returns the number of requests to flush the write cache, and the number of write cache blocks flushed.

-idle

Returns the percentage of time the SP is idle.

-read

Returns the number of reads received by the SP.

-rw

Returns the following:

Host read requests: The number of read requests made by the host to the LUN.
Host write requests: The number of write requests made by the host to the LUN.
Host blocks read: The number of blocks the host read from the LUN.
Host blocks written: The number of blocks written from the host to the LUN.

-sc

Returns the status of the system cache (on/off).

-sf

Returns the status of the system fault LED (on/off).

-sl

Returns the status of statistics logging (on/off).

-time

Returns the SP's system time.

-write

Returns the number of writes received by the SP.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getcontrol

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output The following is a sample output. Actual output varies depending upon which switches you use with the **getcontrol** command.

```
System Fault LED:                          OFF
Statistics Logging:                        ON
SP Read Cache State                        Enabled
SP Write Cache State                       Disabled
Max Requests:                              2
Average Requests:                          0
Hard errors:                               0
Total Reads:                               39899771
Total Writes:                              0
Prct Busy:                                 0
Prct Idle:                                 0
System Date:                               08/12/1998
Day of the week:                           Wednesday
System Time:                               14:01:35
Read_requests:                             39899771
Write_requests:                            0
Blocks_read:                               658341649
Blocks_written:                            0
Sum_queue_lengths_seen_by_arrivals:        20009537
Arrivals_to_non_zero_queue:                20009537
Hw_flush_on:                               0
Idle_flush_on:                             0
Lw_flush_off:                              0
Write_cache_flushes:                       0
Write_cache_blocks_flushed:                0
Internal bus 1 busy ticks:                 4294967295
Internal bus 1 idle ticks:                 4294967295
Internal bus 2 busy ticks:                 0
Internal bus 2 idle ticks:                 0
Internal bus 3 busy ticks:                 0
Internal bus 3 idle ticks:                 0
Internal bus 4 busy ticks:                 0
Internal bus 4 idle ticks:                 0
Internal bus 5 busy ticks:                 0
Internal bus 5 idle ticks:                 0
Controller> busy ticks:                    136230
Controller idle ticks:                     16461120
```

getcrus

Gets CRU state information

Description

The **naviseccli** or **navicli getcrus** command returns state information on all or selected CRUs (customer replaceable units) in the storage system except for disks (see the **getdisk** command). The **getcrus** command displays the state of the following CRUs: fans, link controller cards (LCCs), storage processors (SPs), battery backup units (referred to as standby power supplies or SPSs), and power supplies (PSs or VSCs). You can use **getcrus** without any switches to get the state information for every CRU (except disks.)

Note: If one of the LCCs is pulled from Bus x, Enclosure x, all data along that bus (after the LCC was pulled) appears as faulted since the Agent cannot gather any information along that path. If this occurs, issue the **getcrus** command to the peer SP. The CLI lists the faulted components.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getcrus is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getcrus [-cablingspsa] [-cablingspsb] -cachecard] [-encdrivetype] [-fana] [-fanb] [-fanc] [-fand] [-fane] [-fanf] [-fang] [-lcca] [-lccb] [-lccreva] [-lccrevb] [-lccsna] [-lccsnb] [-spa] [-spb] [-spsa] [-spsb] [-speeds] [-vsca] [-vscb] [-vscc] [-vscd]

The optional switches are:

-cablingspsa

Returns the cabling status for SPS A (standby power supply A).

-cablingspsb

Returns the cabling status for SPS B (standby power supply B).

-cachecard (AX-series [single-SP] only)

Returns the hardware state information of the cache memory card. The following table lists the possible hardware states. See also the **luncache** command.

Hardware state	Meaning
OK	The power on the main SP is on and the cache memory card battery is fully charged. The cache memory card is in normal operation.
Not present	The cache memory card is not present.
Faulted	The cache memory card has hardware faults.
Battery charging	The power on the main SP is on and the battery is charging on the cache memory card.
In wrong array	The cache memory card is from the wrong storage system.

-encdrivetype

Displays the type(s) of drives that are currently allowed to run in the enclosure.

-fana

Returns the state information for fan A.

-fanb

Returns the state information for fan B.

-fanc

Returns the state information for fan C.

-fand

Returns the state information for fan D.

-fane

Returns the state information for fan E.

-fanf

Returns the state information for fan F.

-fang

Returns the state information for fan G.

-lcca

Returns the state information of the LCC for SP A.

-lccb

Returns the state information of the LCC for SP B.

-lccreva | -lccrevb

Returns the revision of the DPE LCC A, LCC B, or both if you specify both switches.

-lccsna | -lccsnb

Returns the serial number of the DPE LCC A, LCC B, or both if you specify both switches.

-spa

Returns the current operational state of SP A. It can be in any of the following states:

Present - The SP is the communication channel you are using to communicate with the chassis.

Empty - Agent cannot talk to the SP because a communication channel specifying the SP is not in the agent's configuration file for the selected host. For example, the SP is connected to a different host than the SP in the communications channel for the chassis.

Not Present - SP that is in the communication channel to the selected chassis has failed or been removed.
Removed - SP was not present when the agent was started.

-spb

Returns the state information for SP B. See **-spa** description (above).

-spsa

Returns the state information for SPS (standby power supply, backup battery) A.

-spsb

Returns the state information for standby power supply B.

-speeds

Displays the current and maximum speed of enclosures and LCCs within the enclosures. The current speed indicates the speed an enclosure or LCC is currently running at; the maximum speed indicates the highest speed an enclosure or LCC is capable of running at.

-vsca

Returns the state information on power supply A (A0 for CX3-series model 20, CX3-series model 40 storage systems).

-vscb

Returns the state information for power supply B (A1 for CX3-series model 20, CX3-series model 40 storage systems).

-vscc

Returns the state information for power supply C (B0 for CX3-series model 20, CX3-series model 40 storage systems).

-vscd

Returns the state information for power supply D (B1 for CX3-series model 20, CX3-series model 40 storage systems).

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getcrus

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Sample output follows. Actual output varies depending on the storage-system type and switches used with the **getcrus** command.

```
DPE Enclosure 0
SP A State:                              Present
SP B State:                              Present
Enclosure 0 Fan A State:                 Present
Enclosure 0 Fan B State:                 Present
Enclosure 0 Power A State:               Present
Enclosure 0 Power B State:               Present
Enclosure 0 SPS A State:                 Present
Enclosure 0 SPS B State:                 Empty
Enclosure 0 LCC A State:                 Present
```

```
Enclosure 0 LCC B State:                Present

DAE Enclosure 1
Enclosure 1 Fan A State:                Present
Enclosure 1 Power A State:              Present
Enclosure 1 Power B State:              Present
Enclosure 1 LCC A State:                Present
Enclosure 1 LCC B State:                Present
```

The **getcrus** display includes the bus number, 0 or 1, for each enclosure.

getdisk

Gets disk status

Description

The **naviseccli** or **navicli getdisk** command returns detailed status information about all or selected disks in the system.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getdisk is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getdisk [***disk-position***] [**-bind**] [**-bndcrs**] [**-busyticks**] [**-bytrd**] [**-bytwrt**] [**-capacity**] [**-cpn**] [**-drivetype**] [**-hr**] [**-hs**] [**-idleticks**] [**-hw**] [**-lun**] [**-numluns**] [**-private**] [**-product**] [**-rb**] [**-read**] [**-rds**] [**-rev**] [**-rg**] [**-sectors**] [**-serial**] [**-sig**] [**-speeds**] [**-sr**] [**-state**] [**-sw**] [**-tla**] [**-type**] [**-usercapacity**] [**-vendor**] [**-write**] [**-wrts**]

The optional switches are:

disk-position

Returns status for a specific disk. See Section "LUN IDs, unique IDs, and disk IDs" on page 2-12 to verify the format for specifying disks.

When the *disk-position* is not entered, **getdisk** reports on all disks, regardless of which switches are set. To obtain only the information specified by the optional switches, you must include *disk-position* in the **getdisk** command.

-bind

Returns the percentage of the disk that is bound.

-bndcrs

Returns the number of Stripe Boundary Crossings (string value or Unknown).

-busyticks

Returns the amount of time that this disk is busy.

-bytrd

Returns the number of Kbytes read.

-bytwrt

Returns the number of Kbytes written.

-capacity

Returns the disk capacity in MB.

-cpn

Returns the storage-system part number (string value) or N/A.

-drivetype

Returns the drive type of the disk.

-hr

Returns the total number of hard read errors for all the disk modules in the LUN that persisted through all the retries. A growing number of hard errors may mean that one or more of the LUN's disk modules is nearing the end of its useful life.

-hs

Returns hot spare status: NO if not a hot spare, the disk position otherwise; see page 3-94.

-hw

Returns the total number of hard write errors for all the disk modules in the LUN that persisted through all the retries. A growing number of hard errors may mean that one or more of the LUN's disk modules is nearing the end of its useful life.

-idleticks

Returns the amount of time that this disk is idle.

-lun

Returns the LUN number to which this disk belongs.

-numluns

Returns the number of LUNs bound to this disk. LUNs may span multiple disks.

-private

Returns the offset of every partition on the disk.

-product

Returns the product ID of the disk.

-rb

Returns the percentage of the disk that is rebuilt.

-read

Returns the total number of read requests made to the disk module. You might find the LUN read information in **getlun** more useful because it is for the entire LUN, and not just for one of the disk modules in the LUN.

-rds

Returns the number of read requests.

-rev

Returns the product revision number of the disk.

-rg

Returns the RAID group (if any) associated with this disk.

-sectors

Returns the number of user sectors.

-serial

Returns the serial number of the disk.

-sig

Returns the bind signature, which was automatically assigned during the bind process.

-speeds (CX3-series only)

Displays the current and maximum speed of the disk. The current speed indicates the speed a disk is currently running at; the maximum speed indicates the highest speed a disk is capable of running at. The current speed is dependent on the speed of the enclosure that contains the disk, which is also dependent on the current speed of the bus that the enclosure is running on.

-sr

Returns the total number of soft read errors for all the disk modules in the LUN that disappeared before all the retries. A growing number of soft errors may indicate that one of the LUN's disk modules is nearing the end of its useful life.

-state

Returns the state of the disk.

-sw

Returns the total number of soft write errors for all the disk modules in the LUN that disappeared before all the retries. A growing number of soft errors may indicate that one of the LUN's disk modules is nearing the end of its useful life.

-tla

Returns the CLARiiON TLA part number.

-type

Returns the RAID type of the disk.

-usercapacity

Returns the amount of space on the disk that is assigned to bound LUNs.

-vendor

Returns the vendor ID of the disk.

-write

Returns the total number of write requests to the disk module. You might find the LUN write information in **getlun** more useful because it shows the entire LUN, and not just one disk.

-wrts

Returns the number of write requests.

Conventions and recommendations

A disk module can be in any of the following operational states:

State	Meaning
Binding	Being bound into a LUN.
Empty	Failed or removed *before* the agent started running, or the disk wasn't part of a LUN.
Enabled	Either a hot spare on standby or part of a bound LUN that is assigned to (owned by) the SP you are using as the communication channel to the chassis. If the storage system has another SP, this module's status is Ready when you use the other SP as the communication channel to the chassis.
Equalizing	Data from a hot spare is being copied onto a replacement disk module.
Expanding	Disk is being added to a RAID group.
Failed	Powered down or inaccessible.
Formatting	Being hardware formatted. Generally, modules do not need formatting.
Off	Powered off by the SP, which can happen if a wrong size module is inserted.
Powering Up	Power is being applied to the disk module.
Ready	Module is part of a broken LUN or a LUN that is bound and unassigned. This can mean that the disk module is part of a LUN that is *not* owned by the SP that you are using as the communication channel to the chassis. If the disk module is part of a LUN assigned to an SP other than the one you are using as the communication chassis, the module's status is either Enabled or Ready. It is Enabled when you use the other SP as the communication channel to the chassis.
Rebuilding	Module is either a hot spare or replacement disk module that replaced a failed module in a LUN. The data is being rebuilt on a hot spare or a replacement disk module.
Removed	Removed from the chassis; applies only to a disk module that is part of a LUN.
Hot Spare Ready	Module is either a hot spare or replacement disk module that replaced a failed module in a LUN. The data is being rebuilt on a hot spare or replacement disk module.

State	Meaning
Unbound	Ready to be bound into a LUN.
Unformatted	Disk is unformatted.
Unsupported	Disk is unsupported.

Examples

naviseccli -h ss1_spa getdisk 1_1_1

Returns information for disk 1 in disk array enclosure 1 (DAE or DAE2 number 1) on bus 1.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output. Actual output varies depending on the switches you use with the **getdisk** command.

```
Bus 0 Enclosure 0 Disk 0
Vendor Id:             SEAGATE
Product Id:            ST336704 CLAR36
Product Revision:      3A90
Lun:                   0 1 2 3 4 5 6 7 12 13 14 15 16 17
Type:                 0: RAID5 1: RAID5 2: RAID5 3: RAID5
4: RAID5 5: RAID5 6: RAID5 7: RAID5 12: RAID5 13: RAID5
14: RAID5 15: RAID5 16: RAID5 17: RAID5
State:                 Enabled
Hot Spare:            0: NO 1: NO 2: NO 3: NO 4: NO 5: NO
6: NO 7: NO 12: NO 13: NO 14: NO 15: NO 16: NO 17: NO
Prct Rebuilt:          0: 100 1: 100 2: 100 3: 100 4: 100
5: 100 6: 100 7: 100 12: 100 13: 100 14: 100 15: 100 16:
100 17: 100
Prct Bound:            0: 100 1: 100 2: 100 3: 100 4: 100
5: 100 6: 100 7: 100 12: 100 13: 100 14: 100 15: 100 16:
100 17: 100
Serial Number:         3CD20B8P
Sectors:               7340032 (3758)
Capacity:              37180
Private:               0: 577536 1: 577536 2: 577536 3:
577536 4: 577536 5: 577536 6: 577536 7: 577536 12: 577536
13: 577536 14: 577536 15: 577536 16: 577536 17: 577536
Bind Signature:        0x4594, 0, 0
Hard Read Errors:      0
Hard Write Errors:     0
Soft Read Errors:      0
Soft Write Errors:     0
Read Retries:          0
```

```
Write Retries:         0
Remapped Sectors:      0
Number of Reads:       0
Number of Writes:      0
Number of Luns:        14
Raid Group ID:         0
Clariion Part Number:
Request Service Time: 0 ms
Read Requests:         0
Write Requests:        0
Kbytes Read:           0
Kbytes Written:        0
Stripe Boundary Crossing: 0
.
Statistics logging is disabled.
Certain fields are not printed if statistics
logging is not enabled.
```

getlog

Gets an SP or Event Monitor log

Description

The **naviseccli** or **navicli getlog** command returns the entire SP or Event Monitor log (default), the newest entries to the log, or the oldest entries to the log.

Note: IMPORTANT: Depending on the size of the log, the **getlog** command may take several minutes to execute.

The command affects only the log of the SP you specify with the **-h** switch in the command.

The **getlog** command requires an active Agent.

Note: Before contacting your service provider, go the CX3-series or CX-series self-service website.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getlog is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getlog [**-em**] [**-h**] [+*n*] [-*n*]

Note: For a host not attached (through a switch or HBA) to a storage system, use **getlog -em .**

The optional switches are:

-em

Displays the Event Monitor log. If you omit this switch, the CLI displays the Event Monitor log.

-h

Displays the **getlog** header.

+n

Displays the oldest *n* entries in the log, with the oldest entry first. If there are fewer than *n* entries, the entire log is displayed. *N* must be greater than 0.

-n

Displays the newest *n* entries in the log, with the oldest entry first. If there are fewer than *n* entries, the entire log is displayed. *N* must be greater than 0.

If a range of entries is not specified, the entire log is displayed with the oldest entry first.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getlog -3

```
04/10/1999 12:43:01 SP B(6e5) (FE Fibre loop
   operational)[0x00] 0 0
04/10/1999 12:43:19 SP B(6e4) (FE Fibre loop down)
   [0x03] 0 0
04/10/1999 12:43:19 SP B(6e5) (FE Fibre loop
   operational)[0x00] 0 0
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See above.

getloop

Gets fibre loop information

Note: This command applies only to Fibre Channel storage systems.

Description

The **naviseccli** or **navicli getloop** command returns information about the fibre loop.

This command is not valid for IRIX hosts.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getloop is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getloop [-clfo] [-conn] [-dlf] [-icl] [-ple] [-spf]

The optional switches are:

-clfo

Displays whether the command loop has failed over.

-conn

Displays the connection number.

-dlf

Displays the data loop failover status as follows:

```
Does system have data loop fail-over:Yes/No
Does system have illegal Cross-Loop:Yes/No
```

-icl

Displays whether there is an illegal cross loop.

-ple

Displays whether private loop is enabled.

-spf

Displays whether this SP can fail over.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getloop

```
Has Data Loop Failed Over:    NO
Can This SP Failover:         NO
Private Loop Enabled:         YES
Illegal Cross Loop:           NO
Connection #0:  Enclosure 0
Connection #1:  Enclosure 1
Connection #2:  Enclosure 2
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See above.

getlun

Gets LUN information

Description

The **naviseccli** or **navicli getlun** command returns information about a LUN and the customer replaceable units (CRUs) that make up that LUN.

Note: For CX3-series and CX-series storage systems, values returned for fields noted with an asterisk (*) below may not be correct. Use Navisphere Analyzer for the correct values.

If statistics logging is disabled, some fields are not printed (switches marked with * below). Other switches must be used with the **-disk** switch (switches marked with ** below).

If the target LUN is a metaLUN, EMC recommends that you use the **metlun -list** command (see page 5-15) instead of the **getlun** command to return information about the metaLUN. If you use the **getlun** command, only the following fields report data that apply to metaLUNs — **Name**, **Current owner**, **Default owner**, **LUN Capacity (Megabytes)**, **LUN Capacity (Blocks)**, **UID**, **Is Private**, **Snapshot List**, **MirrorView Name if any**.

If you target the LUNs that make up a metaLUN, all fields apply.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getlun is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getlun *lun-number* **[-aa] [-addroffset] [-at] [-bind] [-bp*] [-bread**] [-brw *] [-busy**] [-busyticks] [-bwrite**] [-capacity] [-crus] [-default] [-disk][-drivetype] [-dsa] [-element] [-ena**] [-ff*] [-hrdscsi] [-idle**] [-idleticks][-idt] [-ismetalun] [-it] [-luncache] [-mirrorname] [-mp][-mt] [-name] [-nminus] [-offset] [-owner] [-parityelements] [-pd] [-pic] [-prb] [-prefetch] [-prf] [-ps] [-private] [-psm] [-que] [-rb] [-rc] [-reads**] [-ret] [-rg] [-rhist*] [-rwf] [-rwr*] [-sc] [-sftscsi] [-snapshot] [-srcp] [-ss] [-ssm] [-state] [-status] [-stripe] [-totque] [-type] [-uid] [-upb*] [-usage] [-verify] [-was] [-wc] [-wch*] [-wh*] [-whist*] [-writes**]**

where:

lun-number

Specifies the logical unit number (LUN) on which to report. If no LUN number is specified, the CLI reports on all LUNs in the storage system. See Section "LUN IDs, unique IDs, and disk IDs" on page 2-12 for information on identifying LUN numbers.

The optional switches are:

-aa

Returns the auto-assignment status (enabled/disabled).

-addroffset

Displays the starting LBA (logical block address) of the LUN. This address tells you where a LUN begins within a RAID group.

-at

Returns auto-trespass status (enabled or disabled).

-bind

Returns the percentage of the disk that is bound.

-bp*

Returns the number of blocks prefetched by read cache.

-bread**

Returns the number of blocks read for each CRU.

-brw *

Returns the number of host blocks read and written.

-busy**

Returns the percentage of time that the disk is busy.

-busyticks

Returns the amount of time that the disks on this LUN are busy.

-bwrite**

Returns the number of blocks written for each CRU.

-capacity

Returns, in MB, the LUN capacity.

-crus

Returns the names and states of disks in this LUN.

-default

Returns the name of the default owner (SP) of the LUN.

-disk

Returns the disk statistics for the disks in the specified *lun-number*. Valid only when statistics logging is enabled.

-drivetype

Returns the drive type of the disks in the LUN.

-dsa

Dispalys the status of Dual Simultaneous Access (dsa).

-element

Returns, in blocks, the stripe size. The stripe size is the number of sectors that the storage system can read or write to a single disk module in the LUN. The default size is 128 sectors. This size was specified when the LUN was bound. Stripe element size does not apply to a RAID 1 LUN, individual unit, or hot spare.

-ena**

Returns the disk status (enabled/disabled). Valid only when the **-disk** switch is included in the command.

-ff*

Returns the number of times that a write had to flush a page to make room in the cache.

-hrdscsi

Returns the total number of hard errors.

-idle**

Returns the percentage of time that the disks within the LUN are idle.

-idleticks

Returns the amount of time that the disks on this LUN are idle.

-idt

Returns, in 100-ms units, the idle delay time for caching. For example, 5 equals 500 ms.

-ismetalun

Returns information about whether or not the LUN is a metaLUN.

-it

Returns the idle threshold value for caching; that is, the maximum number of I/Os that can be outstanding to a LUN and still have the LUN be considered idle.

-luncache

Returns LUN offline (cache dirty) condition information for the specified LUN. See also the **luncache** command.

-mirrorname

Returns the MirrorView mirror name.

-mp

Returns the absolute maximum number of disk blocks to prefetch in response to a read request for variable-length prefetching.

-name

Returns the LUN name. This switch applies only to storage systems running a version of FLARE software that supports storage group commands. LUN names are displayed in the UI. You cannot use the LUN name as a CLI command argument.

Note: The **-name** switch applies only to shared storage systems.

-nminus

Returns the status of minimal-latency read support (is or is not supported).

-offset

Returns the alignment offset, assigned when the LUN was bound. Refer to the **bind - offset** switch.

-owner

Returns the name of the SP that currently owns the LUN. If neither SP owns the LUN a value of **Unknown** is returned.

-parityelements (CX3-series only)

Displays the number of parity elements for a LUN with a RAID type of RAID 5. This switch is only relevant to LUNs with a RAID type of RAID 5. For a LUN with a RAID type other than RAID 5, the CLI displays an N/A value.

-pd

Returns, in blocks, the prefetch disable size. The prefetch disable size is the size of the smallest read request for which prefetching is disabled.

-pic

Returns the maximum number of I/Os that can be outstanding to the unit and have the unit still perform prefetching.

-prb

Returns the percentage of the LUN that is rebuilt.

-prefetch

Returns the prefetch type that the LUN is using for read caching. The possible output follows.

Variable length prefetching YES
Constant length prefetching YES
Prefetching: NO

-prf

Returns the percentage of read requests that caused a flush.

-ps

Returns the number of blocks of data prefetched for one host read request for constant-length prefetching. The prefetch size must be equal to or greater than the segment size. Ranges from 0 to 8192.

-private

Returns information on all private LUNs in the storage system.

-psm

Returns the variable prefetch size. The variable prefetch size is determined by multiplying the size of the read request, in blocks, by the multiplier. For example, if the prefetch multiplier is set to 4 and the amount of data requested is 2 Kbytes (4 disk blocks), then the variable prefetch size is 4 times 2 Kbytes or 8 Kbytes (16 disk blocks).

-que

Returns the queue length, a number.

-rb

Returns the value for the rebuild priority (ASAP, High, Medium, or Low).

-rc

Returns the LUN's read cache state (enabled or disabled).

-reads**

Returns the number of reads received for each CRU.

-ret

Returns the priority for retaining prefetched data when the read cache becomes full. If the value returned is YES, prefetched data has priority over host-requested data. If the value returned is NO, both data types have the same priority.

-rg

Returns the RAID group ID.

-rhist*

Returns Read Histogram information. Read Histogram is an array of 10 locations that contain the number of reads. Element n of the array contains the number of reads that were larger than or equal to 2n-1 and less than 2n blocks in size. For example, the first bucket contains the number of 1 block reads, the second contains the number of 2-3 block reads, the third contains the number of 4-7 block reads, and so on. **-rhist** also displays read histogram overflows, which are the number of I/O operations that were larger than 512 blocks.

-rwf

Returns the percentage of write requests that caused a cache flush.

-rwr*

Returns the number of host read and write requests.

-sc

Returns the LUN capacity as stripe count.

-sftscsi

Returns the total number of soft (correctable) errors.

-snapshot

Returns the number of SnapView snapshots (copy images on which a SnapView session is active).

-srcp

Returns the read cache configuration.

-ss

Returns the prefetch segment size; that is, the size of the segments that make up a constant-length prefetch operation. For constant-length prefetching, **-ss** returns the segment size (in blocks) of data prefetched in one read operation from the LUN.

-ssm

Returns the prefetch segment size/multiplier; that is, the size of the segments that make up a prefetch operation. For variable-length prefetching, **-ssm** returns the multiplier which determines the amount of data, relative to the amount of requested data prefetched in one read operation. For example, if the segment multiplier is 4, the segment size is 4 times the amount of data requested.

-state

Returns the state of the LUN. Valid states are: Expanding, Defragmenting, Faulted, Transitioning, or bound.

-status (AX-series, CX-series, and CX3-series only)

Returns the state of the Device Map for a specificed LUN. The Device Map stores the configuration information about all the replication software in the storage system that is associated with the LUN.

-stripe

Returns the number of times an I/O crossed a stripe boundary on a RAID 5, RAID 0, or RAID 1/0 LUN.

-totque

Returns the total queue length, a number.

-type

Returns the RAID type of the LUN as follows:
RAID 0 - nonredundant individual access array
RAID 1 - mirrored pair
RAID 3 - single-disk parity
RAID 5 - distributed parity
RAID 1/0 - mirrored RAID 0 group
Disk - individual unit
Hot Spare - hot spare

-uid

Returns the LUN unique ID.

-upb*

Returns the number of prefetched blocks not used by the read cache.

-usage

Returns the usage for a private LUN. For standard LUNs the usage displays as `Unknown`.

-verify

Returns the value for the verify priority (ASAP, High, Medium, or Low).

-was

Returns the minimum block size request that bypasses cache.

-wc

Returns the LUN's write cache state (enabled or disabled).

-wch*

Returns the number of times that a write was completely satisfied by the cache, avoiding a disk operation.

-wh*

Returns the write hit information, if statistics logging is enabled.

-whist*

Returns write histogram information. Write Histogram is an array of 10 locations that contain the number of writes. Element n of the array contains the number of writes that were larger than or equal to 2n-1 and less than 2n blocks in size. For example, the first bucket contains the number of 1 block writes, the second contains the number of 2-3 block writes, the third contains the number of 4-7 block writes, and so on. **whist** also displays the write histogram overflows, which are the number of writes that were larger than 512 blocks.

-writes**

Returns the number of writes received for each CRU.

Conventions and recommendations

None

Examples

This example retrieves the LBA (logical block address), LUN capacity, and alignment offset information

naviseccli -h ss1_spa getlun -addroffset -offset -capacity

```
LOGICAL UNIT NUMBER 0
Offset:                      0
LUN Capacity(Megabytes):     1024
LUN Capacity(Blocks):        2097152
Address Offset:              0

LOGICAL UNIT NUMBER 1
Offset:                      0
LUN Capacity(Megabytes):     5120
LUN Capacity(Blocks):        10485760
Address Offset:              2097152

LOGICAL UNIT NUMBER 2
Offset:                      7530
LUN Capacity(Megabytes):     10240
LUN Capacity(Blocks):        20971520
Address Offset:              12582912
```

This example retrieves information about LUN number 13:

naviseccli -h ss1_spa getlun 13

(See sample listing following)

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output. Actual output varies depending on the switches you use with the **getlun** command.

```
LOGICAL UNIT NUMBER                 13
Prefetch size (blocks) =            0
Prefetch multiplier =               48
Segment size (blocks) =             0
Segment multiplier =                4
Maximum prefetch (blocks) =         512
Prefetch Disable Size (blocks) = \129
Prefetch idle count =               40
Variable length prefetching         YES
Prefetched data retained            YES
Read cache configured according
to specified parameters.
Name                                LUN 13
Minimum Latency Reads               N/A
RAID Type:                          RAID5
RAIDGroup ID:                       0
State:                              Bound
Stripe Crossing:                    0
Element Size:                128    128
Current owner:                      SP B
Offset:                      0      0
Auto-trespass:                      DISABLED
Auto-assign:                        DISABLED
Write cache:                        ENABLED
Read cache:                         ENABLED
Idle Threshold:              0      0
Idle Delay Time:                    20
Write Aside Size:                   1023
Default Owner:                      SP B
Rebuild Priority:                   ASAP
Verify Priority:                    Low
rct Reads Forced Flushed:           0
Prct Writes Forced Flushed:         0
Prct Rebuilt:                       100
Prct Bound:                         100
```

```
LUN Capacity(Megabytes):          1024
LUN Capacity(Blocks):             2097152
UID:                              60:06:01:FD:26:60:00:00:
                                  C9:27:93:85:F6:76:D5:11


Enclosure 0 Disk 0  Queue Length:         0
Enclosure 0 Disk 1  Queue Length:         0
Enclosure 0 Disk 7  Queue Length:         0
Enclosure 0 Disk 8  Queue Length:         0
Enclosure 0 Disk 9  Queue Length:         0
Enclosure 0 Disk 1 Hard Read Errors:      0
Enclosure 0 Disk 7 Hard Read Errors:      0
Enclosure 0 Disk 8 Hard Read Errors:      0
Enclosure 0 Disk 9 Hard Read Errors:      0
Enclosure 0 Disk 0 Hard Write Errors:     0
Enclosure 0 Disk 1  Hard Write Errors:    0
Enclosure 0 Disk 7 Hard Write Errors:     0
Enclosure 0 Disk 8 Hard Write Errors:     0
Enclosure 0 Disk 9  Hard Write Errors: 0
Enclosure 0 Disk 0 Soft Read Errors:      0
Enclosure 0 Disk 1 Soft Read Errors:      0
Enclosure 0 Disk 7 Soft Read Errors:      0
Enclosure 0 Disk 8 Soft Read Errors:      0
Enclosure 0 Disk 9 Soft Read Errors:      0
Enclosure 0 Disk 0 Soft Write Errors:     0
Enclosure 0 Disk 1 Soft Write Errors:     0
Enclosure 0 Disk 7 Soft Write Errors:     0
Enclosure 0 Disk 8 Soft Write Errors:     0
Enclosure 0 Disk 9 Soft Write Errors:     0
Bus 0 Enclosure 0 Disk 0  Enabled
Bus 0 Enclosure 0 Disk 1  Enabled
Bus 0 Enclosure 0 Disk 7  Enabled
Bus 0 Enclosure 0 Disk 8  Enabled
Bus 0 Enclosure 0 Disk 9  Enabled
Is Private:                               NO
Usage:
Mirrored Name if any                      Not Mirrored
```

getresume

Displays resume information for storage-system devices

Description

The **naviseccli** or **navicli getresume** command displays the properties (resume information) for storage-system devices, such as the enclosure display board, link control card (LCC), power supply (PS), storage processor (SP), SAN personality card, central processing unit module (CPU), I/O module, management module, and the standby power supply (SPS). You can specify the device you want to display resume information for, or you can display resume information for all devices.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getresume is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getresume [-all] [-cpu] [-io] [-lcc *busNumber enclosureNumber* **[lcca | lccb]] [-mgmt mgmta | mgmtb] [-mp] [-pc] [-ps** *busNumber enclosureNumber* | *xpe* **[psa | psb]] [-sp** *sp*] **[-sps]**

The optional switches are:

-all

Displays resume information for all devices.

-cpu (CX3-series only)

Displays resume information for the central processing unit (CPU) modules.

-io (CX3-series only)

Displays resume information for the I/O modules.

-lcc *busNumber enclosureNumber* **[lcca | lccb]**

Displays resume information for the link control card. If you omit **lcca** or **lccb**, information is returned for link control cards A and B.

-mgmt [mgmta | mgmtb] (CX3-series only)

Displays resume information for the management modules. If you specify **mgmta**, resume information is displayed for the management module associated with SP A; if you specify **mgmtb**, resume information is displayed for the management module associated with SP B.

-mp

Displays resume information for the enclosures.

-pc

Displays resume information for the SAN personality card.

-ps *busNumber enclosureNumber* | *xpe* **[psa | psb]**

Displays resume information for the power supply. If you omit **psa** or **psb**, information is returned for power supplies A and B.

Note: For CX3-40 and CX3-20 storage systems, resume information is displayed for the power supplies associated with the SP you specify in the command line. If you omit **psa** or **psb** arguments, N/A values are returned for the power supplies that are not associated with the SP you specify.

-sp *sp*

Displays resume information for the specified SP.

Note: For CX3-series and later storage systems, resume information for both SPs is displayed. If the SP specified in the command line is not functional, the CLI continues to return resume information for both SPs.

-sps

Displays resume information for the standby power supply (SPS) that is associated with the SP you specify in the command line.

Conventions and recommendations

None.

Example

navicli -h ss1_spa getresume -ps 0 1

This example displays information stored in the resume PROM for power supplies A and B (bus 0, enclosure 1).

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

```
Bus 0 Enclosure 1
Power A
EMC Part Number              118032322
EMC Artwork Revision         000
EMC Assembly Revision        A03
EMC Serial Number            AC115040501930
Vendor Part Number           API2SG02-710
Vendor Assembly Number       M02
Vendor Serial Number         AC1040501930
Vendor Name                  ACBEL POLYTECH INC.
Location of Manufacture      Apex, NC  USA
Year of Manufacture          2004
Month of Manufacture         02
Day of Manufacture           13
Assembly Name                12V P/S w/BWR, RPWR
Programmable Name             N/A
Programmable Revision         N/A
Bus 0 Enclosure 1
Power B
EMC Part Number              118032322
EMC Artwork Revision         000
EMC Assembly Revision        A03
EMC Serial Number            AC115040501699
Vendor Part Number           API2SG02-710
Vendor Assembly Number       M02
Vendor Serial Number         AC1040501699
Vendor Name                  ACBEL POLYTECH INC.
Location of Manufacture      Apex, NC  USA
Year of Manufacture          2004
Month of Manufacture         02
Day of Manufacture           13
Assembly Name                12V P/S w/BWR, RPWR
Programmable Name             N/A
Programmable Revision         N/A
```

getrg (RAID group)

Gets RAID group information

Description

The **naviseccli** or **navicli getrg** command returns information about the specified RAID group.

If no RAID group is specified, the command returns information about all RAID groups.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getrg is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getrg *rgID* **[-disks] [-drivetype] [-exdisks] [-hotspare] [-legal] [-lunex] [-lunlist] [-lusc] [-maxd] [-maxl] [-pod] [-prcntdf] [-prcntex] [-state] [-tcap] [-type] [-ucap]**

where:

rgID

Is the RAID group identification number. *rgID* specifies a number between 0 and the maximum number of RAID groups supported by the RAID group storage system.

The optional switches are:

-disks

Returns the state of disks in the RAID group.

-drivetype

Returns information about what drive type the RAID group consists of.

-exdisks

Returns information about which disks are expanding. Displays N/A for not expanding.

-hotspare

Returns the RAID group number that has the faulted disks for which the hot spare is replacing.

-legal

Returns information about which RAID types LUNs can be bound as on the specified RAID group.

How the new LUNs can be bound depends on the number of LUNs that already exist and upon the number of disks in the RAID group.

-lunex

Returns information about which LUNs are expanding. Displays NO for not expanding.

-lunlist

Returns a list of LUNs that are currently in the RAID group.

-lusc

Returns a free contiguous group of unbound segments in blocks.

-maxd

Returns the maximum number of disks that are allowed in the RAID group.

-maxl

Returns the maximum number of LUNs that are allowed in the RAID group.

-pod

Returns the priority of defragmention/expansion operations. Valid values are high, medium, low, or N/A.

-prcntdf

Returns the percent of defragmention that is complete.

-prcntex

Returns the percent of expansion that is complete.

-state

Returns RAID group state. Valid states are: Invalid, Explicit_Remove, Valid_luns, Expanding, Defragmenting, Halted, and Busy.

-tcap

Returns the raw and logical capacity of the RAID group in blocks.

-type

Returns RAID group type.

-ucap

Returns the free (unbounded) capacity of the RAID group in blocks.

Example

naviseccli -h ss1_spa getrg 1

Retrieves information about RAID group 1.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output. Actual output varies depending on the switches you use with the **getrg** command.

```
RAID Group ID:    1
RAID Group Type:  r5
RAID Group State: Explicit_Remove
                                  Valid_luns
List of disks:   Bus 0  Enclosure 0  Disk 0
                 Bus 0  Enclosure 0  Disk 1
                 Bus 0  Enclosure 0  Disk 2
                 Bus 0  Enclosure 0  Disk 3
                 Bus 0  Enclosure 0  Disk 4
                 Bus 0  Enclosure 0  Disk 5
                 Bus 0  Enclosure 1  Disk 0
                 Bus 0  Enclosure 1  Disk 1
                 Bus 0  Enclosure 1  Disk 3
                 Bus 0  Enclosure 1  Disk 2
List of luns:                                0 2 3 7
Max Number of disks:                         16
Max Number of luns:                          32
Raw Capacity (Blocks):                       170795880
Logical Capacity (Blocks):                   153716292
Free Capacity (Blocks,non-contiguous):       113871492
Free contiguous group of unbound segments:   113871492
Defrag/Expand priority:                      Low
Percent defragmented:                        100
Percent expanded:                            100
Disk expanding onto:                         N/A
Lun Expansion enabled:                       NO
Legal RAID types:                            r5
```

getsniffer (not supported on AX-series)

Gets background verify reports

Description

The **naviseccli** or **navicli getsniffer** command retrieves background verify reports. You can retrieve reports for a specific LUN, all LUNs in a RAID group, or all LUNs in a storage system.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getsniffer is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getsniffer -all | *lun* | **-rg** *raidgroupnumber* [**-alltot**] [**-curr**] [**-nonv**] [**-rg**] [**-rec**]

where:

-all

Specifies to retrieve reports on all luns in the storage system, owned by the target SP.

Note: When you specify the **-all** switch, it may generate a sizeable amount of data and take a considerable amount of time to generate the data.

---

lun

Specifies the logical unit on which to report. *lun* specifies the logical unit number.

-rg *raidgroupnumber*

Specifies to retrieve reports on all LUNs in the RAID group, owned by the target SP.

The optional switches are:

-alltot

Retrieves and displays the report of historical totals of all full unit verifies.

-curr

Retrieves and displays the report of the currently running full unit verify.

-nonv

Retrieves and displays the report of historical totals of all non-volatile verifies.

-rec

Retrieves and displays the report of the most recently completed full unit verify.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa getsniffer 1

Retrieves the report of the active full unit verify operation for LUN 1.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output. Actual output varies depending on the switches you use with the **getsniffer** command.

```
VERIFY RESULTS FOR UNIT 1
Sniffing state:ENABLED
   Sniffing rate(100 ms/IO):4
   Background verify priority:ASAP
Historical Total of all Non-Volatile Recovery Verifies(0
   passes)
   ------------------------------------------------------
                       Corrected          Uncorrectable
   Checksum errors    0                  0
   Write Stamp errors 0                  0
   Time Stamp errors  0                  0
   Shed Stamp errors  0                  0
   Coherency errors   0                  0
```

```
Currently Running Full Unit Verify
   ------------------------------------------------------
   Verify State: Sniff Running
   Percent Complete:0
                      Corrected           Uncorrectable
   Checksum errors    0                   0
   Write Stamp errors 0                   0
   Time Stamp errors  0                   0
   Shed Stamp errors  0                   0
   Coherency errors   0                   0

Most Recently Completed Full Unit Verify
   ------------------------------------------------------
                        CorrectedUncorrectable
   Checksum errors     0         0
   Write Stamp errors  0         0
   Time Stamp errors   0         0
   Shed Stamp errors   0         0
   Coherency errors    0         0

Historical Total of All Full Unit Verifies(0 passes)
   ------------------------------------------------------
                      Corrected  Uncorrectable
   Checksum errors     0         0
   Write Stamp errors  0         0
   Time Stamp errors   0         0
   Shed Stamp errors   0         0
   Coherency errors    0         0
```

getsp

Gets SP revision and serial number information

Description

Displays SP identification information. If you omit switches, it displays all configuration type information.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getsp is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getsp [-type] [-sig] [-psig] [-rev] [-ser] [-mem] [-id]

where:

-type

Displays the SP type.

-sig

Displays the SP unique signature.

-psig

Displays the SP peer unique signature.

-rev

Displays the SP revision number.

-ser

Displays SP serial number.

-mem

Displays the SP memory size.

-id

Displays the SP SCSI ID if available, otherwise displays N/A.

Conventions and recommendations

Use the **getsp** command to display SP revision and signature information.

Example

naviseccli -h ss1_spa getsp

```
SP A

Type of Each SP:                Unknown
Signature For The SP:           147509
Signature For The Peer SP:      135171
Revision Number For The SP:     0.00.00
Serial Number For The SP:       N/A
Memory Size For The SP:         930
SP SCSI ID if Available:        0

SP B

Type of Each SP:                Unknown
Signature For The SP:           135171
Signature For The Peer SP:      147509
Revision Number For The SP:     1.56.20
Serial Number For The SP:       A1000330
Memory Size For The SP:         930
SP SCSI ID if Available:        0
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output See above.

getsptime

Gets the date and time setting on each SP system clock

Description

The **naviseccli** or **navicli getsptime** command displays the system time set on an SP. Times are the same on SPs, since the FLARE software ensures that both SP clocks show the same time.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

getsptime is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

getsptime [**-spa** | **-spb**]

where:

-spa or **-spb**

Specifies from which SP to display the date and time.

Example

naviseccli -h data1_spa getsptime -spa

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The SP date and time.

inserttestevent

Inserts an event into the Event Monitor log to let you verify the accuracy of an Event Monitor template

Description

The **naviseccli** or **navicli inserttestevent** command inserts a dummy event of code 0x2003 in the Navisphere Event Monitor Event Log. The event is code 0x2003 and its description is "Test Event - internal use only." The event is in the local event queue for processing.

To verify that the monitoring Agent will respond as specified (for example, issue email, send a page) use the **responsetest** command.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

inserttestevent is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows**:**

inserttestevent

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa inserttestevent

For ss1_spa, this command writes a test event into the Event Monitor log file.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

---

luncache -clear

Clears the LUN offline (cache dirty) condition

Description

The **naviseccli** or **navicli luncache** command with the **-clear** function clears the LUN offline (cache dirty) condition. You can clear the LUN offline condition for a specific LUN, or for all LUNS on the storage system.

When a storage processor (SP) fails, writes destined for a LUN that have not yet been flushed to disk place the LUN in an offline (cache dirty) condition. LUNs in an offline condition are inaccessible until pending writes for the LUN are cleared.

Note: When you execute **luncache -clear**, all pending writes on the LUN are lost.

You must issue the command to the SP that owns the LUN.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

luncache -clear is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

luncache *lun-number* **-clear** [**-o**]

where:

lun-number

Specifies the LUN for which to clear the LUN offline condition. If you do not specify a LUN number, clears the LUN offline condition for all LUNS on the storage system.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

You can verify the offline condition of a LUN, using the **luncache -list** command.

Example

naviseccli -h ss1_spa luncache 9 -clear

This command clears the LUN offline condition for the specified LUN.

```
Bringing the LUN online will cause all pending writes on
the LUN to be lost.

Do you want to bring the LUN online now? (y/n)
```

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output None if the command succeeds; status or error information if it fails.

luncache -list

Returns LUN offline (cache dirty) condition information

Description

The **naviseccli** or **navicli luncache** command with the **-list** function returns the LUN offline (cache dirty) condition information. You can return information for a specific LUN or for all LUNS on the storage system.

When a storage processor (SP) fails, writes destined for a LUN that have not yet been flushed to disk place the LUN in an offline (cache dirty) condition. LUNs in an offline condition are inaccessible until pending writes for the LUN are cleared.

Note: You must issue the command to the SP that owns the LUN.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli,** anyone that can log in to the host running the Navisphere CLI.

Format

luncache -list is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

luncache *lun-number* **-list**

where:

lun-number

Indicates the LUN for which to display LUN offline condition information. If you do not specify a LUN number, LUN offline condition information is returned for all LUNS on the storage system.

Conventions and recommendations

You can clear the LUN offline condition using **luncache -clear.**

Example

naviseccli -h ss1_spa luncache 9 -list

This command displays LUN offline condition information for the specified LUN.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

```
LUN Offline (Cache Dirty Condition):    YES
```

lunmapinfo

Lists the LUNs attached to a host

Description

The **navicli lunmapinfo** command displays information about the physical and logical devices attached to a server. You must specify a server hostname with the **-h** switch.

This is a host-based command. SP address is only needed to get LUN information related to the devices attached to the server.

Note: If you are running a VMware ESX Server and issuing this command to a virtual machine (VM), it cannot target the Host Agent because the Navisphere Host Agent is only supported on the ESX Server.

User access

You must be able to log in to the host running Navisphere CLI.

Note that the **-h** (host) switch you specify after **navicli** specifies the actual server hostname. (In other commands the **-h** switch specifies the SP hostname.)

Format

lunmapinfo is used with **navicli** (described on page 2-14, but for the **-h** switch see the note above) as follows:

lunmapinfo [-update [-o]]
or
lunmapinfo [-wwn] [-capacity] *sphosts*

where:

-update

Scans the I/O buses for any new devices/drives and does not report any LUN information. Because the scan may take a lot of time, the CLI prompts for confirmation unless you include the **-o** switch.

-o

Executes the command without prompting for confirmation.

-capacity

Displays the capacity for the LUNs.

sphosts

Displays information for those storage systems that are managed by the hosts you specify.

-wwn

Displays the World Wide Name (WWN) for the LUNs.

Conventions and recommendations

None.

Example

navicli -h payroll lunmapinfo -update

```
Refreshing the drive letter mapping for the host "<Host>"
involves scanning all the SCSI devices. This operation
may be time consuming and the performance of the array
may come down during this operation.
Continue (y/n)? y
```

```
The LUN mappings have been successfully updated.
```

navicli -h payroll_srvr lunmapinfo 12.34.567.890 12.34.567.890

```
LOGICAL UNIT NUMBER 1
Current owner:               SP A
Default Owner:               SP A
Trespassed:                  NO
Logical Drives:             F:\
Physical Device:             \\.\PhysicalDrive1

Current owner:               SP A
Default Owner:               SP A
Trespassed:                  NO
Logical Drives:              F:\
Physical Device:             \\.\PhysicalDrive2
```

For the server with hostname **payroll _srver** these commands update the LUN mapping information, and then list the LUN information for the SPs whose IP addresses are **12.34.567.890** and **12.34.567.890 123.456.**

Output

See above.

managedby

Displays the application that manages the storage system

Description

The **naviseccli** or **navicli managedby** command displays whether Navisphere Manager or the Navisphere Express application manages the AX-series storage system you specify.

You use the **managedby** command for purposes of the CLARiiON VSS Provider. The VSS Provider is used in conjunction with the SnapView functionality, to provide backup capabilities. See the *EMC CLARiiON Server Support Products for Windows Installation Guide* for information on the VSS Provider.

If Navisphere Express manages the storage system, the VSS Provider limits some actions. You can use the **managedby** command to determine whether the storage system you specify is managed by Navisphere Manager or Navisphere Express.

Note: The command returns an output value of Navi Manager (Navisphere Manager), Navi Express (Navisphere Express), or None. A value of "None" is synonymous to Navisphere Manager.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli,** anyone that can log in to the host running the Navisphere CLI.

Format

managedby is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

managedby

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa managedby

This command displays the application that manages the AX-series storage system specified. The storage system is managed by Navisphere Manager.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

```
Managed By: Navi Manager
```

managefiles -delete (Secure and Classic CLI version)

Deletes SP logging files on the specified storage system

Description

The **naviseccli** or **navicli managefiles** command with the **-delete** function lets you delete SP logging files from supported directories.

Note: The dumps and logs directories are supported for **managefiles**.

You can specify the files to delete using the **-all** or **-file** switches, or you can omit switches and display a list of files, then choose a file from the list.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

managefiles -delete is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

managefiles -delete [**-all**] [**-file** *filenames*]

where:

-all

Deletes all files from the supported directory.

-file *filenames*

Deletes the specified files from the supported directory.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa managefiles -delete

This command shows you all file index numbers and names. The files appear in the format shown below.

Index	Size	Last modified	Filename
0	0	10/26/2000 17:39:53	naviagent_Oct-26-00_13-36-17.log
1	138	10/27/2000 12:37:19	naviagent_Oct-26-00_13-48-40.log
2	0	10/27/2000 13:20:53	naviagent_Oct-27-00_08-48-38.log
3	0	10/27/2000 13:29:57	naviagent_Oct-27-00_09-29-57.log
4	0	10/27/2000 18:31:42	naviagent_Oct-27-00_11-06-09.log
5	0	10/27/2000 18:41:37	naviagent_Oct-27-00_14-41-37.log

You then enter the file you want to delete, by either its index number or name.

```
Enter files to be deleted with index separated by comma
(1,2,3,4-5) OR a range (1-3) OR enter 'all' to delete all
file OR 'quit' to quit> 2

Files selected to be deleted are

naviagent_Oct-27-00_08-48-38.log

Do you want to continue(y/n)[n]? (y/n)? y
```

File naviagent_Oct-27-00_08-48-38.log is deleted.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output None if the command succeeds; status or error information if it fails.

managefiles -list (Secure and Classic CLI version)

Lists SP logging files in supported directories

Description

The **naviseccli** or **navicli managefiles** command with the **-list** function lets you display a list of SP logging files in supported directories.

Note: The dumps and logs directories are supported for **managefiles**.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli,** anyone that can log in to the host running the Navisphere CLI.

Format

managefiles -list is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

managefiles -list

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa managefiles -list

This command shows you a list of files in the supported directories, for the storage system you specify.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Index	Size	Last modified	Filename
0	0	10/26/2000 17:39:53	naviagent_Oct-26-00_13-36-17.log
1	138	10/27/2000 12:37:19	naviagent_Oct-26-00_13-48-40.log
2	0	10/27/2000 13:20:53	naviagent_Oct-27-00_08-48-38.log
3	0	10/27/2000 13:29:57	naviagent_Oct-27-00_09-29-57.log
4	0	10/27/2000 18:31:42	naviagent_Oct-27-00_11-06-09.log
5	0	10/27/2000 18:41:37	naviagent_Oct-27-00_14-41-37.log

managefiles -retrieve (Secure and Classic CLI version)

Retrieves SP logging files from a remote storage system to the local system

Description

The **naviseccli** or **navicli managefiles** command with the **-retrieve** function lets you retrieve SP logging files from supported directories on a remote storage system to the local system.

Note: The dumps and logs directories are supported for **managefiles**.

You can specify the files to retrieve using the **-all** or **-file** switches, or you can omit switches and display a list of files, then choose a file from the list.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

managefiles -retrieve is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

managefiles -retrieve [**-path** *path*] [**-all**] [**-file** *filenames*]

where:

-path *path*

Specifies the path on the local system to copy the file to. If you do not use this switch, the file is copied to the current directory.

-all

Retrieves all files from the supported directory.

-file *filenames*

Retrieves the specified files from the supported directory.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example **naviseccli -h ss1_spa managefiles -retrieve**

This command shows you all file index numbers and names. The files appear in the format shown below.

Index	Size	Last modified	Filename
0	0	10/26/2000 17:39:53	naviagent_Oct-26-00_13-36-17.log
1	138	10/27/2000 12:37:19	naviagent_Oct-26-00_13-48-40.log
2	0	10/27/2000 13:20:53	naviagent_Oct-27-00_08-48-38.log
3	0	10/27/2000 13:29:57	naviagent_Oct-27-00_09-29-57.log
4	0	10/27/2000 18:31:42	naviagent_Oct-27-00_11-06-09.log
5	0	10/27/2000 18:41:37	naviagent_Oct-27-00_14-41-37.log

You then enter the file you want to retrieve, by either its index number or name.

```
Enter files to be retrieved with index seperated by comma
(1,2,3,4-5) OR a range (1-3) OR enter 'all' to retrieve
all file OR 'quit' to quit> 2

Files selected to be retrieved are

naviagent_Oct-27-00_08-48-38.log

Do you want to continue(y/n)[n]? (y/n)? y
```

File naviagent_Oct-27-00_08-48-38.log is retrieved to the current directory.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output None if the command succeeds; status or error information if it fails.

managefiles -list (Java CLI version)

Lists SP logging files in a specified directory

Description

The **navicli.jar managefiles** command with the **-list** function lets you display a list of SP logging files in supported directories.

Note: The dumps and archives directories are supported for **managefiles**.

You can specify a directory to display all files in that directory, or you can specify a file to display only that file.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

managefiles -list is used with **navicli.jar** (described on page 2-19) as follows:

managefiles -list [**-file** *directory* | *directory**filename*]

where:

-file *directory* | *directory**filename*

Specifies a supported directory or file in a supported directory on the remote storage system. If you do not use this switch, a list of the files in the supported directories is displayed.

Conventions and recommendations

None.

Example

navicli.jar -address ss1_spa managefiles -list -file dumps

This command shows you all files in the **dumps** directory. The files appear in the format shown below.

Output

```
dumps\gui_filter.out
dumps\pfilter-on.log
dumps\ktdump-041207-115134.txt
```

managefiles -retrieve (Java CLI version)

Retrieves SP logging files from a remote storage system to the local system

Description

The **navicli.jar managefiles** command with the **-retrieve** function lets you retrieve an SP logging file from a supported directory on a remote storage system to the local system.

Note: The dumps and archives directories are supported for **managefiles**.

You can specify a file to retrieve, or you can specify a directory to display a list of files in that directory. You can then choose a file from the list by its index number or name to retrieve.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

managefiles -retrieve is used with **navicli.jar** (described on page 2-19) as follows:

managefiles -retrieve [**-path** *path*] [**-file** *directory* | *directory**filename*]

where:

-path *path*

Specifies the path on the local system to copy the file to. If you do not use this switch, the file is copied to C:\.

-file *directory* | *directory**filename*

Specifies a supported directory or file in a supported directory on the remote storage system. If you do not use this switch, a list of the files in the supported directories is displayed.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example **navicli.jar -address ss1_spa managefiles -retrieve -path C:\ -file dumps**

This command shows you all file index numbers and names in the **dumps** directory. The files appear in the format shown below.

```
Index    Filename
0        dumps\gui_filter.out
1        dumps\pfilter-on.log
2        dumps\ktdump-041207-115134.txt
```

You then enter the file you want to retrieve, by either its index number or name.

```
Enter file to be retrieved with index OR 'quit' to quit>
1

File selected to be retrieved :

dumps\pfilter-on.log

Do you want to continue (y or n)? y
```

Output None if the command succeeds; status or error information if it fails.

ndu -list

Describes installed SP driver software packages

ndu Background

The **ndu** command provides nondisruptive upgrades on CX3-series and CX-series storage systems. This command lets you install and upgrade storage-system software without disrupting any I/O from attached servers. Third-party software installation is not supported. This means you can use **ndu** to install FLARE software or Access Logix, MirrorView, and Snapview packages.

Note: For AX-series storage systems the process is disruptive.

Use the **-list** function with no switches to display all the information about all software packages.

Note: The **ndu** command is not supported on Netware and HP-UX operating systems.

Description

The **navicli ndu** command with the **-list** function and no switches displays information about all installed software packages. The format looks like this:

```
Name of the software package:     name
Revision of the software package: n.nn
Commit Required:                  yes or no or
                                  already committed
Revert Possible:                  yes or no
Active State:                     yes or no
Is installation complete          yes or no or not
                                  applicable.
Is this System Software:          yes or no
```

For information on one package, use the **-name** switch. For a subset of package information, use one or more additional switches.

User access

You must be able to log in to the host running Navisphere CLI.

Format

ndu -list is used with **navicli** (described on page 2-14) as follows:

ndu -list [**-name** [*name*]] [**-rev**] [**-iscommitable**] [**-isrevertable**] [**-isactive**] [**-iscomplete**] [**-issystem**] [**-gen**]

where:

-name [*name*]

Without the *name* argument, displays only the names of packages; with *name*, displays information on the package *name*.

-gen

Displays the generation of the package.

-rev

Displays the package revision.

-iscommitable

Displays yes if the package can be committed, no if it cannot.

-isrevertable

Displays yes if the package can be reverted (it is not committed), no if it cannot be.

-isactive

Displays yes if the package is active, no if it is not.

-iscomplete

Displays yes if the package file contains a complete set of files, no or not applicable if it does not.

-issystem

Displays yes if the package is a factory-supplied system driver, no if it is not.

Conventions and recommendations

After listing installed driver packages, you can perform other **ndu** (non-disruptive upgrade) steps, such as **ndu -commit** or **ndu -revert**.

Example

navicli -h payroll_storage_SPA ndu -list

For the SP with hostname **payroll_storage_SPA,** this command lists all installed driver packages. For sample output, see previous page.

Output

See previous page. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

ndu -install

Transfers SP software driver packages to the storage-system private LUN (PSM LUN)

Description

The **ndu** command with the **-install** function transfers files from media to the storage system, queries and displays information about the packages, and then installs or upgrades selected software packages.

Note: For AX-series storage systems the process is disruptive.

The **navicli ndu** command **-install** function transfers one or more SP driver packages from a user-accessible file system to the storage-system private storage LUN (PSM). Media should be present before you issue this command.

Note: Beginning with FLARE Operating Environment version 02.19.xxx.5.yyy, when you execute **ndu -install**, the CLI performs a series of preinstallation validation checks on a CX3-series, CX-series, or AX-series system, prior to installing or upgrading customer-installable software packages. Prior to issuing the install, you must satisfy the specified configuration requirements for the preinstallation validation checks functionality, or the installation will not complete. See "Preinstallation validation checks" at the end of this section for configuration requirements.

You should use a Windows-based Navisphere client (either Navisphere Manager or Navisphere CLI) to install software.

Before starting a non-disruptive software installation, record the read and write cache sizes because they will be set to zero.

Before the SP starts a nondisruptive software installation, it disables the caches and sets their sizes to zero. If the write cache is full and I/O is heavy, disabling the cache may take over an hour because the cached data must be written to disk. After the data is written, the installation starts.

When you install new SP software using the CLI, the only way to determine when the installation is finished is to issue periodic **navicli ndu -status** commands until the CLI shows the operation is completed.

When the installation is complete, restore the cache sizes to their original sizes if possible. You may not be able to use the original sizes

because the new software requires more memory than the version that it replaced.

The software prompts for information as needed; then it installs or upgrades the specified software packages and restarts the SPs. The SPs then load and run the new packages. After successful installation, it deletes the files from the storage system.

You can install more than one package with one **ndu** command.

Note: When you install an upgrade (that is, a newer version of an installed package), you must install all the software packages you want to use in the same command. For example, if you are upgrading SnapView in system that has SnapView, Access Logix, and FLARE software installed, then you must upgrade all three using one **ndu -install** command. When you install a new package of the same revision as other existing packages, you may install only that package and not the others.

The CLI takes the following actions in order:

- If it can find the packages, it transfers them without interaction.
- Unless you used **-force** (which prevents the prompt and is equivalent to the "all" response), the software examines each package and displays the following information for confirmation:

`Item number:`	*n*
`Name of the software package:`	*driver-name*
`Revision of the software package:`	*n.nn*
`Already Installed Revision:`	`NO` or `YES`
`Installable`	`YES` or `NO`

  ```
  Enter Item number of the packages to be installed
  separated by blanks. Enter 'all' for all packages and
  'quit' to quit without installing:
  ```

  Specify the package(s) you want installed. If you make an invalid choice, the CLI does not install any package.

Note: Do not change the configuration; for example, binding new LUNs or expanding MetaLUNs while a software install is in progress. Such operations will be rejected; delay them until after the software upgrade is complete and committed.

Preinstallation validation checks

Preinstallation validation checks identify unsupported or unsafe installation conditions. You initiate the validation checks functionality when you issue the **ndu -install** command. The

validation checks run in the background, prior to installing the software. If a validation check fails, the CLI displays the error and terminates the installation. You can choose to display all validation checks as the functionality executes by specifying the **-verbose** switch, otherwise the CLI only displays failures that prevent installation. The following responses exist for each validation check:

Response	Definition
Successful	Validation check is successful. Installation proceeds.
Warning	Conditions exist that may need correction. Installation proceeds.
Failure	Conditions exist that require correction before installation can proceed. Installation terminates.

Note: The preinstallation validation checks identify a series of unsupported or unsafe installation conditions, but cannot guarantee a successful install.

In addition to the user access requirements for the **ndu** command, the validation checks (a Java-based functionality), has associated configuration requirements that you must follow:

- Install a JRE (see the *EMC Navisphere Manager and Manager Base Release Notes* for the correct version).
- Create the required user accounts on the storage system (see "Getting started with Secure CLI" on page 2-3 or "Requirements for using Java CLI" on page 2-17). You can create the user accounts using the Secure or Java CLI syntax.
- Create a security file on the host (see "Overview of using the Navisphere 6.X security with Java CLI" on page 2-18). You must create a security file using the Java CLI syntax. If you do not create a security file using the Java CLI syntax, the CLI prompts you for a valid username, password and scope:

```
Security File does not exist
Please enter security information to proceed:
      Enter User (Existing user on storage system)
      Enter Password
      Enter Scope (0 - global [default]; 1 - local
```

Note: If the storage system is uninitialized, user credential information is not required. Therefore, a security file is not required and the CLI does not prompt you for a username, password and scope.

You can also issue validation checks without installing or upgrading software (see **ndu -runrules**).

User access

You must have a user entry in the Navisphere agent configuration file.

Format

ndu -install is used with **navicli** (described on page 2-14) as follows:

ndu -install *pathlist* **[-delay** *seconds*] **[-force] [-gen] [-verbose]**

where:

pathlist

Specifies filenames, with full pathnames, of the software packages to be installed. You can use a Windows or UNIX pathname (for example**, C:\temp** or **/usr/bin**). Enclose the pathname list in quotes and separate multiple names by a space. If you are installing a newer version of an existing package, you must install all other packages (as explained above).

-delay *delay*

Specifies the delay time that allows attached hosts enough time after SP B has finished rebooting to rescan and mark paths available to SP B, before SP A reboots. The minimum allowed delay is zero seconds and the maximum allowed is 1140 seconds. In most cases, the EMC recommended NDU delay of 360 seconds should be used. However, some host configurations (such as those using Veritas DMP) may require a longer delay.

-force

Installs without user interaction. If any package is not installed for any reason, the software displays an error message and continues installing other packages specified in the command.

-gen

Displays the generation of the package.

-verbose

Displays all results of the preinstallation validation checks. Without this switch, only errors that prevent installation (failures) are displayed.

Conventions and recommendations

Use the **navicli ndu -list** command to display installed package information. If the **ndu -install** command succeeds, the SPs restart.

Example

navicli -h 10.14.12.74 ndu -install CX400-02.07.400.3.107.lst

```
Item number:                          0
Name of the software package: FLARE-Operating-Environment
Revision of the software package:     02.07.400.3.107
Already Installed Revision:           02.07.400.3.10
Installable                           YES
Disruptive upgrade:                   NO

The requested package(s) will be installed. Do you wish
   to proceed?: (y/n)? y
```

For the SP with hostname **10.14.12.74**, this command installs the FLARE Operating Environment bundle.

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other error message(s):

```
NDU_NOT_SUPPORTED
NDU_CANNOT_FIND_FILE
NDU_CANNOT_XFER_FILE
INVALID_PACKAGE
```

ndu -runrules

Executes the preinstallation validation checks

Description

The **navicli ndu** command with the **-runrules** function executes the preinstallation validation checks, without performing software installation (see **ndu -install**).

Note: The **ndu -runrules** command has associated configuration requirements for the preinstallation validation checks functionality. See "Preinstallation validation checks" under **ndu -install**.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

ndu -runrules is used with **navicli** (described on page 2-14) as follows:

ndu -runrules [*pathlist*] [**-listrules**] [**-verbose**]

where:

pathlist

Specifies filenames, with full pathnames, of the software packages to be committed.

-listrules

Displays a list of preinstallation validation checks that would run for the specified host. The validations checks do not execute. To run the validation checks, do not include this switch.

-verbose

Displays all results of the preinstallation validation checks. Without this switch, only errors that prevent installation (failures) are displayed.

Conventions and recommendations

Use the **navicli ndu -install** command to both run the preinstallation validation checks and install software.

Example

navicli -h payroll_storage_SPA ndu -runrules

For the SP with hostname **payroll_storage_SPA,** this command executes the preinstallation validation checks.

Output

If the preinstallation validation checks detect failures, the failures are displayed.

ndu -commit

Commits (makes permanent) an installed storage-system driver package

Description

The **navicli ndu** command with the **-commit** function commits an installed software package. Every package does not require commit.

If a package needs to be committed and it is not committed, all new features of the newly installed package may not be available. A committed package cannot be reverted. It can be uninstalled.

Note: You cannot create any new RAID groups or bind any new LUNs until you commit FLARE and Access Logix software.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

ndu -commit is used with **navicli** (described on page 2-14) as follows:

ndu -commit *namelist*

where:

namelist

Lists package names of the software packages to be committed.

Conventions and recommendations

Use the **navicli ndu -list** command to display installed package information.

Example

navicli -h payroll_storage_SPA ndu -commit mypackage

For the SP with hostname **payroll_storage_SPA,** this command commits the installed package **mypackage**.

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

ndu -status

Returns the status of the ndu install, commit, or revert operations.

Description

The **navicli ndu** command **-status** function reports the progress of the last **ndu -install**, **-commit**, or **-revert** function executed.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

ndu -status is used with **navicli** (described on page 2-14) as follows:

ndu -status [**-clear**]

where:

-clear

Clears the status of the last executed **ndu** command.

Conventions and recommendations

Use the **navicli ndu -list** command to display installed package information.

Example

navicli -h payroll_storage_SPA ndu -status

For the SP with hostname **payroll_storage_SPA,** this command reports the status of the **ndu -install**, **-commit**, or **-revert** function.

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

ndu -revert (not supported on AX-series)

Returns to (restores functionality of) the previous revision of an installed storage-system driver

Description

The **navicli ndu** command **-revert** function restores the functionality of the previous revision of an installed driver package. A committed package cannot revert, nor can a package that had no previous revision installed. After the command succeeds, the SPs will restart.

If you omit the **-o** (override) switch, the CLI prompts for confirmation:

```
Revert operation will revert package-name from both
SPs. Do you still want to revert. (y/n)?
```

Answer **y** to revert; answer **n** to cancel the command.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

ndu -revert is used with **navicli** (described on page 2-14) as follows:

ndu -revert [**-delay** *seconds*] *namelist* [**-o**]

where:

-delay *seconds*

Specifies the delay time that allows attached hosts enough time after SP B has finished rebooting to rescan and mark paths available to SP B, before SP A reboots. The minimum allowed delay is zero seconds and the maximum allowed is 1140 seconds. In most cases, the EMC recommended NDU delay of 360 seconds should be used. However, some host configurations (such as those using Veritas DMP) may require a longer delay.

namelist

Lists package names of the software packages to be reverted.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

Use the **navicli ndu -list** command to display installed package information.

Example **navicli -h payroll_storage_SPA ndu -revert mypackage**

For the SP with hostname **payroll_storage_SPA,** this command reverts to the previous revision of **mypackage** for both SPs.

Output If the version of FLARE software running on the SP does not support command, a `Not supported` error message is printed to **stderr**. Other errors:

```
NDU_CANNOT_FIND_FILE
NDU_CANNOT_XFER_FILE
INVALID_PACKAGE
```

networkadmin -get

Lists network name and address information

Description

The **naviseccli** or **navicli networkadmin** command **-get** function without switches lists all network information for an SP. Issue the command to the SP for which this information is needed.

Issuing this command with one or more switches displays the information based on the specified switch. The line `Storage Processor:` is always displayed. This command displays information in the following format:

`Storage Processor:`	*SP-id* (`A` or `B`)
`Storage Processor Network Name:`	*SP-network-name*
`Storage Processor IP Address:`	*SP-IP-address*
`Storage Processor Subnet Mask:`	*SP-subnet-mask*
`Storage Processor Gateway Address:`	*SP's-gateway-system address*

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

networkadmin -get is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

networkadmin -get [-name] [-address] [-gateway] [-subnetmask]

where:

-name

Displays the SP's network name.

-address

Displays the SP's network IP address.

-gateway

Displays the IP address of the SP's gateway system.

-subnetmask

Displays the SP's subnet mask.

Conventions and recommendations

If you need to change an SP network name or address, you can do so with the **networkadmin -set** function described on page 3-159.

Example

naviseccli -h payroll_storage_SPA networkadmin -get

naviseccli -h payroll_storage_SPB networkadmin -get

For each SP, these commands list all network information.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See previous page. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

networkadmin -mib

Enables and disables SNMP services on the storage system SP

Description

The **naviseccli** or **navicli networkadmin** command **-mib** function enables or disables the processing of SNMP MIB read requests on an SP. This command with no option lists the current status of the SNMP service.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

networkadmin -mib is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

networkadmin -mib [-enable] [-disable] [-o]

where:

-enable

Enables the SNMP services.

-disable

Disables the SNMP services.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

To discover current settings, use the **networkadmin -mib** function.

Example

naviseccli -h payroll_storage_SPA networkadmin -mib -disable

```
Disable processing of SNMP read requests on SP A (y/n)[n]
```

y

For the SP with hostname **payroll_storage_SPA** this command disables the SNMP services on SP A.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

```
Storage Processor:  SP A
SNMP MIB Status:    Disabled
```

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

networkadmin -set

Updates network information for an SP

Note: The network properties are initially set by EMC service personnel to work at your site. Do not change any value unless you are moving the SP to another LAN or subnet.

If you change any value, after you confirm, the SP will restart and use the new value.

Description

The **naviseccli** or **navicli networkadmin** command **-set** function changes one or more network settings for an SP. Issue the command to the SP whose information you want to update.

If you omit the **-o** (override) option, the CLI displays a message in the following form to confirm the update.

```
Changing the name of SP <A|B> from oldname to newname
(y/n)[n]?
```

```
Changing the IP address of SP <A|B> from old-address to
new-address (y/n)[n]?
```

```
Changing the sub-net mask of SP <A|B> from old-mask to
new-mask (y/n)[n]?
```

```
Changing the gateway address of SP <A|B> from
old-gateway-address to new-gateway-address (y/n)[n]?
```

To make the change, enter **y**; otherwise, enter **n**.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

networkadmin -set is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

networkadmin -set [**-name** *name*] [**-address** *IP-address*] [**-gateway** *gateway-IP-address*] [**-subnetmask** *mask*] [**-o**]

where:

-name *name*

Changes the SP's network name to *name*. The maximum size of the name is 64 characters.

-address *IP-address*

Changes the SP's IP address to *IP address*.

-gateway *gateway-IP-address*

Changes the SP's gateway IP address to *gateway-IP-address*.

-subnetmask *mask*

Changes the SP's subnet mask to *mask*.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

To discover current settings, use the **networkadmin -get** function.

Example

naviseccli -h payroll_storage_SPA networkadmin -set -gatewayaddress 123.456.789.012

```
Changing the gateway address of SP A from 123.456.789.011
to 123.456.789.011 (y/n)[n] y
```

SP A reboots

For the SP with hostname **payroll_storage_SPA** this command changes the gateway address.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See above. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
NETADMIN_NOT_FOUND
NETADMIN_INVALID_NAME
```

rebootSP

Reboots an SP

Description

This command reboots one or both SPs. If you omit switches, the current SP is rebooted.

Note: If rebootSP is executed while I/O processes are active, I/O errors may occur and/or the Navisphere Agent process may hang. If the Agent process hangs, you will need to reboot the host on which the Navisphere Agent is running. If you are binding LUNs assigned to one SP, you should not reboot the peer SP until the binding process has completed. Otherwise, until the binding process is completed, you will see error messages each time the SP is polled.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

rebootSP is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

rebootSP [-both] [-o]

The optional switches are:

-both

Reboot both SPs.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

See the **rebootpeerSP** command, to reboot the peer SP of the target SP.

Examples

naviseccli -h ss1_spa rebootSP -both -o

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

None

rebootpeerSP (AX150-series or CX3-series only)

Reboots a peer SP

Description

Lets you reboot the peer SP of the target SP in a dual-SP storage system. For the **rebootpeerSP** command, the peer SP is the SP on the storage system to which the command is not targeted.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

rebootpeerSP is used with **naviseccli** (described on page 2-6) as follows:

rebootpeerSP [**-o**]

The optional switches are:

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

See the **rebootSP** command, to reboot the target SP or both SPs on the storage system.

Examples

The following example reboots the peer SP of the target SP. The target SP is ss1_spa; the peer SP is ss1_spb.

naviseccli -h ss1_spa rebootpeerSP

```
This operation will cause a storage system reboot!
DO YOU WISH TO CONTINUE?  (y/n)?
```

Output

None

remoteconfig -getconfig

Displays information about a host or SP Agent

remoteconfig Background

The **remoteconfig** command displays and sets Agent configuration information. An Agent can be any host Agent or SP Agent. These commands let you get and set the configuration of the Agent running on a remote host, scan all the devices in the storage system on a remote host, and stop the Agent running on a host.

Note: If you are running VMware ESX Server and issuing this command to a virtual machine (VM), it cannot target the Host Agent because the Navisphere Host Agent is supported only on ESX Server.

Description

The **naviseccli** or **navicli remoteconfig** command with **-getconfig** displays information on the Agent running on an SP. To display information on the Agent for the specified host, use **navicli** in the command line. If you omit switches, the command displays all Agent information. You can request specific information with switches.

To write the Agent information to a file, use the **-write** *filename* switch. If you use **-write**, the CLI writes all information to the file; you cannot select specific information with switches. If a file with the same name exists, the CLI will verify to overwrite.

The format of the display when you use **naviseccli** is as follows. Entries marked with an asterisk (*) would appear only if you use **navicli** and issue the command to a host.

`Description:` Description of host.
`Contact Person:` Name and phone number of person managing the Agent.
`*Device Connections:` Displays following device info through Comments.
`*Device Name:` Name of device, such as **c1t3d0s2.**
`*Storage System:` Storage-system name, such as storage1.
`*SP:` ID of SP managing the device: A or B.
`*Comments:` Any comments.
`*Connection Type:` Connection: SCSI, tty, lan, and so on.
`Users:` List of users by login name and host; for example, **jgarg@cpc3440.**
`Polling Interval:` Interval in seconds, if applicable.
`*Serial Line Baud Rate:` Baud rate, such as 9600, if applicable.
`*Log Entries to Transfer:` Log size to transfer or all, if applicable.
`*Mega-Poll`

`*Use explicit device names`Enabled or Disabled.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must be able to log in to the host running Navisphere CLI.

Format

remoteconfig -getconfig is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

remoteconfig -getconfig [**-description**] [**-contact**] [**-users**] [**-interval**] [**-write** *filename*]

where:

-description

Displays contents of description field.

-contact

Displays contents of contact field.

-users

Displays contents of users field.

-interval

Displays contents of polling interval field.

-write *filename*

Writes an image of the configuration file as it exists on the host or SP to file *filename*. The file is written in the same format as the **agent.config** file, which differs from the output of the **getconfig** function without the **-write** switch. You can use this file to set the configuration for other Agents using the **remoteconfig setconfig -f** *filename* function. No other switch is allowed with **-write**.

Conventions and recommendations

After listing Agent information, you can change the Agent settings with the **remoteconfig -setconfig** command.

Example

naviseccli -h ss1_spa remoteconfig -getconfig

This command lists all Agent information. Sample output is below.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

See page 3-163. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

`RAC_AGENT_NOT_RUNNING`

remoteconfig -reloadconfig (not supported on AX-series)

Instructs the Agent to reread the agent configuration file

Description

The **navicli remoteconfig** command with the **-reloadconfig** function instructs the Agent to use any new values established by **remoteconfig -setconfig**. This switch lets you avoid stopping and restarting the Agent to force it to use the new values.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

remoteconfig -reloadconfig is used with **navicli** (described on page 2-14) as follows:

remoteconfig -reloadconfig

Conventions and recommendations

None.

Example

navicli -h server1 remoteconfig -reloadconfig

This command instructs the Agent to reread the agent configuration file.

Output

None.

remoteconfig -setconfig

Changes configuration information for a host or SP Agent

Description

The **naviseccli** or **navicli remoteconfig** command with **-setconfig** changes the configuration information for the Agent running on an SP. To change configuration information for the Agent running on the specified host, use **navicli** in the command line.

Note: The comments in the Host Agent configuration file are removed. When your changes to the configuration file take effect, comments that previously resided in the file are permanently lost.

The CLI prompts for confirmation of every change you specify unless you use the **-o** (override) or **-f** switch. To change the setting for the Agent, enter **y**. The confirmation queries for all settings are as follows. Entries marked with an asterisk (*) would appear only if you use **navicli** and issue the command to a host.

```
Change host description from old to new <y/n>[y]?
Change contact information from  old to new <y/n>[y]?
*Add device device to managed device list <y/n>[y] ?
*Remove device device from managed device list <y/n>[y]?
*Scan devices and manage all of them <y/n>[y]?
Add user in the authorized user list <y/n>[y] ?
Remove user from the authorized user list <y/n>[y] ?
Change polling interval to new-interval <y/n>[y] ?
*Change baud rate to baud-rate <y/n>[y]?
*Change log size to size  <y/n>[y]?
*Enable/Disable Mega-Poll <y/n>[y]?
*Enable/Disable use of explicit device names <y/n>[y]?
```

To have the CLI obtain the Agent information from a file (perhaps a file written with the **getconfig -write** function), use the **-f** *filename* switch. Only the **-o** (override) switch is allowed with the **-f** switch.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

remoteconfig -setconfig is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

remoteconfig -setconfig [**-o**] [**-adduser** *userlist*] [**-contact** *contactinfo*] [**-description** *description*] [**-f** *filename*][**-interval** *interval*] [**-rmuser** *userlist*]

where:

-o

Executes the command without prompting for confirmation.

-adduser *userlist*

Adds the users specified in *userlist* to the authorized user list. The user name form is *username@hostname*. Separate the user entries with a space.

-contact *contactinfo*

Specifies new contact information for the Agent description field.

-description *description*

Specifies new contents for the Agent description field.

-f *filename* (Not supported on AX-series)

Reads the configuration information from file *filename*. This file must be in the correct format (same as the Agent configuration file used in earlier Navisphere revisions). The **-getconfig -write** command automatically creates files in the correct format. When you use **-f**, the CLI does not prompt for confirmation; the **-o** switch is not needed.

-interval *interval*

Changes the polling interval in seconds to *interval*. The valid range is 1 to 120. This switch may not apply to all storage-system types.

-rmuser *userlist*

Removes the specified users from the authorized user list.

Conventions and recommendations

You can use the **-getconfig** function to see how settings are formatted. Make sure that your entries are valid for the Agent you are configuring. A wrong setting can make an Agent inaccessible.

Example

naviseccli -h ss1_spa remoteconfig -setconfig -adduser tsjones@viking

```
Add tsjones@viking in the authorized user list <y/n>[y]?
```

This command adds the user **tsjones** on host **viking** to the Agent privileged users list.

Output

See page 3-167. If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
RAC_AGENT_NOT_RUNNING
RAC_REMOTECONFIG_NOT_SUPPORTED
INVALID_MEGAPOLL
INVALID_USEEXPLICITDEVNAME
RAC_FILE_NOT_FOUND
```

removerg (RAID group)

Removes a RAID group

Description

The **naviseccli** or **navicli removerg** command removes a specified RAID group.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

removerg is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

removerg *rgID*

where:

rgID

RAID group identification number. *rgID* specifies a number between 0 and the maximum number of RAID groups supported by the RAID group storage system.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa removerg 1

This command removes RAID group 1.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

None

resetandhold (CX3-series only)

Resets an SP and holds the reboot following the power on self tests (POST)

Description

The **naviseccli resetandhold** command, resets an SP and holds the reboot following the power on self tests (POST), to allow an SP to be reset in a safe manner for storage systems where pulling and reseating the SP is not permitted during operation. Because the boot process is held, a subsequent **rebootpeerSP** command must be issued to clear the hold and reboot the SP, to return the SP to service.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

resetandhold is used with **naviseccli** (described on page 2-6) as follows:

resetandhold

Conventions and recommendations

Issue **rebootpeerSP** after you issue **resetandhold**, when you are ready to return the SP to service.

Example

The following example resets and holds the reboot for the targeted SP on the storage system.

naviseccli -h ss1_spa resetandhold

```
This operation will cause the storage system to reset and
then hold the reboot process following the Power On Self
Tests (POST). To clear the hold state and complete the SP
reboot, a rebootpeersp command must be issued to the peer
SP.

DO YOU WISH TO CONTINUE?  (y/n)?
```

Output

None.

responsetest

Tests Event Monitor response

Description

The **naviseccli** or **navicli responstest** command creates an artificial event to test Navisphere Event Monitor response.

The **responsetest** command is designed for use without the Event Monitor User Interface (UI). That is, you can use **responsetest** in conjunction with the Event Monitor template file, **navimon.cfg**, which you can edit to specify the Event Monitor responses you want. If you have used the Event Monitor UI to set up an Event Monitor template, do not use this command.

Event Monitor functions accessed via **responsetest** are decentralized, providing email and pager support from local storage systems only. The EMC phone home feature is not available via this command.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

responsetest is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) with one of the following arguments as follows:

responsetest -email *response-parameters* |
-emailpage *response-parameters* | **-modempage** *response-parameters* |
-snmp *response-parameters*

where:

response_parameters

Allows different parameters for each type of response you specify, as follows.

-email

-smtpmailserver *smtpmailserver_hostname* Specifies the SMTP mail server; required.

-destaddress *destination_email_address* Specifies the destination email address; required.

[**-subject** *"text"*]
The *text*, within quotation marks, specifies the subject of the email; optional.

[**-cc** *destination_email_address*]
The email address to send a cc (copy) to; optional.

[**-message** *"text"* | **-file** *filename*]
The *text*, in quotation marks, describes the event; optional. Or you specify a file with descriptive text using **-file.**

[**-sender** *sender_email_address*]
Specifies the sender address; optional. If omitted, CLI inserts the Agent hostname as the *sender_email_address*.

-emailpage

-smtpmailserver *smtpmailserver_hostname* Specifies the SMTP mail server; required.

-destaddress *destination_email_address* Specifies the destination email address; required.

[**-subject** *"text"*]
The *text*, within quotation marks, specifies the subject of the email; optional.

[**-cc** *destination_email_address*]
Specifies the email address to send a cc (copy) to;

[**-message** *"text"* | [**-file** *filename*]
The *text*, in quotation marks, describes the event; optional. Or you specify a file with descriptive text using **-file.**

[**-sender** *sender_email_address*]
Specifies the sender address; optional. If omitted, CLI inserts the Agent hostname as the *sender_email_address*.

-modempage

(Not supported on AX-series)

-destnumber *phone-number* Specifies the pager phone number (with area code) and is required.

-msgnumber *phone-number*
Specifies the number that will appear on the pager display (with area code).

[**-comport** *number*]
Specifies the *number* is the PC COM port number. If omitted, the CLI assumes COM l; optional.

[**-messagedelay** *seconds*]
Specifies the delay between sending the destination phone number to the modem and sending the message to the modem. This allows enough time for the receiving modem to answer the call. Optional.

[**-dialcommand** *command]*
Specifies the modem dial command to be used by the agent. Optional.

[**-initcommand** *command-to-modem*]
Specifies the modem dial command used by the Agent. The **initcommand** allows for some custom modem configuration before the data is sent to it. Optional.

-snmp

-community *community* Specifies a community on the snmp managment host; optional.

-desthost *destination-hostname* Specifies an **snmp** management hostname; required.

-device *device*
Specifies the device represented by the snmp management host. Required.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa responsetest modempage -destnumber 15055678901 -msgnumber 19990124576

This command sends a modem page test event.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Result of the test.

setcache (not supported on AX-series)

Sets SP cache or RAID 3 size information

Description

The **naviseccli** or **navicli setcache** command changes system caching or RAID 3 settings on an SP. By using **setcache** with its various switches, you can enable, disable, and configure the cache. Cache size switches do not affect a cache if that cache is enabled; you must disable the pertinent cache (**-rc** or **-wc** switches) before any size switches will be effective.

Note: The changes to caching properties may be delayed until you have allocated memory and the standby power supply (SPS) is working. This may take several minutes.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setcache is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setcache [**-h** *high-watermark*] [**-hacv** *n*] [**-l** *low-watermark*]
[**-p** *page-size*] [**-r3a** *raid3-size-spa*] [**-r3b** *raid3-size-spb*]
[**-rsza** *read-cache-size-spa*] [**-rszb** *read-cache-size-spb*]
[**-rca** *read-cache-spa*] [**-rcb** *read-cache-spb*]
[**-wc** *write-cache*] [**-wsz** *write-cache-size*]

The optional switches are:

-h *high-watermark*

Sets the write cache high watermark. *high-watermark* specifies the percentage of dirty pages, which, when reached, causes both SPs to begin flushing the cache. The default is 80 percent for CX3-series and CX-series. A lower value causes the SPs to start flushing the cache sooner. The high watermark cannot be less than the low watermark. To turn watermark processing off, set both the low and high watermark values to 100.

-hacv *n*

Enables or disables the HA cache vault. *n* is as follows:

1 = Enables HA cache vault (the default)
0 = Disables HA cache vault

If you set **-hacv** to a value other than 0 or 1, an error message appears. If you enable the HA cache vault, a single drive failure will cause the write cache to become disabled, thus reducing the risk of losing data in the event of a second drive failing. If you disable the HA cache vault, a single drive failure does not disable the write cache, leaving data at risk if a second drive fails. When you disable the HA cache vault, you will receive a warning message stating that this operation will allow write caching to continue even if one of the cache vault drives fails. If there is already a failure on one of the cache vault drives, this operation will not re-enable the write cache.

-l *low-watermark*

Sets the write cache low watermark. *low-watermark* specifies the percentage of cache dirty pages that determines when cache flushing stops. When the low watermark is reached during a flush operation, both SPs stop flushing the cache. The default is 60 percent for CX3-series and CX-series. The low watermark cannot be greater than the high watermark. To turn watermark processing off, set both the low and high watermark values to 100.

-p *page-size*

Sets, in Kilobytes, the page size for the caches. Valid sizes are 2, 4, 8, and 16. The default is 2. Page size is set to 2 regardless of enable/disable. As a general guideline, the cache page size should be 8 Kilobytes for general UNIX file server applications, and 2 Kilobytes or 4 Kilobytes for database applications. It does not work if the read or write cache is enabled.

Note: Setting a page size, RAID 3 size, or write cache size for one SP automatically sets the other to the same size, so you need only specify a size for one SP.

-r3a *raid3-size-spa*

For a non-4700 storage system: Sets the SP memory size, in MB, reserved for RAID 3 in SP A (and SP B). *raid3-size-spa* specifies the size. This size must be the sum of the memory allocated for all RAID 3 LUNs to be bound. For example, if you bind two RAID 3 LUNs, each with the recommended 6 MB of memory, you must set this field to 12 (6 + 6). If the storage system does not have any RAID 3 LUNs, this value should be 0.

For a CX3-series or CX-series, RAID 3 memory is allocated automatically; you cannot set it.

-r3b *raid3-size-spb*

Sets the optimum RAID 3 size for SP B (and SP A). See comments for **-r3a** above.

-rsza *read-cache-size-spa*

Sets the read cache size for SP A to *read-cache-size-spa* MB.

Note: For read/write caching to function, the total size allocated to the read and write caches (together) must be at least 4 MB (for CX3-series and CX-series storage systems).

-rszb *read-cache-size-spb*

Sets the read cache size for SP B to *read-cache-size-spb* MB.

-rca *read-cache-spa*

Enables or disables the read cache function for SP A. For *read-cache-spa*::

0 = Disables read cache
1 = Enables read cache

-rcb *read-cache-spb*

Enables or disables the read cache function for SP B. For *read-cache-spb*:

0 = Disables read cache
1 = Enables read cache

-wc *write-cache*

Enables or disables the write cache function. For *write-cache*:

0 = Disables write cache
1 = Enables write cache

-wsz *write-cache-size-sp*

Sets the write cache size for the storage system to *write-cache-size-sp* MB. Also, see the note on sizes under **-rsza**.

Conventions and recommendations

You can use the **getsp** command to discover SP memory and the **getcache** command to discover cache settings.

Examples

naviseccli -h ss1_spa getsp -mem

```
Memory Size For The SP:         930
```

The **getsp -mem** command gets SP memory information. Each SP has the same amount of memory, so you need not issue this command for SP B.

naviseccli -h ss1_spa setcache -wsz 650 -wc 1 -p 8 -rcza 280 -rczb 280 -rc 1

This command sets the write cache (applies to both SPs) to 650 MB, enables write caching, sets a write cache page size of 8 Kbytes, sets a read cache size for each SP of 280 MB, and enables read caching.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

None

setfeature

Adds a software feature to a LUN controlled by an SP

Description

In Navisphere, the **naviseccli** or **navicli setfeature** command adds and removes a software driver feature to a LUN owned by an SP.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setfeature is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setfeature -on|**-off -feature** *feature* **-lun** *lun*|**-lunuid** *uid*

where:

-on or **-off**

Adds or removes the feature.

-feature *feature*

Identifies the feature; for example, RM for remote mirroring and sancopy for SAN Copy.

-lun *lun* or **-lunuid** *uid*

Specifies the LUN. You can use the LUN number or the LUN unique ID, UID (which is the World Wide Name, WWN).

Output

If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**. Other errors:

```
COMMAND_NOT_SUPPORTED
FEATURE_REQUIRED
LUN_AND_LUNUID_SPECIFIED
```

setsniffer (not supported on AX-series)

Starts a background verify process or changes verify process parameters

Description

The **naviseccli** or **navicli setsniffer** command starts a background verify process or changes the parameters for the verify process. You can indicate a specific LUN, all LUNs in a RAID group, or all LUNs in a storage system.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setsniffer is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setsniffer **-all** | *lun* | **-rg** *raidgroupnumber* **[-bv]** **[-bvtime** *priority*] **[-cr]**

where:

-all

Indicates to apply sniffer parameters to all luns in the storage system. The target SP must own one LUN at minimum.

lun

Indicates to apply sniffer parameters to the specified LUN. *lun* specifies the logical unit number. You must target the SP that owns the specified LUN.

-rg *raidgroupnumber*

Indicates to apply sniffer parameters to all luns in the specified RAID group.

The optional switches are:

-bv

Starts a full unit background verify.

-bvtime *priority*

Specifies the background verify priority. *priority* specifies the priority value (the rate at which the full background verify is executed). Valid values are ASAP, High, Medium, and Low.

-cr

Clears background verify reports.

Conventions and recommendations

None

Example

naviseccli -h 128.111.222.33 setsniffer 0 -bv -bvtime high

Starts a background verify on LUN 0 and sets the verify priority to high.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

There is no output. Errors are printed to **stderr**.

setspstime

Sets SPS or BBU battery test time

Description

The **naviseccli** or **navicli setspstime** command sets the SPS battery test time. If no switches are specified, the command returns the current SPS battery test time. The SPS test time is displayed for the client's time zone.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setspstime is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setspstime [**-d** *day-num*] [**-h** *hour-num*] [**-m** *minute-num*] [**-nolocal**]

The optional switches are:

-d *day-num*

Sets the day of the week (0-6, 0=Sunday).

-h *hour-num*

Sets the hour of the day (0-23, 0=12:00 AM).

-m *minute-num*

Sets the minute of the hour (0-59).

Note: To set the SPS or BBU test time, all switches must be specified.

-nolocal

The SPS test time is displayed for the client's time zone.

Note: -nolocal is required if your system is communicating with a host Agent version less than 6.5. You cannot use this switch with version 6.5 or higher.

Example

naviseccli -h ss1_spa setspstime -d 0 -h 1 -m 0

This example sets the SPS battery test time to Sunday at 1:00 AM.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output There is no output. Errors are printed to **stderr**.

setsptime

Sets the SP system clocks

Description

The **naviseccli** or **navicli setsptime** command sets the system time for both SPs.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setsptime is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setsptime [-**M** *month-num*] [-**D** *day-num*] [**-Y** *year-num]* [-**h** *hour-num*] [**-m** *minute-num*]

where:

-**M** *month-num*

Specifies the month (1-12).

-D *day-num*

Specifies the day (1-31).

-Y *year-num*

Specifies the year; use four digits.

-**h** *hour-num*

Specifies the hour (0-23).

-**m** *minute-num*

Specifies the minute (0-59).

Example

naviseccli -h data1_spa setsptime -M 3 -D 13 -Y 2002 -h 9

This example sets the SP system clock to March 13, 2002, 9:00 am.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

There is no output. Errors are printed to **stderr**.

setstats (not supported on AX-series)

Sets statistics logging

Description

The **naviseccli** or **navicli setstats** command sets statistics logging. If no optional switches are present, the command returns the current state of statistics logging. The SP maintains a log of statistics for the LUNs, disk modules, and storage-system caching that you can turn on and off. When enabled, logging affects storage-system performance, so you may want to leave it disabled unless you have a reason to monitor performance.

The log uses a 32-bit counter to maintain the statistics numbers. When the counter is full, the statistics numbers restart at zero. As a result, you will see a sudden decrease in a statistics number if you view it shortly before the counter is full and shortly after the counter restarts at zero. If you want to keep the log turned on for more than two weeks, we recommend that you reset the log about every two weeks, so you know when the numbers start at zero.

The command affects only the SP you specify.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

setstats is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

setstats [-on | -off]

where:

-on

Enables statistics logging.

-off

Disables statistics logging.

Note: If statistics logging is off, certain options in other commands are disabled. The options for the other commands specify whether statistics logging must be on for their options to be valid.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa setstats -on

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

There is no output. Errors are printed to **stderr**.

shutdown (AX-series only)

Shuts down and powers off the storage system

Description

The **naviseccli** or **navicli shutdown** command shuts down and powers off the storage system you specify.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

shutdown is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows.

shutdown [-o]

where:

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa shutdown

This command shuts down and powers off the specified storage system.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Before you shutdown the storage system, stop all I/O from
any servers connected to the storage system and save all
unsaved data to disk.  During the shutdown process you
will lose access to all data on the LUNs but you will not
lose any data.  When you power up the storage system you
will regain access to the LUNs.

Do you want to shutdown and power off the subsystem now
(y/n)?
```

Output

None if the command succeeds; status or error information if it fails.

spcollect -info (automated version)

Displays the setting of the automated SPCollect service

Description

The **naviseccli** or **navicli.jar spcollect** command with the **-info** function lets you display the setting of the automated SPCollect functionality. The setting appears as *Enabled* when the SPCollect automated functionality is turned on; *Disabled* when it is turned off.

The automated SPCollect service is part of the *Peerwatch* service included with FLARE Operating Environment version 02.19.xxx.5.yyy or higher.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

spcollect -info is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows:

spcollect -info

Conventions and recommendations

None.

Example

naviseccli -address ss1_spa spcollect -info

This command shows you the setting of the automated SPCollect functionality for the specified storage system. The *Enabled* setting, indicating that the SPCollect process is turned on, appears in the output below.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
AutoExecution: Enabled
```

spcollect -set (automated version)

Sets the automated SPCollect service on or off

Description

The **naviseccli** or **navicli.jar spcollect** command with the **-set** function lets you set the automated SPCollect process on or off.

The automated SPCollect service is part of the *Peerwatch* service included with FLARE Operating Environment version 02.19.xxx.5.yyy or higher.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

spcollect -set is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows:

spcollect -set -auto *on* | *off* [**-o**]

where:

-auto *on* | *off*

Specifies to set the automated SPCollect process on or off. If you indicate *on*, it turns the automation service on; *off* indicates to turn the automation service off.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

Use **spcollect -info** to verify whether the service is enabled or disabled.

Example

naviseccli -address ss1_spa spcollect -set -auto on

This command turns the automated SPCollect process on.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

spcollect (manual version)

Selects and places a collection of storage system log files into a single .zip file

Description

The **naviseccli** or **navicli spcollect** command selects a collection of storage system log files and places them in a single .zip file on the storage system. You can retrieve the file from the storage system using the **managefiles** command.

Note: This command is not related to the automated SPCollect service that is part of the Peerwatch service included with FLARE Operating Environment version 02.19.xxx.5.yyy or higher. This command lets you run the SPCollect functionality separate from the scheduled service. See the **spcollect -set** command to enable or disable the automated SPCollect service.

Important The SPCollect functionality can affect system performance (may degrade storage system performance).

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

spcollect is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

spcollect

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa spcollect

This example creates a .zip file on the storage system, which contains system log files.

The .zip file has the following format:

*arrayserialnumber*_**SP***x*_*date*_*time*_*spsignature*_**data.zip**

where

arrayserialnumber	Storage system serial number.
x	SP A or B.
date	Date of collection.
time	Time of collection.
spsignature	SP signature

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output There is no output. Errors are printed to **stderr**.

spportspeed

Set or get the SP port speed

Description

The **naviseccli** or **navicli spportspeed** command gets or sets the SP port speed. You can set the port speed on either SP directly or through the other SP. The port speed you can set and the options available depend upon your storage-system type.

For a port speed to work, the HBA, switch, and SP must all support it. You can set the ports of an SP to different speeds if the ports connect to switches or HBAs with different speeds.

CAUTION

Incompatible port speeds will prevent the two devices from communicating. The CLI prompts for confirmation as follows before executing the -set command.

```
Changing the port speed is a disruptive function.
Verify that the other device connected to the
storage system, supports the new speed. If the
speed settings are incompatible, the storage system
will be unable to communicate with the other
connected device.

Are you sure you want to change speed of SP x Port n
from n Gigabit to n Gigabit <y/n>?
```

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format **spportspeed** is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

spportspeed -get [-isauto] [-avail] [-requested] [-type]

where:

-isauto

Indicates whether the Auto-Negotiate feature is turned on or off. The CLI returns a yes value if the feature is turned on, a no value if the feature is turned off, and a not supported value if the feature is not supported.

Note: If you have the Auto-Negotiate feature turned on, the Speed Value that is generated in the ouput does not have a value of auto. The value reflects the speed at which the port is currently operating. If you have the Auto-Negotiate feature turned on and you specify the **-requested** switch, the Requested Value displays a value of auto.

-avail

Indicates the available speeds for a specified port.

-requested

Displays the speed requested through**spportspeed -set**. The speed that is requested may not equal the actual speed of the port. For example when the Auto-Negotiate feature is turned on, the Requested Value displays auto and the Speed Value displays the speed at which the port is currently operating.

-type

Displays the connection type (Fibre Channel or iSCSI) for each port along with the speeds.

or

spportspeed -set -sp *sp* **–portid** *port speed*

Note: If an incompatible small form factor pluggable (SFP) is detected, the port is faulted and you will not be able to set the SP port speed.

where:

-sp *sp*

Specifies the SP to set the port speed on **a** | **b**.

-portid *port speed*

port specifies the port on the SP (**0**, **1**, **2**, or **3**).

speed specifies the port speed: See the note above. For Fibre Channel systems, port speed is **1** for 1-Gb mode, **2** for 2-Gb mode, **4** for 4-Gb mode, **auto** to initiate the Auto-Negotiate feature. For iSCSI systems, port speed is **10** for 10-Mb mode, **100** for 100-Mb mode, **1000** for 1000-Mb mode, **auto** to initiate the Auto-Negotiate feature.

Conventions and recommendations

None

Example

naviseccli -h ss1__spa spportspeed -get

```
Storage Processor :   SP A
Port ID :             0
Speed Value :         1

Storage Processor :   SP A
Port ID :             1
Speed Value :         2

Storage Processor :   SP B
Port ID :             0
Speed Value :         2

Storage Processor :   SP B
Port ID :             1
Speed Value :         2
```

naviseccli -h ss1_spa spportspeed -set -sp a -portid 0 2

```
Changing the port speed is a disruptive function.
Verify that the other device connected to the
storage system, supports the new speed. If the
speed settings are incompatible, the storage system
will be unable to communicate with the other
connected device.

Are you sure you want to change speed of SP A Port n
   from 1 Gigabit to 2 Gigabit <y/n>? y
```

The **get** command example displays the port speeds of the SP **ss1_spa** and its peer SP. The **set** command example sets the SP port speed of SP A port 0 to 2 Gbs/second.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output If the version of FLARE software running on the SP does not support this command, a `Not supported` error message is printed to **stderr**.

systemtype (not supported on AX-series)

Sets the storage-system type

Description

The **naviseccli** or **navicli systemtype** command changes the configured storage-system type. Write caching must be disabled for this command to work. Changing the system type causes an SP to restart.

If you issue the command without arguments, the CLI will display both the current and configured system types.

Note: Do not change the system type of any storage sytem running Access Logix. Do not change the system type of a storage system unless it has been quiesced. The Agent must be running and managing the storage system.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

systemtype is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

systemtype -config [*type*] **[-o]**

The optional switches are:

-config [*type*]

Sets the storage-system type to one of the following:

A - HP-UX type with auto-trespass off; use this if your HP-UX system does not have the PVLINKS feature.

2 - HP-UX type with auto-trespass on; use this if your HP-UX system has the PVLINKS feature.

3 - CLARiiON open storage system (default)

9 - SGI (CX600)

13 - Dell

16 - Fujitsu

1C - HP type

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

Depending on the type of HP-UX operating system, you may want auto-trespass to be on or off.

Examples

naviseccli -h ss1_spa systemtype

```
The configured system type is: 0x3
The current system type is: 0x3
```

naviseccli -h ss1_spa systemtype -config 2

```
In order for this command to execute, write cache
must be disabled and memory size set to zero:
```

naviseccli -h ss1_spa setcache -wc 0.

```
This operation will cause a storage system reboot!
DO YOU WISH TO CONTINUE? (y/n) y
```

This example sets the storage-system type to an HP-UX system type with auto-trespass on. The newly configured system type will become the current system type after the SP restarts.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

Shown above.

trespass

Trespasses one or more LUNs to control of an SP

Description

This command trespasses one or more LUNs to control of an SP.

Note: Not applicable to single-SP storage systems.

The command attempts to trespass all specified LUNs to the SP you specify with the **-h** switch.

Note: If **trespass** is executed while I/O processes are active, I/O errors may occur.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

trespass is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

trespass [all | lun *lun-number* **| mine]**

where:

all

Trespasses on all LUNs in the system.

lun *lun-number*

Trespasses on one LUN (specified in *lun-number*).

mine

Performs whatever trespassing is necessary to take all of the LUNs that have this SP as a default owner.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa trespass all

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

There is no output. Errors are printed to **stderr**.

unbind

Deconfigures a LUN

Description

The **naviseccli** or **navicli unbind** command deconfigures LUNs from their current logical configuration. **unbind** destroys all data on the LUN; therefore, when you execute an **unbind** command, you are prompted to verify that you really want to unbind the LUN(s). If you do not want the prompt to appear, you can override prompting using the **-o** switch.

The command can unbind only LUNs owned by the SP you specify with **-h**.

You can unbind multiple LUNs at the same time.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

unbind is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

unbind *lun* **[-o]**

where:

lun

Specifies the LUN to deconfigure.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None

Examples

naviseccli -h ss1_spa unbind 3 -o

This command destroys (deconfigures) LUN 3 without prompting you for permission, and frees its disks to be reconfigured.

naviseccli -h ss1_spa unbind 0 1 2 3 4 -o

This command destroys (deconfigures) LUNs 0, 1, 2, 3, and 4 without prompting you for permission, and frees its disks to be reconfigured.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output None

unitserialnumber

Displays or changes the VDPP80 (port 80) behavior mode

Description

The **naviseccli** or **navicli unitserialnumber** command displays or set the VDPP80 behavior mode, which defines how subsequent VPDP80 requests will be populated with the storage-system serial number. You might need to do this for software such as SunCluster 3.

To set this mode for a specific storage group, see the **storagegroup** command in Chapter 4.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

unitserialnumber is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

unitserialnumber [array | lun] [-o]

where:

array

Sets the behavior mode to array (storage system).

lun

Sets the behavior mode to LUN.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None

Examples

naviseccli -h ss1_spa unitserialnumber

```
Current unit serial number mode is: LUN
```

naviseccli -h ss1_spa unitserialnumber array

These two commands display the current behavior mode and then set the mode to **array** (storage-system) mode.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

4

Access Logix (storage group) commands

This chapter describes the Access Logix™ (storage group) commands that are available for shared storage systems, that is, storage systems with the EMC Access Logix option.

Note: The commands in this chapter function only with a storage system that has the optional Access Logix software installed.

Topics are:

- Shared storage setup and management overview 4-2
- port 4-4
- register 4-18
- sc_off (not supported on AX-series) 4-19
- storagegroup 4-21

Shared storage setup and management overview

Storage groups are meaningful only in shared environments where multiple hosts will have exclusive or shared access to LUNs in a storage system. You specify host-storage group access using the unique ID (also called the world wide name, WWN) of each HBA and LUN.

Generally, you may find it easier to use Navisphere Manager than the CLI to create and manipulate storage groups. However, the following is a sequence of tasks you can perform using only the CLI.

1. Plan the LUNs that each host will use: RAID group type, capacity, SP owner, storage group, and so on.
2. Create the RAID groups, bind the LUNs, and assign the LUNs to RAID groups using Manager or the CLI. See the unshared storage overview in Chapter 3 for example use of the CLI.

   Note: If you are running VMware ESX Server, you can bind LUNs from ESX Server or a virtual machine (VM).

3. Create the storage groups you want using Manager or the CLI command **storagegroup -create.**
4. Connect the hosts to storage groups using Manager or the CLI. You can use the CLI command **storagegroup -connecthost** to assign a storage group to all HBAs in a host, or the command **storagegroup -setpath** to assign a storage group to a specific HBA in a host.

   Note: If you are running VMware ESX Server, assign ESX Server to the storage group.

5. Assign LUNs to the storage groups using Manager or the CLI **storagegroup -addhlu** command.You can assign more than one LUN to a storage group and let more than one host access a storage group.

Note: If you are running VMware ESX Server, rescan the bus at the ESX Server level. If you are running ESX Server 2.5.x, you must then power down any virtual machine to which you will assign LUNs. If you are running ESX Server 3.x, you do not need to power down the virtual machine. At the ESX Server level, assign the LUNs to the virtual machines. When complete, if you are running ESX Server 2.5.x, power up the VM. If you are running ESX Server 3.x, you do not need to power up the VM.

6. As needed, reconfigure host-storage group connections using Manager or the CLI command **storagegroup -sethost**. If you need to disconnect a host from a storage group, use **storagegroup -disconnecthost**.

port

Lists SP port information, removes an HBA entry from an SP's initiator list, and provides diagnostic capabilities

Description

The **naviseccli** or **navicli port** command lists SP port information, removes an HBA entry from an SP's permitted initiator list (initiator record), and provides diagnostic capabilities for SAN Copy initiator records and duplicate host initiator records. See also the **storagegroup -setpath** command starting on page 4-31 and **alpa** command, page 3-8.

To register an HBA with a storage system (opposite of removing an HBA entry), use the **register** command.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

port is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

port [**-diagnose** [*optional-diagnose-switches*]] [**-list** [*optional-list-switches*]] [**-removeHBA** [*optional-removeHBA -switches*] [**-o**]

The optional **port -diagnose** switches are:

[**-sancopy** [**-clean**]] [**-host**]

-sancopy [**-clean**]

Lists the SAN Copy initiator records where the initiator is the same as that of the targeted SP. If you include the optional **-clean** switch, the CLI prompts you to remove the initiator records that are displayed.

-host

Scans the host initiator records and displays duplicate hosts with the same host ID.

The optional **port -list** switches are:

[-all] [-arraycommpath] [-arrayhba] [-failovermode] [-gname] [-hba] [-initiatorcount] [-sfpstate] [-sp] [-uid *StorageGroupUID*] [-**unitserialnumber**]

Without arguments, **-list** displays information about all ports in the system but does not list information given by **-all**, **-arraycommpath**, and **-failovermode**; this allows **-list** without an argument to produce output compatible with scripts written for Navisphere revisions 5.X. Example 1 below shows output without switches; example 2 shows CLI 6.0.5 output with the **-all switch.**

You can use one of the following optional switches with **-list**:

-all

Lists all port information, including any information that is new with this Navisphere release. For script compatibility with revisions of Navisphere before 5.3, use the **-list** without an argument.

-arraycommpath

Displays the status of the **arraycompath** setting: 0 if **arraycompath** is disabled; 1 if **arraycommpath** is enabled.

-arrayhba

Displays information about all storage systems attached to this HBA, or about storage systems that were logged in at some point and for which initiator records still exist. See Example 2 for a display.

-failovermode

Displays the failover mode: 0, 1, 2, or 3. See the **storagegroup -failovermode** description for more information.

-gname *StorageGroupName*

Specifies a storage group. *StorageGroupName* specifies the user-defined storage group name. If you omit the **-gname** and the **-uid** switches, the CLI describes all HBA ports connected to this storage group.

-hba

Returns information on HBA ports. The initiator and target **-hba** field returns different information depending on whether you are targeting a Fibre Channel or an iSCSI HBA. When you target a Fibre Channel HBA, the **-hba** returns the world wide

name such as:
10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C. When you target an iSCSI HBA, **-hba** returns the initiator name.

-initiatorcount

Displays the initiator information for each port on a given SP. Lists the number of initiators that are defined, logged-in and those that are not logged in.

-mac

Displays the MAC address for the front end ports of an iSCSI storage system. Running the **port** ... **-mac** command returns a *MAC Address* field for each port. When you run the **port** ... **-mac** command, if any ports are Fibre Channel ports, the *MAC Address* field for those ports will display *Not Applicable*.

-sfpstate(CX3-series only)

Displays the small form factor pluggable (SFP) state for each port. This lets you determine if an incompatible or faulty SFP is detected, in which the status is set to **faulted**.

-sp

Specifies SP ports only.

-uid *StorageGroupUID*

Specifies the storage group unique ID (also known as the world wide name, WWN). If you omit the **-gname** and the **-uid** switches, the CLI describes all HBA ports connected to this storage group.

-unitserialnumber

Specifies the **unitserialnumber** mode.

The optional **port -removeHBA** switches are:

[**-hbauid** *hbauid* | **–host** *hostname* |**-hostip** *IPAdress* |**-all**]

-all

Removes all initiator records that are logged out and registered, for the specified storage system.

-hbauid *hbauid*

Removes a specific initiator record specified with **-hbauid**. *hbauid* specifies a unique host bus adapter identification number (must use uppercase).

-host *hostname*

Removes all initiator records that are logged out and registered, for the specified hostname.

-hostip *IPAdress*

Removes all initiator records that are logged out and registered, for the specified host IP address.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None

Example 1

The following example shows sample output of the **port -list** command targeted to Fibre Channel HBAs and SPs:

naviseccli -h ss1_spa port -list

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Information about each HBA:

HBA UID:
   10:10:10:10:10:10:10:10:10:10:10:10:10:10:10:10
Server Name:             matt
Server IP Address:       1.2.3.4
HBA Model Description:   ModelABC
HBA Vendor Description:  VendorABC
HBA Device Driver Name:   N/A
Information about each port of this HBA:

    SP Name:               SP A
    SP Port ID:            0
    HBA Devicename:        N/A
    Trusted:               NO
    Logged In:             NO
    Defined:               YES
    Initiator Type:           3
    StorageGroup Name:     Private


Information about each HBA:

HBA UID:
   20:00:00:00:C9:21:FE:D5:10:00:00:00:C9:21:FE:D5
Server Name:
   20:00:00:00:C9:21:FE:D5:10:00:00:00:C9:21:FE:D5
```

```
Server IP Address:       UNKNOWN
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:               SP B
    SP Port ID:            0
    HBA Devicename:
    Trusted:               NO
    Logged In:             YES
    Source ID:             7280384
    Defined:               NO
    Initiator Type:           128
    StorageGroup Name:     None


Information about each HBA:

HBA UID:
   AA:01:34:11:22:33:44:44:72:68:01:38:01:21:42:53
Server Name:             dochost.example.com
Server IP Address:       10.10.10.1
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:               SP A
    SP Port ID:            0
    HBA Devicename:
    Trusted:               NO
    Logged In:             NO
    Defined:               YES
    Initiator Type:           3
    StorageGroup Name:     Documentation

    SP Name:               SP A
    SP Port ID:            1
    HBA Devicename:
    Trusted:               NO
    Logged In:             NO
    Defined:               YES
    Initiator Type:           3
    StorageGroup Name:     Documentation


Information about each HBA:

HBA UID:
   20:00:00:00:C9:2B:53:D3:10:00:00:00:C9:2B:53:D3
```

```
Server Name:
   20:00:00:00:C9:2B:53:D3:10:00:00:00:C9:2B:53:D3
Server IP Address:       UNKNOWN
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:               SP A
    SP Port ID:            0
    HBA Devicename:
    Trusted:               NO
    Logged In:             YES
    Source ID:             1315328
    Defined:               NO
    Initiator Type:           128
    StorageGroup Name:     None


Information about each HBA:

HBA UID:
   00:11:22:33:44:55:66:77:88:99:AA:BB:CC:DD:EE:FF
Server Name:             abc.example.com
Server IP Address:       10.10.10.2
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:               SP A
    SP Port ID:            0
    HBA Devicename:
    Trusted:               NO
    Logged In:             NO
    Defined:               YES
    Initiator Type:           3
    StorageGroup Name:     PublicStorageGroup

Information about each SPPORT:

SP Name:             SP B
SP Port ID:          0
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:68:50:C3:0F:E0
Link Status:         Up
Port Status:         Online
Switch Present:      YES
Switch UID:
   10:00:00:60:69:10:18:16:20:09:00:60:69:50:14:13
SP Source ID:        727296
```

```
SP Name:              SP B
SP Port ID:           1
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:69:50:C3:0F:E0
Link Status:          Down
Port Status:          DISABLED
Switch Present:       YES
Switch UID:
   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
SP Source ID:         239

SP Name:              SP A
SP Port ID:           0
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:60:50:C3:0F:E0
Link Status:          Up
Port Status:          Online
Switch Present:       YES
Switch UID:
   10:00:00:60:69:50:10:4A:20:09:00:60:69:50:15:23
SP Source ID:         661760

SP Name:              SP A
SP Port ID:           1
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:61:50:C3:0F:E0
Link Status:          Down
Port Status:          DISABLED
Switch Present:       YES
Switch UID:
   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
SP Source ID:         239
```

Note: The `StorageGroup Name` field displays `None` if the HBA is not explicitly mapped to a user-defined, a non-user defined, a null, a management, or a physical storage group.

Example 2 The following example shows sample output of the **port -list -all** command targeted to Fibre Channel HBAs and SPs:

naviseccli -h ss1_spa port -list -all

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Information about each HBA:

HBA UID:
   10:10:10:10:10:10:10:10:10:10:10:10:10:10:10:10
```

```
Server Name:              matt
Server IP Address:        1.2.3.4
HBA Model Description:    ModelABC
HBA Vendor Description:   VendorABC
HBA Device Driver Name:    N/A
Information about each port of this HBA:

    SP Name:                SP A
    SP Port ID:             0
    HBA Devicename:         N/A
    Trusted:                NO
    Logged In:              NO
    Defined:                YES
    Initiator Type:            3
    StorageGroup Name:      Private
    ArrayCommPath:          0
    Failover mode:          1


Information about each HBA:

HBA UID:
   20:00:00:00:C9:21:FE:D5:10:00:00:00:C9:21:FE:D5
Server Name:
   20:00:00:00:C9:21:FE:D5:10:00:00:00:C9:21:FE:D5
Server IP Address:        UNKNOWN
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:                SP B
    SP Port ID:             0
    HBA Devicename:
    Trusted:                NO
    Logged In:              YES
    Source ID:              7280384
    Defined:                NO
    Initiator Type:            128
    StorageGroup Name:      None
    ArrayCommPath:          0
    Failover mode:          0


Information about each HBA:

HBA UID:
   AA:01:34:11:22:33:44:44:72:68:01:38:01:21:42:53
Server Name:              dochost.example.com
Server IP Address:        10.10.10.1
HBA Model Description:
HBA Vendor Description:
```

```
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:                SP A
    SP Port ID:             0
    HBA Devicename:
    Trusted:                NO
    Logged In:              NO
    Defined:                YES
    Initiator Type:            3
    StorageGroup Name:      Documentation
    ArrayCommPath:          0
    Failover mode:          0

    SP Name:                SP A
    SP Port ID:             1
    HBA Devicename:
    Trusted:                NO
    Logged In:              NO
    Defined:                YES
    Initiator Type:            3
    StorageGroup Name:      Documentation
    ArrayCommPath:          0
    Failover mode:          0


Information about each HBA:

HBA UID:
   20:00:00:00:C9:2B:53:D3:10:00:00:00:C9:2B:53:D3
Server Name:
   20:00:00:00:C9:2B:53:D3:10:00:00:00:C9:2B:53:D3
Server IP Address:       UNKNOWN
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:                SP A
    SP Port ID:             0
    HBA Devicename:
    Trusted:                NO
    Logged In:              YES
    Source ID:              1315328
    Defined:                NO
    Initiator Type:            128
    StorageGroup Name:      None
    ArrayCommPath:          0
    Failover mode:          0


Information about each HBA:
```

```
HBA UID:
   00:11:22:33:44:55:66:77:88:99:AA:BB:CC:DD:EE:FF
Server Name:              abc.example.com
Server IP Address:        10.10.10.2
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

    SP Name:               SP A
    SP Port ID:            0
    HBA Devicename:
    Trusted:               NO
    Logged In:             NO
    Defined:               YES
    Initiator Type:           3
    StorageGroup Name:     PublicStorageGroup
    ArrayCommPath:         1
    Failover mode:         2

Information about each SPPORT:

SP Name:              SP B
SP Port ID:           0
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:68:50:C3:0F:E0
Link Status:          Up
Port Status:          Online
Switch Present:       YES
Switch UID:
   10:00:00:60:69:10:18:16:20:09:00:60:69:50:14:13
SP Source ID:         727296

SP Name:              SP B
SP Port ID:           1
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:69:50:C3:0F:E0
Link Status:          Down
Port Status:          DISABLED
Switch Present:       YES
Switch UID:
   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
SP Source ID:         239

SP Name:              SP A
SP Port ID:           0
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:60:50:C3:0F:E0
Link Status:          Up
Port Status:          Online
Switch Present:       YES
```

```
Switch UID:
   10:00:00:60:69:50:10:4A:20:09:00:60:69:50:15:23
SP Source ID:         661760

SP Name:              SP A
SP Port ID:           1
SP UID:
   50:06:01:60:D0:C3:0F:E0:50:06:01:61:50:C3:0F:E0
Link Status:          Down
Port Status:          DISABLED
Switch Present:       YES
Switch UID:
   00:00:00:00:00:00:00:00:00:00:00:00:00:00:00:00
SP Source ID:         239
```

Example 3 The following example shows sample output of the **port -list -hba** command targeted to an *iSCSI* HBA:

naviseccli -h IPAddress_SP port -list -hba

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Information about each HBA:
HBA UID: iqn.1991-05.com.microsoft:nlpc20234
Server Name: nlpc20234
Server IP Address: 25.24.23.235
HBA Model Description:
HBA Vendor Description:
HBA Device Driver Name:
Information about each port of this HBA:

SP Name:             SP A
SP Port ID:          0
HBA Devicename:      \\.\SCSI2:0:0:1
Trusted:             NO
Logged In:           YES
Source ID:           4294967295
Defined:             YES
Initiator Type:      3
StorageGroup Name:   StorageGrpnlpc20234

Information about each SPPORT:
SP Name:               SP A
SP Port ID:      0
SP UID:          iqn.1992-04.com.emc:cx.apm00034901526.a0
Link Status:     Up
Port Status:     Online
Switch Present:  Not Applicable

SP Name:         SP A
```

```
SP Port ID:      1
SP UID:          iqn.1992-04.com.emc:cx.apm00034901526.a1
Link Status:     Down
Port Status:     Online
Switch Present:  Not Applicable

SP Name:         SP B
SP Port ID:      0
SP UID:          iqn.1992-04.com.emc:cx.apm00034901526.b0
Link Status:     Down
Port Status:     Online
Switch Present:  Not Applicable

SP Name:         SP B
SP Port ID:      1
SP UID:          iqn.1992-04.com.emc:cx.apm00034901526.b1
Link Status:     Down
Port Status:     Online
Switch Present:  Not Applicable
```

Example 4 The following example shows sample output of the **port -list -mac** command targeted to an *iSCSI* storage system:

naviseccli -h 10.14.80.107 port -list -sp -mac

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Information about each SPPORT:
SP Name:         SP B
SP Port ID:      0
SP UID:          iqn.1992-04.com.emc:cx.apm00034901792.b0
Link Status:     Down
Port Status:     Online
Switch Present:  Not Applicable
MAC Address:     00:60:16:01:83:AF

SP Name:         SP B
SP Port ID:      1
SP UID:          iqn.1992-04.com.emc:cx.apm00034901792.b1
Link Status:     Up
Port Status:     Online
Switch Present:  Not Applicable
MAC Address:     00:60:16:01:83:B1

SP Name:         SP A
SP Port ID:      0
SP UID:          iqn.1992-04.com.emc:cx.apm00034901792.a0
Link Status:     Down
Port Status:     Online
```

```
Switch Present: Not Applicable
MAC Address:    00:60:16:01:82:89

SP Name:        SP A
SP Port ID:     1
SP UID:         iqn.1992-04.com.emc:cx.apm00034901792.a1
Link Status:    Up
Port Status:    Online
Switch Present: Not Applicable
MAC Address:    00:60:16:01:82:8B
```

Example 5 The following example shows sample output of the **port -list -mac** command targeted to a *Fibre Channel* storage system:

naviseccli -h 10.14.5.202 port -list -sp -mac

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

```
Information about each SPPORT:
SP Name:        SP A
SP Port ID:     1
SP UID: 50:06:01:60:90:21:26:3D:50:06:01:61:10:21:26:3D
Link Status:    Up
Port Status:    Online
Switch Present: NO
MAC Address:    Not Applicable

SP Name:        SP A
SP Port ID:     0
SP UID: 50:06:01:60:90:21:26:3D:50:06:01:60:10:21:26:3D
Link Status:    Up
Port Status:    Online
Switch Present: YES
Switch UID:
   10:00:08:00:88:60:8E:77:20:0D:08:00:88:60:8E:77
SP Source ID:   7998739
MAC Address:    Not Applicable

SP Name:        SP B
SP Port ID:     1
SP UID: 50:06:01:60:90:21:26:3D:50:06:01:69:10:21:26:3D
Link Status:    Up
Port Status:    Online
Switch Present: NO
MAC Address:    Not Applicable

SP Name:        SP B
SP Port ID:     0
SP UID: 50:06:01:60:90:21:26:3D:50:06:01:68:10:21:26:3D
Link Status:    Up
Port Status:    Online
```

```
Switch Present: YES
Switch UID:
   10:00:08:00:88:60:8E:77:20:0C:08:00:88:60:8E:77
SP Source ID:   7998483
MAC Address:    Not Applicable
```

register

Enables HBA(s) to be associated with a specified hostname

To use the **navicli register** command, you must be a privileged user in the Host Agent configuration file.

Description

The **register** command, when issued without parameters, instructs the specified host to associate its hostname with its HBA(s), and to broadcast that information to every storage group storage system attached to the server.

To remove an HBA registration from a storage system (unregister the HBA), use the **port** command with the **-removeHBA switch.**

For any storage-system type, you must specify the hostname of a server computer system, not the hostname of an SP.

Note: If you are running VMware ESX Server and issuing this command to a virtual machine (VM), it cannot target the Host Agent because the Navisphere Host Agent is supported only on ESX Server.

User access

You must have a user entry in the Navisphere agent configuration file.

Format

register is used with **navicli** (described on page 2-14) as follows:

register [**-list**]

where:

-list

Displays information about the registered HBAs.

Conventions and recommendations

None

Examples

navicli -h server1 register

Output

None

sc_off (not supported on AX-series)

Disables data access control

CAUTION

Be aware that executing sc_off resets the storage system to its factory unshared storage settings, permanently destroying all previously implemented shared storage features.

Description

The **naviseccli** or **navicli sc_off** command disables data access control and turns off shared storage features. You can use this command to reset the storage system to its factory unshared storage settings.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

sc_off is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

sc_off [-o]

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None

Example

naviseccli -h ss1_spa sc_off

Note: To use this command with **navicli**, replaca **naviseccli** with **navicli**.

Output

The first time you run the **sc_off** command, you will see an output similar to the following:

```
You have asked to remove all shared storage components
from the indicated storage system.

The following functions will be performed, if necessary:

Clear the storage system's password

Turn fairness off
```

```
Set the default storage group to ~physical

Remove all initiator records

Remove all user defined storage groups

Do you wish to proceed? (y/n)? y

Clearing the storage system's password

Old Password: ***

Turning fairness off

Setting the default storage group to ~physical

Removing all initiator records

Removing all user defined storage groups
```

If you run the command a second time, and the first time through completed successfully, the output will be as follows:

```
You have asked to remove all shared storage components
from the indicated storage system.

The following functions will be performed, if necessary:

Clear the storage system's password

Turn fairness off

Set the default storage group to ~physical

Remove all initiator records

Remove all user defined storage groups

Do you wish to proceed? (y/n)? y
```

storagegroup

Creates and configures storage groups

Description

The **naviseccli** or **navicli storagegroup** command lets you create and manage shared storage systems; that is, storage systems that use storage groups and have the Access Logix option. For most command operations, the CLI prompts for confirmation unless you use the **-o** switch.

You can use the CLI command **storagegroup -connecthost** to assign a storage group to all HBAs in a host, or the command **storagegroup -setpath** to assign a storage group to a specific HBA in a host. To change the settings of storage group that is already assigned, use the command **storagegroup -sethost**. To disconnect a host from all its storage groups, use **storagegroup -disconnecthost**.

The **storagegroup** command has many switches, some of which have functions that you also indicate with switches.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

storagegroup is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

storagegroup
[**-addhlu** *switches*] |
[**-addsnapshot** *switches*] |
[**-chgname** *switches*] |
[**-connecthost** *switches*] |
[**-create** *switch*] |
[**-destroy** *switch*] |
[**-disconnecthost** *switch*] |
[**-enable**] |
[**-list** *switches*] |
[**-removehlu** *switches*] |
[**-removesnapshot** *switches*] |
[**-sethost** *switches*] |
[**-setpath** *switches*] |
[**-shareable** *switch*] |

The switches are as follows:

storagegroup command, **-addhlu** switch
-addhlu **-gname** *StorageGroupName* | **-uid** *StorageGroupUID*
-hlu *hlunumber* **-alu** *alunumber*

Adds a host LUN to a storage group. This command requires a bound LUN. If required, use the **bind** command to create a LUN. You must use **-gname** or **-uid** and two other switches with **-addhlu** as follows. Also see the example on page 4-35.

-gname *StorageGroupName*

Specifies the name of the storage group.

-uid *StorageGroupUID*

Specifies the storage group unique identification number.

For Fibre Channel storage systems, the UID uses the world wide name (WWN) format such as: 10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C.

For iSCSI storage systems, the UID uses the initiator name which uses the IQN format such as: iqn.1992-04.com.emc:cx.apm00034901792.b0.

-hlu *hlunumber*

Specifies the host LUN number, which is the number that the storage-system server will see. *hlunumber* is the virtual LUN number. (Virtual LUN numbers let a host whose operating system has LUN limit or LUN booting restrictions use a number other the actual storage-system LUN ID (**-alu** below), which might be out of the operating system's range, to access a LUN.) This switch is required along with **-alu** and either the **-gname** or **-uid** switch.

If you have not assigned a host LUN number of 0 and if the **arraycommpath** setting is 1, then after the bus is rescanned, the system will display an entry for LUN 0 even though you have not assigned a host LUN 0. This occurs because the **arraycommpath** setting of 1 creates a virtual LUN 0 for communication with the storage system.

-**alu** *alunumber*

Specifies the storage-system LUN number, the actual LUN number internal to the storage system. This is the number assigned when the LUN was bound. *alunumber* specifies the logical unit number. This switch is required along with **-hlu** and either the **-gname** or **-uid** switch.

storagegroup command, **-addsnapshot** switch
-addsnapshot -gname *StorageGroupName* | **-uid** *StorageGroupUID* **-hlu** *hlunumber* **-snapshotname** *snapshotname* | **-snapshotuid** *snapshotuid*

-addsnapshot adds a SnapView snapshot to a storage group. The storage group you choose should be different from the source LUN storage group. You must use three of the following switches with **-addsnapshot**:

-**gname** *StorageGroupName*

Sets the name of the storage group. *StorageGroupName* specifies a user-defined storage group name; or

-**uid** *StorageGroupUID*

Specifies the storage group unique identification number.

For Fibre Channel storage systems, the UID uses the world wide name (WWN) format such as: 10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C.

For iSCSI storage systems, the UID uses the initiator name which uses the IQN format such as: iqn.1992-04.com.emc:cx.apm00034901792.b0.

-hlu *hlunumber*

Specifies the host LUN number for the snapshot, which is the unique number that the storage-system server will see. *hlunumber* is the virtual LUN number.

-snapshotname *snapshotname* | **-snapshotuid** *snapshotuid*

Specifies the snapshot name or unique ID number (World Wide Name, WWN). One of these switches is required along with the **-gname** or **-uid** switch.

storagegroup command, **-chgname** switch
-chgname -gname *StorageGroupName* | **-uid** *StorageGroupUID*
-newgname *NewName* **[-o]**

Renames the storage group. You must use two of the following switches with **-chgname:**

-gname *StorageGroupName*

Specifies the name of the storage group. *StorageGroupName* specifies a user-defined storage group name.

-**uid** *StorageGroupUID*

Specifies the storage group unique identification number.

For Fibre Channel storage systems, the UID uses the world wide name (WWN) format such as: 10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C.

For iSCSI storage systems, the UID uses the initiator name which uses the IQN format such as: iqn.1992-04.com.emc:cx.apm00034901792.b0.

-newgname *NewName*

Sets the new storage group name for the storage group (specified by the **-gname** or **-uid** switch). *NewName* specifies the new name for the specified storage group.

-o

Executes the command without prompting for confirmation.

storagegroup command**, -connecthost s**witch
-connecthost -host *HostName*
-gname *StorageGroupName* | **-uid** *StorageGroupUID* **[-o]**

Connects the specified host to the specified storage group. It connects all of the host's HBA/SP combinations to the storage group by assigning the host's initiator records to the storage group. To assign a storage group to a specific HBA, use s**toragegroup -setpath**.

You may use the **navicli accesscontrol -hbalist** command to get a list of registered HBAs. If nothing is registered, use the **navicli register** command to register an HBA.

You must specify the host using the **-host** switch, and the storage group using the **-gname** switch or the **-uid** switch. If you include the **-o** switch, the command will be executed without asking for user confirmation. Also see the example on page 4-35.

-host *HostName*

Specifies the user-defined hostname.

-gname *StorageGroupName*

StorageGroupName specifies the storage group name.

-uid *StorageGroupUID*

StorageGroupUID specifies the unique ID.

storagegroup command, **-create** switch
-create -gname *StorageGroupName*

Creates a storage group. You must use the **-gname** switch with **-create.** Also see the example on page 4-35.

-gname *StorageGroupName*

StorageGroupName specifies a user-defined storage group name.

storagegroup command, **-destroy** switch
-destroy -gname *StorageGroupName* | **-uid** *StorageGroupUID* **[-o]**

Destroys the specified storage group. If you include the **-o** switch, the command will be executed without asking for user confirmation. You must use one of the following switches with **-destroy**:

-gname *StorageGroupName*

StorageGroupName specifies a user-defined storage group name.

-uid *StorageGroupUID*

Specifies the storage group unique identification number.

storagegroup command, **-disconnecthost** switch
-disconnecthost -host *HostName* **[-o]**

Disconnects all of the specified host's HBA/SP combinations from the currently connected storage group, and reconnects them to **~management**. You must specify the host using the **-host** switch. If the **-o** switch is present, the command will be executed without asking for user confirmation.

-host *HostName*

HostName specifies the user-defined hostname.

storagegroup command, **-enable** switch **[-o]**

Enables data access control. Sets the default storage group to **~management**. If the **-o** switch is present, the command will be executed without asking for user confirmation.

storagegroup command, **-list** switch
-list [-gname *StorageGroupName* | **-uid** *StorageGroupUID* **] -host**

Displays information about the specified storage group. When no storage group is specified, **-list** displays information about each user-defined storage group in the system. You can use one of the following optional switches with **-list**.

-gname *StorageGroupName*

StorageGroupName specifies a user-defined storage group name.

-host

Displays the hostname of the attached host.

-uid *StorageGroupUID*

Specifies the storage group unique ID.

storagegroup command, **-removehlu** switch
-removehlu -gname *StorageGroupName* | **-uid** *StorageGroupUID*
-hlu *hlunnumber*

Removes the specified host LUN number from the specified storage group. You must use one of the following switches:

-gname *StorageGroupName*

StorageGroupName specifies a user-defined storage group name.

-uid *StorageGroupUID*

Specifies the storage group unique ID.

-hlu *hlunumber*

hlunumber specifies the logical unit number, which is the number that the storage-system server will see.This switch is required along with either the **-gname** or **-uid** switch.

storagegroup command, **-removesnapshot** switch
-removesnapshot **-gname** *StorageGroupName* | **-uid** *StorageGroupUID* **-snapshotname** *snapshotname* | **-snapshotwwn** *snapshotUID*

-removesnapshot removes a SnapView snapshot from a storage group. You must use one of the four following switches with **-removesnapshot**:

-gname *StorageGroupName*

StorageGroupName specifies the user-defined storage group name.

-uid *StorageGroupUID*

Specifies the storage group unique ID.

-snapshotname *snapshotname* | **-snapshotwwn** *snapshotUID*

Specifies the snapshot name or unique ID number (World Wide Name, WWN). One of these switches is required.

storagegroup command, **-sethost** switch
storagegroup command
-sethost [**-host** *hostname* | **-ip** *host-ip-address* [**-arraycommpath 0 | 1**] [**-failovermode 0 | 1 | 2 | 3**] [**-type** *initiator-type*] [**-unitserialnumber array | lun**] [**-o**]

The **-sethost** function creates or changes certain settings for all initiators (HBAs) in the specified host that are connected to a specific storage system. You must specify the host (**-host** switch), unless you are issuing the command in the current host. To obtain **-sethost** status, use the **port list** command. The **-sethost** function has subfunction switches as follows.

-arraycommpath [0 | 1]

storagegroup -sethost with **-arraycommpath** modifies one or more communication paths between the server and storage system. It may be needed when there is no LUN owned by an SP through which the host recognizes the storage system and

in the storage group through which the host recognizes the storage system. A communication path is a logical path between the host and the storage system.

Note: AX-series storage systems support only arraycommpath setting 1.

Changing the **arraycommpath** setting may force the storage system to reboot. The CLI will issue a confirmation request that indicates whether a storage-system reboot is required. However, the CLI will not issue a confirmation request first if you include the **-o** switch.

CAUTION

Do not issue this command option unless you know the appropriate value for the type of failover software running on the servers connected to the specified storage group. The command is designed for transition from one type of failover software to another. Changing the arraycommpath to the wrong value will make the storage group inaccessible to any connected servers.

This form of **-arraycommpath** works for a host. For an entire storage system, or unshared storage, use the command **arraycommpath**.

To discover the current setting of **arraycommpath**, use the **port -list -all** or **port -list -arraycommpath** command.

0

Disables the communication path previously enabled.

1

Enables a communication path.

Example with **arraycommpath:**
naviseccli -h ss1_spa storagegroup -sethost -hostname server101 -arraycommpath 1

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

storagegroup -sethost with **-failovermode** sets the type of trespass needed for failover software. Use this command with certain types of failover software if suggested in the failover software Release Notice or manual.

Changing the **failovermode** setting may force the storage system to reboot. The CLI will issue a confirmation request that indicates whether a storage-system reboot is required. However, the CLI will not issue a confirmation request first if you include the **-o** switch.

CAUTION

Do not issue the failovermode command option unless you know the appropriate value for the type of failover software running on the servers connected to the specified storage group. The command is designed for transition from one type of failover software to another. Changing the failovermode to the wrong value will make the storage group inaccessible to any connected servers.

This method of setting **-failovermode** works for storage systems with Access Logix only. For storage systems without Access Logix, use the command **failovermode** (see Chapter 3.

To discover the current setting of **failovermode**, use the **port -list -failovermode** or **port -list -all** command.

Note: For information about when to use these failover modes, refer to the *EMC Installation Roadmap for CX3-series, CX-series, AX-Series, and FC-Series Storage Systems*, which is on the EMC Powerlink website.

0
Failover mode 0.

1
Failover mode 1.

Note: AX-series storage systems support only failover mode setting 1.

2
Failover mode 2.

3
Failover mode 3.

Example with **failovermode:**
naviseccli -h ss1_spa storagegroup -sethost -failovermode 1 -hostname server102

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

-hostname [*host*]

Specifies the HBA owner's hostname. You must specify the host's hostname or its IP address (next).

-ip *host-ip-address*

Specifies the IP address of the host, in the form *xx.xx.xx.xx*. You must specify either the IP address or hostname.

-type *initiatortype*

Specifies an initiator type to override the system default. The CLI uses the default, 3, for the target if omitted. Type values (specify **0x** to indicate hex) are

0x2 HP (auto trespass)
0x3 CLARiiON Open (default).
0x9 SGI
0xa HP (no auto trespass)
0x13 Dell
0x16 Fujitsu
0x1c Compaq Tru64

Note: AX-series storage systems support only type 0x3.

-unitserialnumber [**array** | **lun**]

The **unitserialnumber** command displays or sets the VDPP80 behavior mode, which defines how subsequent VPDP80 requests will be populated with the storage-system serial number. You might need to do this for software such as SunCluster 3. You can discover the mode with the **port -list -unitserialnumber** or **port -list -all** command. To set this mode for a host, see **storagegroup -sethost** above.

array
Sets the behavior mode to storage system.

lun
Sets the behavior mode to LUN.

Note: Not supported on AX-series storage systems.

Example with **unitserialnumber**:
naviseccli -h ss1_spa storagegroup -sethost -unitserialnumber lun

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

storagegroup command, **-setpath** switch
-setpath [**-gname** *StorageGroupName* | -**uid** *StorageGroupUID*] [**-arraycommpath 0 | 1**] [**-failovermode 0 | 1 | 2 | 3**] [**-hbauid** *hbauid*] [**-host** *hostname*] [**-ip** *ip-address*] [**-sp a | b**] [**-spport 0 | 1**] [**-unitserialnumber** *array | lun*] [**-o**]

Creates or changes settings for a specific initiator (HBA). You must specify the HBA (**-hba** switch), SP (**-sp**), and SP port (**-spport**). You can identify the storage group by name (**-gname** switch) or unique ID (**-uid** switch). If you omit both switches, the CLI uses the default path. To obtain **-setpath** status, use the **port list** command. The **-setpath** function has many function switches as follows.

Note: Not supported on AX-series storage systems.

-arraycommpath 0 | 1

storagegroup -setpath with **-arraycommpath** modifies one or more communication paths between the server and storage system. It may be needed when there is no LUN owned by an SP through which the host recognizes the storage system and in the storage group through which the host recognizes the storage system.

Changing the **arraypath** setting forces the storage system to reboot.

This form of **-arraycommpath** works for storage systems with Access Logix only. For storage systems without Access Logix, use the command **arraycommpath** (see Chapter 3).

To discover the current setting of **arraycommpath**, use the **port -list -arraycommpath** or **port -list -all** command.

0
Disables the communication path previously enabled.

1
Enables a communication path.

Example with **arraycommpath:**
naviseccli -h ss1_spa storagegroup -setpath -gname Group1 -hbauid 10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C -sp a -spport 0 -arraycompath 1

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

-failovermode 0 | 1 | 2 | 3

storagegroup -setpath with **-failovermode** sets the type of trespass needed for failover software.Use this command with certain types of failover software if suggested in the *EMC Installation Roadmap for CX3-series, CX-series, AX-Series, and FC-Series Storage Systems*, which is on the EMC Powerlink website.

Changing the **failovermode** setting may force the storage system to reboot. The CLI will issue a confirmation request that indicates whether a storage-system reboot is required. However, the CLI will not issue a confirmation request first if you specified the **-o** switch.

This form of **-failovermode** works for one storage group. To set the entire storage-system mode, use the command **failovermode**.

To discover the current setting of **failovermode**, use the **port -list -failovermode** or **port -list -all** command.

0
Failover mode 0

1
Failover mode 1

2
Failover mode 2

3

Failover mode 3

-o

Executes the command without prompting for confirmation.

Example with **failovermode:**
naviseccli -h ss1_spa storagegroup -setpath -gname Group1 -hbauid 10:00:00:00:C9:20:DE:0C:10:00:00:00:C9:20:DE:0C -sp a -spport 0 -failovermode 1

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

-gname *StorageGroupName*

StorageGroupName specifies a user-defined storage group name. Use this or the storage group unique ID (below).

-hbauid *hbauid*

Specifies the HBA unique ID (WWN). Required.

-host [*hostname*]

Specifies the HBA owner's hostname. The storage system will use the hostname (or **ip** address, below) for any subsequent **storagegroup -connecthost** and **-disconnecthost** commands you issue. If you omit this, the storage system uses the HBAUID. Not required.

-ip *ip-address*

Specifies the HBA owner's IP address (that is, the server's IP address. Not required. See **-hostname** above.

-sp a | b

Specifies the SP that owns the storage group. Required.

-spport 0 | 1

Specifies the SP port. Required.

-uid *StorageGroupUID*

Specifies the storage group unique ID.

-unitserialnumber *array* | *lun*

Sets the unitserialnumber operation mode. Use this switch if the software instructs you to.

-o

Executes the command without prompting for confirmation.

storagegroup command, **-shareable** switch
-shareable [**-gname** *StorageGroupName* [**yes** | **no**] |
-uid *StorageGroupUID* [**yes** | **no**]]

Specifies whether more than one host can share the storage group. You must use one of the following switches with **-shareable**, followed by a **yes** or a **no**. A **yes** or **no** indicate whether the storage group can be shared. Only Navisphere Manager can enforce sharing.

-gname *StorageGroupName* **yes** | **no**

Sets the storage group named *StorageGroupName* to be shareable (**yes**) or not shareable (**no**).

-uid *StorageGroupUID* **yes** | **no**

Sets the storage group with unique ID *StorageGroupUID* to be shareable (**yes**) or not shareable (**no**).

Conventions and recommendations

None

Example

In the following example, Navisphere connects all of **ss1_spa**'s HBA-SP combinations to the storage group **mail**.

naviseccli -h ss1_spa storagegroup -gname mail -connecthost -o

In the next, the **-list** command displays storage group information.

naviseccli -h ss1_spa storagegroup -list

```
Storage Group Name:    Blade 150
Storage Group UID: 34:C7:72:A9:2D:DB:D8:11:AF:5E:08:00:1B:43:73:EE
HBA/SP Pairs:

HBA UID                                          SP Name     SPPort
-------                                          -------     ------
20:00:00:00:C9:39:40:C7:10:00:00:00:C9:39:40:C7   SP B          0
20:00:00:00:C9:39:40:C8:10:00:00:00:C9:39:40:C8   SP A          0

HLU/ALU Pairs:
```

```
  HLU Number      ALU Number
  ----------      ----------
    0               15
    1               14
    2               13
    3               11
    4               10
    5               9
    6               7
    7               6
    8               5
    9               3
    10              2
    11              1
Shareable:              YES
```

The following example creates two storage groups, connects them to separate hosts, and adds a LUN to each one.

naviseccli -h ss_spa storagegroup -create -gname Production
naviseccli -h ss_spa storagegroup -create -gname Backup

naviseccli -h ss_spa storagegroup -connecthost -o -host ServerABC -gname Production

naviseccli -h ss_spa storagegroup -connecthost -o -host ServerXYZ -gname Backup

naviseccli -h ss_spa storagegroup -addhlu -gname Production -hlu 20 -alu 20

naviseccli -h ss_spa storagegroup -addhlu -gname Backup -hlu 21 -alu 21

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output See the first example above.

5

LUN expansion (metaLUN) commands

This chapter explains the Navisphere Manager CLI commands that manage Navisphere metaLUNs.

Major sections in the chapter are:

- MetaLUNs overview 5-2
- CLI metaLUN command functions 5-4
- metalun -destroy 5-5
- metalun -expand 5-6
- metalun -info 5-13
- metalun -list 5-15
- metalun -modify 5-22
- Using the added capacity of an expanded SnapView, MirrorView or SAN Copy LUN 5-24

MetaLUNs overview

A metaLUN is a type of LUN whose maximum capacity is the combined capacities of all the LUNs that compose it. The metaLUN feature lets you dynamically expand the capacity of a single LUN (base LUN) into a larger unit called a metaLUN. You do this by adding LUNs to the base LUN. You can also add LUNs to a metaLUN to further increase its capacity. Like a LUN, a metaLUN can belong to a storage group, and can participate in SnapView, MirrorView and SAN Copy sessions.

During the expansion process, the host has access to any existing data on the LUN or metaLUN, but it does not have access to any added capacity until the expansion is complete. Whether you can actually use the increased user capacity of the metaLUN depends on the operating system running on the servers connected to the storage system.

A metaLUN may include multiple sets of LUNs that are striped together and are independent of other LUNs in the metaLUN. Each set of striped LUNs is called a component. All metaLUNs contain at least one component which includes the base LUN and one or more LUNs. Any data that gets written to a metaLUN component is striped across all the LUNs in the component.

You can expand a LUN or metaLUN in two ways — stripe expansion or concatenate expansion. A stripe expansion takes the existing data on the LUN or metaLUN, and restripes (redistributes) it across the existing LUNs and the new LUNs you are adding. The stripe expansion may take a long time to complete. A concatenate expansion creates a new metaLUN component that includes the new LUNs and appends this component to the end of the existing LUN or metaLUN. There is no restriping of data between the original storage and the new LUNs. The concatenate operation completes immediately.

Figure 5-1 depicts a LUN using stripe expansion to add two LUNs. The result is a metaLUN with a single component consisting of all three LUNs with the data on the base LUN re-striped across all three LUNs.

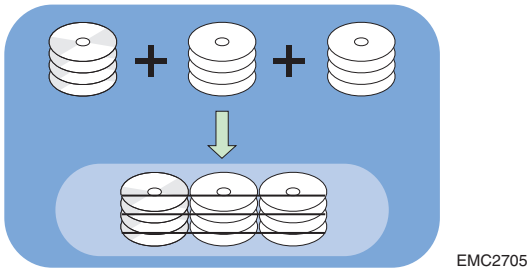

Figure 5-1 Sample stripe expansion

Figure 5-2 depicts a LUN using concatenate expansion to add two LUNs. The result is a metaLUN with two components. The first component is the base LUN. The second component consists of two new LUNs striped together, but not striped to the first component.

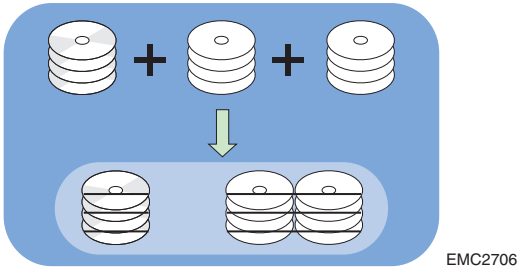

Figure 5-2 Sample concatenate expansion

Note: EMC does *not* recommend that you expand LUN capacity by concatenating LUNs of different RAID types. Do this only in an emergency situation when you need to add capacity to a LUN and you do not have LUNs of the same RAID type or the disk capacity to bind new ones. Concatenating metaLUN components with a variety of RAID types could impact the performance of the resulting metaLUN. Once you expand a LUN, you cannot change the RAID type of any of its components without destroying the metaLUN. Destroying a metaLUN unbinds all LUNs in the metaLUN, and therefore causes data to be lost.

CLI metaLUN command functions

The **naviseccli** or **navicli.jar** metaLUN command functions, listed alphabetically, are

- **metalun -destroy**
- **metalun -expand**
- **metalun -info**
- **metalun -list**
- **metalun -modify**

The CLI metaLUN functions are listed functionally, in the order you would perform them, in the following table.

Table 5-1 naviseccli or navicli.jar MetaLUN Command Functions, Listed in Order of Use

Essential functions (in order performed)	
metalun -expand	Creates a metaLUN or expands one
metalun -destroy	Destroys a metaLUN and then unbinds all LUNs that were part of the metaLUN
Optional and status functions (alphabetically)	
metalun -info	Provides metaLUN information with respect to a specific storage system
metalun -list	Lists the properties of existing metaLUNs
Optional reconfiguration functions (alphabetically)	
metalun -modify	Modifies certain metaLUN properties

metalun -destroy

Destroys a metaLUN and unbinds all LUNs that were part of the metaLUN

Description

The **naviseccli** or **navicli.jar metalun** command with the **-destroy** switch destroys an existing metaLUN and then unbinds all LUNs that were part of the metaLUN. You will lose all data on the LUNs.

Note: You *cannot* destroy a metaLUN that belongs to a storage group. You must remove the metaLUN from the storage group in order to destroy it. You cannot destroy any metaLUNs that are currently participating in a snapshot, clone, mirror or SAN Copy session.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

metalun -destroy is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

metalun -destroy -metalun *number* | *WWN* | **[-o]**

where:

-metalun *number* | *WWN*

Specifies the unique number or World Wide Name of the metaLUN you want to destroy. Use only one of the identifiers with the **-metalun** command. Use the **metalun -list** command to determine the number or WWN of the metaLUN (see "metalun -list" on page 5-15).

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

naviseccli metalun -destroy 20

This command destroys the metaLUN with the number 20.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

metalun -expand

Creates a new metaLUN or expands the capacity of an existing one

Description

The **naviseccli** or **navicli.jar metalun** command with the **-expand** function creates a new metaLUN or expands the capacity of an existing one. See "Conventions and recommendations" on page 5-11 for metaLUN requirements.

Note: For raw device mapping volumes (RDMs), if you are running VMware ESX Server, after you create or expand the metaLUN, you must rescan the bus at the ESX Server level. You can also rescan at the virtual machine level (optional). You then must expand the file system at the virtual machine level. ESX Server and the virtual machine will now recognize the new or expanded metaLUN.

For configuration specifications, go to the E-Lab Interoperability Navigator on EMC Powerlink.

User access

You must have a user account on the storage system on which you want to execute the command.

Format:

metalun - expand is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) to create a *new* metaLUN or expand an *existing* metaLUN as follows:

To create a new metaLUN, the following command switches are valid:

metalun - expand -base *number* | *WWN* **-lus** *number* | *WWN*
[**-autoassign 0** | **1**] [**-bindoffset** *sector-number*] [**-cap** *capacity*]
[**-defaultowner A** | **B**] [**-elszm** *elementSizeMultiplier*]
[**-expansionrate low** | **medium** | **high** | **ASAP** | *value*]
[**-name** *metaLUNname*] [**-preservedata 1** | **0**] [**-nogrow**] [**-o**]
[**-sq tb** | **gb** | **mb** | **bc**] [**-type C** | **S**]

To expand a metaLUN, the following command switches are valid:

metalun - expand -base *number* | *WWN* **-lus** *number* | *WWN* [**-type** *C* | *S*] [**-sq tb** | **gb** | **mb** | **bc**] [**-cap** *number*] [**-nogrow**] [**-o**]

where:

-base *number* | *WWN*

Specifies the unique number or World Wide Name of the LUN or metaLUN you want to expand. Use only one of the identifiers with the **-base** switch. Use the **metalun -list** command to determine the number or WWN of the LUN or metaLUN (see "metalun -list" on page 5-15).

When you specify a LUN with the **-base** command, the CLI creates a new metaLUN with the number and WWN of the base LUN. Once the CLI creates the new metaLUN, it assigns a new WWN to the original base LUN and makes it a private LUN. When expanding a single LUN, you can use any or all of the **-expand** switches.

Note: The base LUN can belong to a storage group. Expansion LUNs *cannot* belong to a storage group.

When you specify an existing metaLUN with the **-base** command, the CLI expands the capacity of the existing metaLUN. The following switches are not valid during the expansion of an existing metaLUN: **-name**, **-preservedata**, **-expansionrate**, **-defaultowner**, **-autoassign**, **-elsz**, and **-bindoffset**. The expanded metaLUN retains the values of the original metaLUN. After the metaLUN is expanded, use the **metalun -modify** command to change the metaLUN using **-name**, **-expansionrate**, **-defaultowner**, or **-autoassign**. The **-preservedata**, **-elsz** and **-bindoffset** values cannot be changed.

-lus *lunnumber* | *WWN*

Specifies the LUN number or World Wide Name of the LUNs you want to add to the LUN or metaLUN (expansion LUNs). Use only one of the identifiers per LUN with the **-lus** command. Use the **metalun -list** command to determine the number or WWN of the LUNs (see "metalun -list" on page 5-15).

Note: Expansion LUNs cannot be participating in a SnapView (snapshot or clones), MirrorView, or SAN Copy session.

The optional switches are:

-**autoassign 0 | 1** (Not supported on AX-series)

Enables or disables autoassign for a metaLUN. Specify **1** to enable autoassign and **0** to disable it. If you do not specify an autoassign value, it defaults to the value of the base LUN.

Autoassign controls the ownership of the LUN when an SP fails in a storage system with two SPs. With autoassign enabled, if the SP that owns the LUN fails and the server tries to access that LUN through the second SP, the second SP assumes ownership of the LUN to enable access. The second SP continues to own the LUN until the failed SP is replaced and the storage system is powered up. Then, ownership of the LUN returns to its default owner. If autoassign is disabled in the previous situation, the second SP does not assume ownership of the LUN, and access to the LUN does not occur.

If you are running failover software on a Windows or UNIX server connected to the storage system, you must disable autoassign for all LUNs that you want to fail over to the working SP when an SP fails.

-**bindoffset** *sector-number* (Not supported on AX-series)

Note: Available only if the **preservedata** switch is set to **0**.

EMC does not recommend using a metaLUN **bindoffset** value if the base LUN already has one.

Automatically aligns the logical sector number of the metaLUN to a stripe boundary on the base LUN. The value to enter is the number of sectors by which user data is offset due to file system or paritition metadata. Correct application of the bindoffset should result in improved performance. Use a decimal, not hexadecimal, number for *sector-number*. If you do not specify a bind offset value, it defaults to **0**.

-**cap** *capacity*

Specifies the capacity of usable space in the metaLUN. The capacity must be smaller than the maximum capacity of the metaLUN components, and greater than or equal to the current capacity (user capacity of the LUN or metaLUN before adding

LUNs). The default value is the maximum capacity of the metaLUN (total capacity of the existing LUNs and any new LUNs).

Note: If you want to expand a LUN or metaLUN that is participating in a SnapView (snapshot or clone), MirrorView, or SAN Copy session, you must use the **-nogrow** switch with the **-expand -cap** command. This command expands the capacity of the LUN or metaLUN to the specified value, but keeps the available user capacity of the base (LUN or metaLUN) the same as it was before adding LUNs. In order for the host to have access to the added capacity, you must wait for the session to complete and then follow the instructions in "Using the added capacity of an expanded SnapView, MirrorView or SAN Copy LUN" on page 5-24.

-defaultowner A | B

Specifies the SP that will assume ownership of the metaLUN when the storage system is powered up. If you do not specify a default owner, it defaults to the owner of the base LUN.

-elszm *elementSizeMultiplier* (Not supported on AX-series)

Sets the stripe element size for a metaLUN component. You determine this by multiplying the stripe size of the first LUN in each component (stripe size of the first LUN = stripe element size of the LUN multiplied by the number of disks in the LUN) by the element size multiplier. Valid multiplier values are 1 through 255. The default multiplier is 40.

Note: EMC recommends that you leave the element size multiplier value at 40.

-expansionrate low | medium | high | ASAP | *value*

Specifies the relative importance of making additional LUN capacity available to the host. It determines the amount of resources the SP devotes to re-striping the existing data on the original LUNs across the original LUNs and the new LUNs instead of to normal I/O activity. This rate is available only when you first create a metaLUN and is important only for a stripe expansion. Valid rebuild priorities are **ASAP** (default) or **3**, **High** or **2**, **Medium** or **1**, and **Low**, or **0**.

An expansion rate of **ASAP** or **High** re-stripes the data across the metaLUN faster than one with **Medium** or **Low** priority, but may degrade storage-system performance.

Note: AX-series systems support only a High expansion rate.

-name *metaLUN-name*

Specifies the name of the metaLUN. If you do not specify a name, it defaults to the name of the base LUN.

-nogrow

Keeps the available user capacity of the metaLUN the same as it was before adding LUNs. You cannot use the added capacity until you change the capacity using the **-modify** switch.

For a stripe expansion, any existing data is restriped across the original storage and any new LUNs, but you cannot access the added capacity at this time.

-o

Executes the command without prompting for confirmation.

-preservedata 1 | 0

Use with the **-type S** command (see page 5-11). Allows you to preserve or overwrite any existing data on the base LUN, only if the base LUN is outside a storage group.

Note: You cannot use this command with the **-type C** switch.

If the base LUN is outside of a storage group, do one of the following:

- Specify **1** to enable stripe expansion and preserve the data on the base LUN. Note that this operation could take a while. The default value is **1**.

  Note: You must *always* specify **1** when the base LUN is in a storage group. CLI returns an error message if you specify **0** in this case.

- Specify **0** to enable stripe expansion and overwrite the existing data on the base LUN. Note that you will lose the original data on the LUN.

-sq tb | gb | mb | bc

Specifies the size qualifier for the capacity of the metaLUN component.

where:

tb equals terabytes, **gb** equals gigabytes, **mb** equals megabytes and **bc** equals block count. The default qualifier is block count.

Note: AX-series systems support only megabyte (mb) and gigabyte (gb) size qualifiers.

-type C | S

Sets the expansion type for the metaLUN to concatenate or stripe. The default expansion type is stripe.

C sets the expansion type to concatenate. A concatenate expansion appends the new LUNs to the end of the base LUN component or metaLUN as a single, separate striped component. There is no striping between the original storage and the new LUNs.

Note: AX-series systems support only the Concatenate (C) expansion type.

S sets the expansion type to stripe. For a list of requirements for stripe expansion, see "Conventions and recommendations" on page 5-11.

If you are expanding a LUN (the base LUN), the **-type S** switch creates a metaLUN with one component which includes the base LUN and any LUNs that you add. Any data on the base LUN is restriped across the base LUN and the new LUNs.

Note: If the base LUN has existing data, and it is outside of a storage group, refer to the **-preservedata** switch (page 5-10) for additional options.

You can expand only the last component of an existing metaLUN. In this case, the **-type S** switch restripes any existing data across the original LUNs in the component and any new LUNs that you add. The new LUNs become part of that metaLUN component.

Conventions and recommendations

This section describes the general requirements and recommendations for both a stripe and concatenate expansion, as well as those specific to one or the other.

General expansion requirements and recommendations

- All LUNs within a metaLUN must be either a redundant (RAID 5, RAID 3, RAID 1, RAID 1/0) or non-redundant (RAID 0, Disk) RAID type.
- All disks within metaLUN must be the same type.
- You can expand *only* the last component of a metaLUN.
- Expansion LUNs cannot be participating in a SnapView, MirrorView or SAN Copy session.

Stripe expansion requirements and recommendations

- All LUNs within a striped metaLUN or metaLUN component *must* be the same size and RAID type, and EMC recommends that each LUN
  - be from a different RAID group.
  - includes the same number of disks.
  - has the same stripe element size.

Concatenate expansion requirements and recommendations

- All LUNs within a concatenated metaLUN component must be the same size and RAID type, but can differ from the size and RAID type of LUNs within other components.

Note: EMC does not recommend that you expand LUN capacity by concatenating LUNs of different RAID types. Do this only in an emergency situation when you need to add capacity to a LUN and you do not have LUNs of the same RAID type or the disk capacity to bind new ones. Concatenating metaLUN components with a variety of RAID types could impact the performance of the resulting metaLUN. Once you expand a LUN, you cannot change the RAID type of any of its components without destroying the metaLUN. Destroying a metaLUN unbinds all LUNs in the metaLUN, and therefore causes data to be lost.

Example

naviseccli metalun -expand -base 20 -lus 42 -name newMetaLUN

This command creates a metaLUN with the name **newMetaLUN**, **which consists of** which includes base LUN 20 and LUN 42. Since the default expansion type is stripe, this metaLUN is striped.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

metalun -info

Provides general information about a storage system's metaLUN environment

Description

The **naviseccli** or **navicli.jar metalun** command with the **-info** function and no other options displays all general information about the metaLUN environment for a storage system. Issuing this command with one or more options displays the information based on the options issued.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

metalun -info is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

metalun -info [**-canexpand**] [**-nummetaluns**] [**-maxmetaluns**] [**-maxcomponents**] [**-maxluns**] [**-availableluns**] [**-lunsinmeta**]

where:

-canexpand

Specifies whether you can or cannot expand any LUNs or metaLUNs on the storage system. - **Yes** or **No**.

-nummetaluns

Displays the number of metaLUNs in the storage system.

-maxmetaluns

Displays the maximum number of metaLUNs that the storage system will support (based on storage-system type). See the CLI release notes for currently supported values.

-maxcomponents

Displays the maximum number of components allowed per metaLUN for this storage system (based on storage-system type). See the CLI release notes for currently supported values.

-maxluns

Displays the maximum number of LUNs per component that this storage system supports (based on storage-system type). See the CLI release notes for currently supported values.

-availableluns

Lists all LUNs (by LUN number) in the storage system that are available for expansion.

-lunsinmeta

Lists any LUNs (by LUN number) in the storage system that are part of a metaLUN.

Conventions and recommendations

None.

Example

naviseccli -address 10.14.20.57 metalun -info

This command requests information about the metaLUN environment for the storage system with SP 10.14.20.57.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Can a LUN or a Meta-LUN be expanded on this system:
Yes

Number of Meta-LUNs in the system: 7

Maximum Number of Meta-LUNs per system:  1024

Luns that are participating in Meta-LUNs:  513 512
515 514 517 516 519 518 521 52

0 523 522 525 524

Luns that are available for expansion:  32 43 44 47
48 49 50 51 52 53 54 55 56 5

7 58 59 0

Maximum Number of Components per Meta-LUN:  8

Maximum Number of LUNs per Component:  16
```

The CLI returns status or error information if the command fails.

metalun -list

Lists the properties of existing metaLUNs

Description

The **naviseccli** or **navicli.jar metalun** command with the **-list** function and no other options lists all property information for all metaLUNs on a storage system. Issuing this command with one or more options displays the information based on the options issued.

Note: In order to return values for performance data, you must enable statistics logging for each SP in the storage system. Use Navisphere CLI or Navisphere Manager. Performance data switches are marked with an asterisk (*).

If you request performance data for a specific metaLUN, make sure that you enter the IP address for the SP that is the current owner of the metaLUN.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

metalun -list is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

metalun -list [**-name** [*metaLUN-name*]]
[**-metalunwwn** *metaLUN-WWN*]
[**-metalunnumber** *metaLUN-number*]
[**-actualusercap**] [**-autoassign**] [**-bindoffset**] [**-brw***] [**-components***]
[**-currentowner**] [**-canexpand**] [**-defaultowner**] [**-drivetype**]
[**-expansionrate**] [**-elszm**] [**-isredundant**] [**-percentexp**] [**-rhist***]
[**-rwr***] [**-state**] [**-totalcap**] [**-whist***]

where:

-name [*metaLUN-name*]

Lists all information for that specific metaLUN.

Issuing the **-name** command without a *metaLUN-name* displays the names of all metaLUNs on the storage system.

-metalunwwwn *metaLUN-WWN*

Lists all information for that specific metaLUN

Issuing the **-metalunwwn** command without a *metaLUN-WWN* displays the WWNs for all metaLUNs on the storage system.

-metalunnumber *metaLUN-number*

Lists all information for that specific metaLUN.

Issuing the **-metalunnumber** command without a *metaLUN-number* displays the numbers for all metaLUNs on the storage system.

The optional switches are:

-actualusercap

Displays the current user capacity of all metaLUNs on the storage system.

Issuing the **-actualusercap** command with a metaLUN name, number or WWN displays the user capacity for that specific metaLUN.

-autoassign

Displays the current state of the **autoassign** feature for all metaLUNs on the storage system (**Yes** or **No**).

Issuing the **-autoassign** command with a metaLUN name, number or WWN displays the current state of the autoassign feature for that specific metaLUN.

-bindoffset

Aligns the logical sector number of all metaLUNs on the storage system to a stripe boundary on the base LUN (see page 5-8). Issuing the **-bindoffset** command with a metaLUN name, number or WWN returns the value of the bindoffset used for that metaLUN.

-brw*

Displays the number of host block read and write requests to all metaLUNs on the storage system.

Issuing the **-brw** command with a metaLUN name, number or WWN displays the number of host block read and write requests to that specific metaLUN.

-components*

Displays the contents of all components in all metaLUN on the storage system.

Issuing the **-components** command with a metaLUN name, number or WWN displays the contents of all components for that specific metaLUN.

-currentowner

Lists the current SP owner of all metaLUNs in the storage system. If neither SP owns the metaLUN a value of **Unknown** is returned.

Issuing the **-components** command with a metaLUN name, number or WWN lists the current SP owner of the specified metaLUN.

--canexpand

Displays the ability of all metaLUNs on the storage system to be expanded - **Yes** or **No.**

Issuing the **-canexpand** command with a metaLUN name, number or WWN displays the ability of the specified metaLUN to be expanded - **Yes** or **No.**

-defaultowner

Lists the default SP owner of all metaLUNs on the storage system.

Issuing the **-defaultowner** command with a metaLUN name, number or WWN lists the default SP owner of the specified metaLUN.

-drivetype

Displays the drive type for all metaLUNs on the storage system.

Issuing the **-drivetype** command with a metaLUN name, number or WWN displays the drive type for the specified metaLUN.

-expansionrate

Displays the expansion rate for all metaLUNs on the storage system (see page 5-9). Valid values are 0 (Low), 1 (Medium), 2 (High), 3 (ASAP), or N/A if the metaLUN is not currently expanding.

Issuing the **-expansionrate** command with a metaLUN name, number or WWN displays the expansion rate for the specified metaLUN (see page 5-9).

-elszm

Displays the element size multiplier for all metaLUNs on the storage system (see page 5-9).

Issuing the **-elszm** command with a metaLUN name, number or WWN displays the element size multiplier for the specified metaLUN (see page 5-9).

-isredundant

Displays the redundancy of all metaLUNs on the storage system - **Yes** if it is redundant; **No** if it is not redundant.

Issuing the **-elszm** command with a metaLUN name, number or WWN displays the redundancy of the specified metaLUN - **Yes** if it is redundant; **No** if it is not redundant.

-percentexp

Displays the percent complete of the stripe expansion process of all base LUNs or metaLUNs on the storage system.

Issuing the **-percentexp** command with a metaLUN name, number or WWN displays the percent complete of the stripe expansion process of the specified base LUN or metaLUN.

-rhist*

Returns read histogram information for all metaLUNs on the storage system.

Note: A read histogram is an array of 10 locations that contain the number of reads. Element *n* of the array contains the number of reads that were larger than or equal to 2*n*-1 and less than 2*n* blocks in size. For example, the first bucket contains the number of 1 block reads, the second contains the number of 2-3 block reads, the third contains the number of 4-7 block reads, and so on. The **-rhist** switch also displays the number of read histogram overflows, which are the number of reads that were larger than 512 blocks.

Issuing the **-rhist** command with a metaLUN name, number or WWN returns the read histogram for the specified metaLUN.

-rwr*

Displays the number of host read and write requests to all metaLUNs on the storage system.

Issuing the **-rwr** command with a metaLUN name, number or WWN displays the number of host read and write requests to the specified metaLUN.

-state

Displays the current state of all metaLUNs on the storage system.

When issuing the **-state** command with a metaLUN name, number or WWN displays the state of the specified metaLUN.

Table 5-2 Valid metaLUN states

State	Description
Normal	The metaLUN is operating normally.
Degraded	Some part of the metaLUN is faulted, but the metaLUN is still able to process I/O.
Shut down	The metaLUN is faulted and unusable.
Expanding	The metaLUN is in the process of expanding (restriping data across all component LUNs).

-totalcap

Displays the total available capacity of all metaLUNs on the storage system.

Issuing the **-totalcap** command with a metaLUN name, number or WWN displays the total available capacity of the specified metaLUN.

-whist*

Returns write histogram information for all metaLUNs on the storage system.

Note: A write histogram is an array of 10 locations that contain the number of writes. Element *n* of the array contains the number of writes that were larger than or equal to 2*n*-1 and less than 2*n* blocks in size. For example, the first bucket contains the number of 1 block writes, the second contains the number of 2-3 block writes, the third contains the number of 4-7 block writes, and so on. The **-whist** switch also displays the number of write histogram overflows, which are the number of writes that were larger than 512 blocks.

Issuing the **-whist** command with a metaLUN name, number or WWN returns the write histogram for the specified metaLUN.

Conventions and recommendations

None.

Example

naviseccli -address 10.14.20.57 metalun -list

This command requests information on all metaLUNs that are currently owned by the SP with IP address 10.14.20.57.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Meta-LUN Name:  LUN30
Meta-LUN WWN:
   60:06:01:6D:35:0A:00:00:FC:35:5B:8C:66:60:D7:11
Meta-LUN Number:  30
Default Owner:  SP A
Current Owner:  SP B
Meta-LUN State:  ENABLED
Can MetaLUN Be Expanded:  Yes
Expansion Rate:  MEDIUM
Percent Expanded:  0
Total Capacity (Blocks/Megabytes):  819200/400
Actual User Capacity (Blocks/Megabytes):  819200/400
Autoassign:  No
Is Redundant:  Yes
Drive Type:  Fibre Channel
Element Size Multiplier:  40
Bind Offset:  0
Read Histogram [0]        :    22
Read Histogram [1]        :    14
Read Histogram [2]        :    19
Read Histogram [3]        :     37
Read Histogram [4]        :     6
Read Histogram [5]:            0
Read Histogram [6]        :     0
Read Histogram [7]        :     0
```

```
Read Histogram [8]         :     0
Read Histogram [9]          :    0
Read Histogram Overflows:       45
Write Histogram [0]        :    22
Write Histogram [1]        :    22
Write Histogram [2]        :    22
Write Histogram [3]        :    22
Write Histogram [4]        :    22
Write Histogram [5]        :    22
Write Histogram [6]        :    22
Write Histogram [7]        :    22
Write Histogram [8]        :    22
Write Histogram [9]        :    22
Write Histogram Overflows:       45
Read Requests:  0
Write Requests:  0
Blocks Read:  0
Blocks Written:  0
Components:
Number of LUNs:  2
LUNs:
LUN Number:  513
LUN Name:  LUN 30
LUN WWN:  60:06:01:72:35:0A:00:00:B0:44:01:4B:61:60:D7:11
RAID Type:  RAID5
LUN Number:  512
LUN Name:  LUN 31
LUN WWN:  60:06:01:72:35:0A:00:00:15:FB:3B:4C:61:60:D7:11
RAID Type:  RAID5
Number of LUNs:  1  (Lists LUN information for second component)
```

The CLI returns status or error information if the command fails.

metalun -modify

Modifies certain properties of an existing metaLUN

Description

The **naviseccli** or **navicli.jar metalun** command with the **-modify** function lets you edit certain properties of a specified metaLUN. You must specify either the number or WWN for the metaLUN, and you must specify at least one other switch.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

metalun -modify is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

metalun -modify -metalun *number* | *WWN* [**-autoassign 0** | **1**]
[**-cap***capacity*] [**-defaultowner A** | **B**]
[**-expansionrate low** | **medium** | **high** | **ASAP** | *value*]
[**-newname** *newName*] [**-o**] [**-sq tb** | **gb** | **mb** | **bc**] [**-tomaxcap**]

where:

-metalun *number* | *WWN*

Specifies the number or WWN of the metaLUN whose properties you want to change.

The optional switches are:

-autoassign 1 | **0 (**Not supported on AX-series**)**

Enables or disables auto assign for a metaLUN. Specify **1** to enable auto assign and **0** to disable it. If you do not specify an auto assign value, it defaults to the value of the base LUN. For more information about auto assign, see page 5-8.

-cap *capacity*

Specifies the capacity of usable space in the metaLUN. The capacity must be smaller than the maximum capacity of the metaLUN, and greater than or equal to the current capacity (user capacity of the LUN or metaLUN before adding LUNs).

Note: If you want to modify the user capacity of a LUN or metaLUN that is participating in a SnapView (snapshot or clone), MirrorView or SAN Copy session, see "Using the added capacity of an expanded SnapView, MirrorView or SAN Copy LUN" on page 5-24.

-defaultowner A | B

Specifies the new default SP owner for the metaLUN — **A** or **B**.

-expansionrate low | medium | high | ASAP | *value*

Specifies the relative importance of making additional LUN capacity available to the host. It determines the amount of resources the SP devotes to re-striping the existing data on the original LUNs across the original LUNs and the new LUNs instead of to normal I/O activity. This rate is available only when you first create a metaLUN and is important only for a stripe expansion. Valid rebuild priorities are **ASAP** (default) or **3**, **High** or **2**, **Medium** or **1**, and **Low**, or **0**.

An expansion rate of **ASAP** or **High** re-stripes the data across the metaLUN faster than one with **Medium** or **Low** priority, but may degrade storage-system performance.

Note: AX-series systems support only a High expansion rate.

-newname *newName*

Specifies the new name for the metaLUN. A valid name must not exceed 64 characters and must include at least one non-whitespace character. This name must be unique on the storage system.

-o

Executes the command without prompting for confirmation.

-sq tb | gb | mb | bc

Specifies the size qualifier for the capacity of the metaLUN component.

where:

tb equals terabytes, **gb** equals gigabytes, **mb** equals megabytes and **bc** equals block count. The default qualifier is block count.

Note: AX-series systems support only megabyte (mb) and gigabyte (gb) size qualifiers.

-tomaxcap

Lets you expand the metaLUN to its maximum capacity.

Using the added capacity of an expanded SnapView, MirrorView or SAN Copy LUN

You must perform the operations detailed in the following sections to expand the capacity of a LUN or metaLUN that is currently participating in a SnapView, MirrorView or SAN Copy session (see "naviseccli metalun -destroy 20" on page 5-5), and to allow the host to access the added capacity.

Note: For a stripe expansion, any existing data is restriped across the original LUN or metaLUN and the added LUNs *during* the SnapView, MirrorView or SAN Copy session. This restriping is invisible to the host.

For LUNs in a SnapView session

To access the added capacity of an expanded snapshot source LUN, do the following:

1. Stop *all* SnapView sessions and destroy *all* snapshots associated with the expanded source LUN (see the admsnap, the online help or the *SnapView Administrator's Guide*).
2. Use the **metaLUN -modify** command on page 5-22 to change the capacity of the expanded LUNs.
3. Make sure the host operating system can utilize the added capacity.
4. You can now start new sessions and create new snapshots with the expanded LUNs (see the *SnapView CLI Reference*, the online help or the *SnapView Administrator's Guide*).

For LUNs in a clone group

Note: You must expand the clone and the clone source LUN to the same size.

To access the added capacity of an expanded clone, or clone source LUN, do the following:

1. For the clone, remove the clone form the clone group; for a clone source LUN, destroy the clone group.
2. Use the **metaLUN -modify** command on page 5-22 to change the capacity of the expanded LUNs.
3. Make sure the host operating system can utilize the added capacity.
4. Reconstruct the clone group with the expanded LUNs and then perform a full synchronization of the LUNs in the clone group.

For LUNs in mirrors

Note: You must expand both the primary and secondary images of a mirror to the same size.

To access the added capacity of an expanded primary and secondary MirrorView LUN, do the following:

1. For the expanded primary image, destroy the mirror; for the expanded secondary image, remove it from the mirror (see the *MirrorView CLI Reference*, the online help or the *MirrorView Administrator's Guide*)
2. Use the **metaLUN -modify** command on page 5-22 to change the capacity of the expanded LUNs.
3. Make sure the host operating system can utilize the added capacity.
4. Reconstruct the mirror with the expanded LUNs and then perform a full synchronization of the mirror.

For LUNs in SAN Copy sessions

Note: If you expand the SAN Copy source logical unit, make sure that the destination LUNs are of equal or greater capacity.

To access the added capacity of an expanded SAN Copy source LUN or destination LUN, do the following:

1. For any sessions that the expanded LUNs are participating in, wait until the SAN copy sessions complete, or stop the sessions, and then remove these sessions. (see the online help, or the *SAN Copy Administrator's Guide*).
2. Use the **metaLUN -modify** command on page 5-22 to change the capacity of the expanded LUNs.
3. Make sure the host operating system can utilize the added capacity.
4. Reconstruct the SAN Copy sessions that you removed and then, when you are ready, start the sessions. (see the online help, or the *SAN Copy Administrator's Guide*).

6

Reserved LUN pool commands

This chapter explains how to configure the reserved LUN pool, which is required for running replication software such as SnapView. It also describes the CLI commands that you can use if SnapView is installed on your system.

Major sections are:

- Introduction to the reserved LUN pool 6-2
- Estimating the reserved LUN pool size 6-3
- reserved -lunpool -addlun 6-5
- reserved -lunpool -list 6-7
- reserved -lunpool -rmlun 6-9

Introduction to the reserved LUN pool

The reserved LUN pool works with replication software, such as SnapView and SAN Copy, to store data or information required to complete a replication task. The reserved LUN pool consists of one or more private LUNs, and each SP has its own reserved LUN pool. Since the LUNs in the reserved LUN pool are private LUNs, they cannot belong to storage groups and a host cannot perform I/O to them.

Before starting a replication task, the reserved LUN pool must contain at least one LUN for each source LUN that will participate in the task. You can add any LUNs that are available to either SP's reserved LUN pool. Each SP manages its own LUN pool space and assigns a separate reserved LUN (or multiple LUNs) to each source LUN. All replication software that uses the reserved LUN pool shares the resources of the reserved LUN pool. For example, if you are running an incremental SAN Copy session on a LUN that belongs to SP A and a SnapView session on another LUN that belongs to the same SP, the reserved LUN pool for SP A must contain at least two LUNs - one for each source LUN. If both sessions are running on the same source LUN, the sessions will share a reserved LUN.

Allocation of reserved LUNs

Each SP manages its own reserved LUN pool space and allocates reserved LUNs on a per-source-LUN basis, not a per-session basis. For example, if two sessions are running on a source LUN, the SP assigns reserved LUNs, as needed, to the source LUN, and both sessions share these LUNs.

The assignment of reserved LUNs is based upon the first available free LUN in the SP's LUN pool. An adequate number of reserved LUNs is essential because the software will terminate sessions if no free LUNs are available in the SP's LUN pool. If you are running multiple sessions per source LUN and your reserved LUN fills up (runs out of space) and no free LUNs are available in the SP's LUN pool, the session that is trying to allocate a reserved LUN from this pool will terminate.

How SPs manage the reserved LUN pool

When you start the first session on a source LUN, Navisphere Manager assigns reserved LUNs from the LUN pool of the SP that currently owns the source LUN. All subsequent sessions started on this source LUN will use reserved LUNs from the same SP's LUN pool, even if the source LUN trespasses to the peer SP (unless you stop all sessions on the trespassed source LUN).

For example, if you start the first session on a source LUN that belongs to SP A, and the source LUN is trespassed to SP B, the reserved LUNs assigned to this source LUN also trespass to SP B. If you start a second session on the trespassed source LUN (which now belongs to SP B), the second session will still use SP A's reserved LUNs and not SP B's. If, however, you stop all sessions on the trespassed source LUN, and then start a new session on this LUN, the new session uses reserved LUNs from SP B's LUN pool, not SP A's.

Estimating the reserved LUN pool size

Each reserved LUN can vary in size. However, using the same size for each LUN in the pool is easier to manage because Navisphere Manager assigns reserved LUNs without regard to size; that is, it assigns the first available free LUN in the SP's reserved LUN pool. Since you cannot control which reserved LUNs it uses for a particular session, EMC recommends that you use more, smaller reserved LUNs. By doing this, Manager is better able to allocate the reserved LUN space. If a session requires additional reserved LUN space, it dynamically assigns a free reserved LUN from the SP's LUN pool.

Note: Before binding LUNs for the reserved LUN pool, think about which source LUNs will participate in a session. The size of these LUNs will help you estimate a suitable size for the LUNs in the reserved LUN pool size.

Estimating a suitable reserved LUN pool size

To help determine the size of the reserved LUN pool and the reserved LUNs, do the following:

1. Add the total size of source LUNs in SP A or SP B.
2. Multiply that number by 10%. This value is the reserved LUN pool usage.
3. Multiply the reserved LUN pool usage amount by two (this is a buffer for any unanticipated I/O to the source LUN(s)).

   The result is a reasonable estimate for the size of the reserved LUN pool.
4. To determine the size of each reserved LUN, divide the reserved LUN pool size by two times the number of source LUNs. The result is the size of each reserved LUN per session.

Note: To protect your sessions from being terminated (if no free reserved LUNs were available in the pool), the number of reserved LUNs in the pool should always be two times the number of source LUNs.

In addition to using the size of the source LUN to determine a suitable size for the reserved LUN pool, you may want to consider the duration time for the replication session in your calculations. A longer duration time could increase the need for more reserved LUN pool space since it is possible that more areas will be written to over a longer period of time.

reserved -lunpool -addlun

Adds a LUN to the reserved LUN pool

Description

The **naviseccli** or **navicli reserved** command with the **-lunpool** and **-addlun** functions adds one or more LUNs to the reserved LUN pool. Each SP has its own reserved LUN pool, and before starting a session, the reserved LUN pool must contain at least one LUN for each source LUN that will be participating in a session.

Note: Sessions include SnapView sessions and any reserved sessions for use in another application.

When you add a LUN to the pool, you allocate each LUN to either SP A's or SP B's reserved LUN pool. Each SP manages its own LUN pool space and assigns a separate reserved LUN (or multiple LUNs) to each source LUN.

Note: You must bind the LUN before you can add it to the reserved LUN pool. While a LUN is part of the reserved LUN pool, you cannot use it for any other purpose.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a user entry in the Navisphere agent configuration file.

Format

reserved -lunpool -addlun is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

reserved -lunpool -addlun *lun_numbers*

where:

lun_numbers

Specifies the logical unit number(s) to add to the reserved LUN pool.

Conventions and recommendations

None.

Example **naviseccli -h ss1_spa reserved -lunpool -addlun 11**

For SP **ss1_spa**, this command adds the LUN with ID 11 to SP A's reserved LUN pool.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output If the version of software running on the SP does not support this command, a `Command is not supported` error message is printed to **stderr**.

reserved -lunpool -list

Displays reserved LUN pool information

Description

The **naviseccli** or **navicli reserved** command with the **-lunpool** and **-list** functions and no other switches lists all information about the reserved LUN pool. You can obtain more specific information with function switches.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a username/host entry in the Navisphere SP Agent configuration file.

Format

reserved -lunpool -list is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

reserved -lunpool -list [-allocatedluns] [-chunksize] [-freeluncount] [-freeluns] [-freesize] [-luncount] [-percentused] [-size] [-used]

where:

-allocatedluns

Displays the LUN IDs of all allocated LUNs in the reserved LUN pool.

-chunksize

Displays the number of disk blocks in the reserved LUN pool, in Kbytes. The chunk size applies to both SPs.

-freeluncount

Displays the total number of unallocated LUNs in the LUN pool.

-freeluns

Displays the LUN IDs of all unallocated LUNs in the reserved LUN pool.

-freesize

Displays the total size of unallocated LUNs in GBs.

-luncount

Displays the total number of LUNs in the reserved LUN pool. You can add LUNs with the **reserved -lunpool -addlun** functions.

-percentused

Displays the percentage of the reserved LUN pool that is used.

-size

Displays the size of the reserved LUN pool in GBs.

-used

Displays the space used in the reserved LUN pool, in GBs.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa reserved -lunpool -list

This command displays the reserved LUN pool information for SP **ss1_spa**. A sample output follows.

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output

The following is a sample output that shows the devices controlled by one Agent. Actual output varies depending on the switches you use with the **-lunpool -list** command.

Note: You can display reserved LUN pool information only for the SP you direct the command to.

```
Name of the SP:                       SP A
Total Number of LUNs in Pool:         9
Number of Unallocated LUNs in Pool:   4
Unallocated LUNs:                     14, 24, 23, 22
Allocated LUNs:                       16, 17, 18, 20, 21
Total size in GB:                     4.488281
Unallocated size in GB:               1.292969
Used LUN Pool in GB:                  0.017639
% Used of LUN Pool:                   0.393005
Chunk size in disk blocks:            128
```

If the version of software running on the SP does not support this command, a `Command is not supported` error message is printed to **stderr**.

reserved -lunpool -rmlun

Removes one or more LUNs from the reserved LUN pool

Description

The **naviseccli** or **navicli reserved** command with the **-lunpool** and **-rmlun** functions removes one or more LUNs from the reserved LUN pool. If you omit the override option, the CLI prompts for confirmation before removing the LUN from reserved LUN pool.

User access

For **naviseccli**, you must have a user account on the storage system on which you want to execute the command.

For **navicli**, you must have a username/host entry in the Navisphere SP Agent configuration file..

Format

reserved -lunpool -rmlun is used with **naviseccli** (described on page 2-6) or **navicli** (described on page 2-14) as follows:

reserved -lunpool -rmlun *luns* **[-o]**

where:

-o

Executes the command without prompting for confirmation.

-rmlun *luns*

Specifies the LUN ID of each LUN, with the IDs separated by blanks, you want to remove from the reserved LUN pool.

Conventions and recommendations

None.

Example

naviseccli -h ss1_spa reserved -lunpool -rmlun 42

For SP **ss1_spa**, this command starts removing LUN 42 from the reserved LUN pool. The software asks for confirmation:

```
Do you really want to remove the luns from LUN pool.
(y/n)[N]?
```

y

Note: To use this command with **navicli**, replace **naviseccli** with **navicli**.

Output If the version of software running on the SP does not support this command, a `Command is not supported` error message is printed to **stderr**.

7

iSCSI (Internet SCSI) commands

This chapter explains each of the **naviseccli** or **navicli.jar** iSCSI commands; that is, the CLI commands that are common to all CLARiiON iSCSI disk-array storage systems.

Major sections are:

- About iSCSI storage systems in IP networks 7-2
- Using iSNS (Internet Storage Naming Service) within an iSCSI storage environment 7-5
- iSCSI commands overview 7-7
- connection -adduser 7-8
- connection -deleteuser 7-10
- connection -getuser 7-12
- connection -getport 7-14
- connection -setPort 7-17
- connection -pingnode 7-19
- connection -traceroute 7-21
- isns -addserver 7-23
- isns -deleteserver 7-25
- isns -listserver 7-27
- isns -setprimary 7-29

About iSCSI storage systems in IP networks

An iSCSI storage system, such as the CX500i, connects directly to an IP network. Servers with either iSCSI HBAs (host bus adapters) or Ethernet connections can access the iSCSI storage system through an IP network, such as a local area network (LAN).

A LAN is a set of point-to-point connections between nodes, with each node having its own unique IP address. Connections are made through one or more network components such as switches or hubs. Nodes are connected through a LAN by Ethernet CAT 6 (for Gigabit Ethernet LAN) and CAT 5 (for 10/100 LAN) copper cables. Network switches are *not* nodes.

Each node in an iSCSI environment is either an initiator (server) or a target (storage system). Figure 7-1 shows an initiator node and a target node.

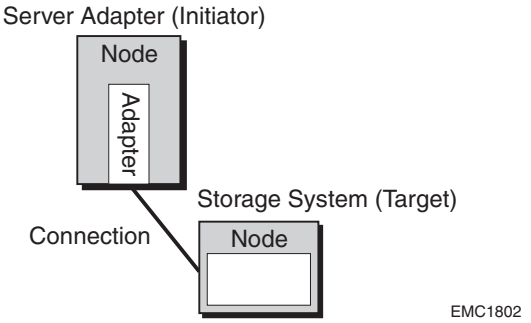

Figure 7-1 Nodes - initiator and target

Before a server is able to initiate server I/O to the iSCSI storage system, it must be configured as follows:

- You have installed one of the following interface cards and relevant drivers:
  - Supported iSCSI HBA cards that have a driver and configuration tool (for example, Qlogic), or
  - Gigabit Ethernet Network Interface Cards (NICs) running Microsoft software that provides HBA functionality.

Note: We support 10-Mb, 100-Mb, and 1000-Mb Gigabit Ethernet (GigE) interfaces, but the storage system supports only 1000-Mb. If your NIC does not run GigE, then you need to connect to the storage system using a GigE router or switch.

- You have cabled the storage system properly (refer to the setup guide that shipped with the storage system).
- You have installed the Navisphere Utilities on each server with access to data on the storage system (refer to the setup guide).
- You have installed PowerPath software on the servers for multi-pathing (refer to the setup guide).
- You have set the network parameters and security for the SP management ports on the storage system.

The iSCSI interface uses CHAP (Challenge Handshake Authentication Protocol) to protect the storage system's iSCSI ports from unwanted access. CHAP is *optional*, but if your storage system might be accessed from a public IP network, we strongly recommend that you use CHAP security.

CHAP is a method for authenticating iSCSI users (initiators and targets). The iSCSI storage system can use CHAP to authenticate server initiators and initiators can authenticate targets such as the storage system. To use CHAP security, you must configure CHAP credentials for the storage system iSCSI ports and any servers that will access the storage system data.

Note: If you will be using CHAP security, we strongly recommend that you configure it on both the storage system and the server *before* initiating server I/O.

Figure 7-2 illustrates an iSCSI storage system in a storage domain with various servers and illustrates how iSCSI storage systems differ from Fibre Channel storage systems.

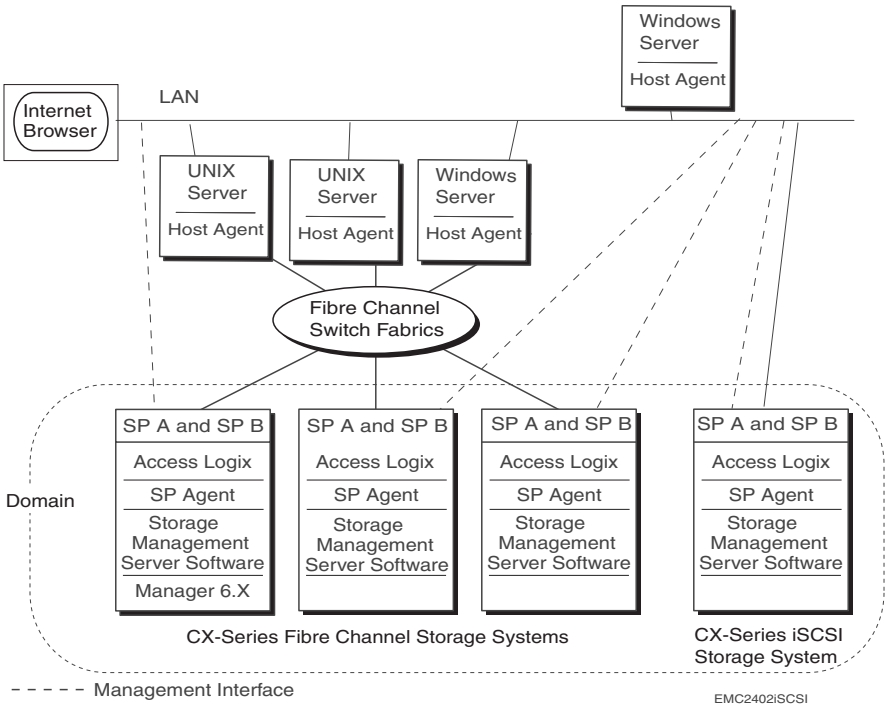

Figure 7-2 FC and iSCSI storage systems in an IP network

Using iSNS (Internet Storage Naming Service) within an iSCSI storage environment

Note: iSNS (Internet Storage Naming Service) is supported only on Windows platforms that are part of an iSCSI network configuration.

The iSNS service provides the same function for TCP/IP storage networks as the Simple Name Server (SNS) service in a Fibre Channel fabric — automated discovery, management and configuration of iSCSI devices. It eliminates the need to manually configure each individual storage device with its own list of initiators and targets. Once configured, the iSNS server assumes responsibility for the discovery and management of iSCSI devices.

The iSNS service includes an iSNS server component and iSNS client components. The iSNS server must reside somewhere within the IP storage network, for example, in the switch firmware, or on a host. An iSNS client resides on both the iSCSI storage system and any iSCSI hosts connected to the storage system. When you start the storage system, the iSNS client on the storage system gathers all the storage system's iSCSI port information and stores it locally on the storage system. When you add a server to the storage system's iSNS configuration, Navisphere establishes a connection from the storage system to the iSNS server, and then registers all the stored information on the storage system with the iSNS server.

To use the features of the iSNS service in an iSCSI storage environment:

- all the iSCSI requirements listed in the section, "About iSCSI storage systems in IP networks" on page 7-2, must be met;
- an iSNS server must be running on a network to which the storage system has access;
- the host initiators or HBAs must be able to use the iSNS service;
- the storage system must support the iSNS service;
- the iSNS server must be able to communicate with the storage system.

The following illustration represents a sample iSNS configuration. In this configuration, the management and storage networks are separate. The management station is used to configure both the iSNS servers and the storage system (using Navisphere Manager). The iSNS servers are also connected to the storage network so that the clients may query them for target information. The storage system uses either the storage or the management network to register its targets (ports) with the iSNS servers.

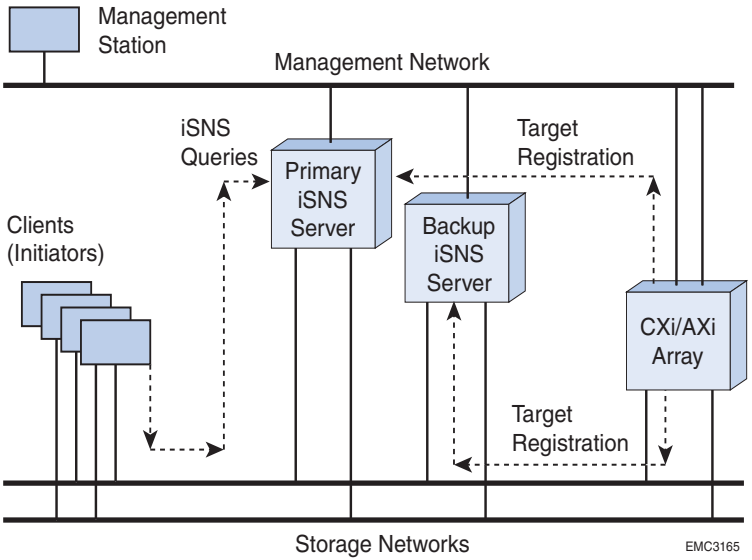

Figure 7-3 Sample iSNS storage configuration

iSCSI commands overview

The **naviseccli** or **navicli.jar** iSCSI commands in this chapter include the connection and iSNS commands. The following table identifies the iSCSI commands that can be used.

Table 7-1 naviseccli or navicli.jar iSCSI commands

Command	Description
CHAP User Commands	
connection -adduser	Creates a CHAP user account
connection -deleteuser	Deletes a CHAP user account
connection -getuser	Displays CHAP user accounts
Port Administration Commands	
connection -getport	Retrieves a specific iSCSI port or the list of all the iSCSI ports
connection -setport	Modifies the properties of a connection port
connection -pingnode	Verifies that packets reach a destination node without errors
connection -traceroute	Displays the route that a packet takes to a destination node
iSNS Commands	
isns -addserver	Adds an iSNS server to a storage system's iSNS service configuration
isns -deleteserver	Deletes an iSNS server from a storage system's iSNS service configuration
isns -listserver	Displays all iSNS servers that are configured in the storage system's iSNS service
isns -setprimary	Sets a configured iSNS server as the primary server for a storage system's iSNS service configuration

connection -adduser

Add a CHAP authentication user

Description

The **naviseccli** or **navicli.jar connection** command with the **-adduser** function adds either an initiator CHAP authentication user or a target (storage system) CHAP authentication user to the storage system CHAP user database.

Note: If you try to create a CHAP user for an initiator and the user is already defined, an error message is returned that the user is already defined for the initiator.

If you try to add a user for a target and the user is already defined, an error is returned that only one user can be defined for target access.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -adduser is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -adduser -definedFor initiator | **target -initiatorName** *initiatorName* [**-userName** *userName*] **-secret** *secret* [**-hexsecret**] [**-o**]

where:

-definedFor initiator | **target**

initiator adds an initiator CHAP user account to the storage system user database. If you specify **initiator**, you must specify an initiator using the **-initiatorName** parameter.

target specifies that a target (storage system) CHAP user account will be created. If you specify **target**, do not use the **-initiatorName** parameter.

-initiatorName *initiatorName*

If *initiator* user account data is being added, *initiatorName* is a unique identifier for the initiator and uses the iSCSI Qualified Name (IQN) of the iSCSI initiator. This parameter is required if you are defining an initiator user.

-userName *username*

If *initiator* user account data is being added, *username* specifies the CHAP username that the initiator uses when connecting to an

iSCSI target. For CHAP, a *username* and *secret* must be defined for each initiator. If the **-userName** parameter is omitted, it defaults to the **-initiatorName** value. If a target is being configured for mutual CHAP, the target name becomes the *username*.

-secret *secret*

If *initiator* user account data is being added, *secret* specifies the CHAP secret (password) that the storage system will use to authenticate the initiator. You can specify the secret in ASCII or hexadecimal characters (see the **-hexsecret** switch that follows). By default, **-secret** is an ASCII string. ASCII secrets must consist of at least 12 and no more than 16 characters. Hexadecimal secrets must consist of at least 12 and no more than 16 pairs of data (24 to 32 characters).

-hexsecret

If *initiator* user account data is being added, including the **-hexsecret** parameter specifies that **-secret** is a hexadecimal value.

-o

Executes the command without prompting for confirmation. If you include the **-o** switch, you will not be prompted to confirm that you want to add the user account data. If you do not use the **-o** switch, you will be prompted to confirm that you want to add the user.

Example

The following example adds a user account to the storage system database:

naviseccli connection -adduser -definedfor initiator -initiatorName 5.com.microsoft:cpc7745 -username Guest -secret 1234567890123456

```
Adding an iSCSI user account with the following
   attributes:
Initiator Name: iqn.1991-05.com.microsoft:cpc7745
User name: Guest
Secret: 1234567890123456
Defined For: initiator
Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Ouput

None if the command succeeds; status or error information if it fails.

connection -deleteuser

Delete a CHAP authentication user

Description

The **naviseccli** or **navicli.jar connection** command with the **-deleteuser** function deletes a specified initiator or target CHAP authentication user from the storage system CHAP user database.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -deleteuser is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -deleteuser -definedFor initiator | **target -initiatorName** *initiatorName* **-userName** *username* **[-o]**

where:

-definedFor initiator | **target**

initiator specifies that an initiator user account will be deleted from the storage system user database. If you specify **initiator**, you must specify an initiator using the **-initiatorName** parameter.

target specifies that the target (storage system) user data will be deleted.

-initiatorName *initiatorName*

If *initiator* user account data is being deleted, *initiatorName* is the name that was assigned for the initiator when the user account was created. The default initiator name is the IQN of the initiator.

-userName *username*

Specifies the iSCSI CHAP username for the initiator or target user being deleted.

-o

Executes the command without prompting for confirmation. If you include the **-o** switch, you will not be prompted to confirm the user account deletion. If you do not use the **-o** switch, you will be prompted to confirm that you want to delete the user account data.

Example The following example deletes a user account from the storage **naviseccli connection -deleteuser -definedfor initiator -initiatorName iqn.1991-05.com.microsoft:cpc7745 -username Guest**

```
Deleting an iSCSI user account with the following
   attributes:
Initiator Name: iqn.1991-05.com.microsoft:cpc7745
User name: Guest
Defined For: initiator
Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

connection -getuser

Display CHAP authentication user data

Description

The **naviseccli** or **navicli.jar connection** command with the **-getuser** function displays CHAP authentication user account data that is configured on the storage system. If no arguments are specified, all of the CHAP users defined on the storage system are displayed. Use **-definedFor**, **-initiatorName**, and **-userName** to display information for a specified user. If you specify a particular user and that user is not found, the error message, `The specified user account does not exist,` is returned.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -getuser is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -getuser [**-definedFor initiator** | **target**] [**-userName** *userName*] [**-initiatorName** *initiatorName*]

where:

-definedFor initiator | **target**

initiator specifies that information for a CHAP initiator user is displayed. If you specify **initiator**, you must include the **-userName** and **-initiatorName**.

target specifies that information for a CHAP target user (the storage system user account) is displayed. If you specify **target**, you must include the **-userName**.

-initiatorName *initiatorName*

The initiator is the host or HBA that initiates the connection with the target storage system. The initiator is identified by the IQN of the iSCSI initiator.

-userName *username*

Specifies the iSCSI CHAP username for the initiator or target user being specified by **initiatorName**.

Example The following example gets information on the current user:

naviseccli connection -getuser

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Initiator Name:  iqn.1991-05.com.microsoft:cpc7745
User Name:  Guest
Defined For:  initiator
```

connection -getport

Retrieve a specific iSCSI port or the list of all the iSCSI ports

Description

The **naviseccli** or **navicli.jar connection** command with the **-getport** function displays information about either a specified iSCSI port or a list of all iSCSI ports. If no arguments are specified, all of the iSCSI ports defined on the targeted storage system are displayed.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -getport is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -getport [**-sp a** | **b**] [**-portid** *portid*] [**-address**] [**-subnetmask**] [**-gateway**] [**-initiatorAuthentication**]

where:

The **-sp** and **-portid** parameters select which iSCSI ports will be displayed. If both options are specified, a particular iSCSI port is specified. If either or both of the options is omitted, all iSCSI ports that meet the search criteria are displayed.

-sp a | **b**

Specifies storage processor A or B. Information will be displayed only for iSCSI ports configured on the specified SP.

-portid *portid*

Specifies a iSCSI port ID. Displays information for only the specified iSCSI port.

The following parameters, **-address**, **-subnetmask**, **-gateway**, and **-initiatorAuthentication** define additional information that is displayed for iSCSI ports. If none of these options is specified, all fields are displayed. The **SP** and **Port ID** fields are always displayed.

-address

Displays the IP address of the specified iSCSI ports. The address is a 32-bit numeric address written as four 8-bit numbers (0-255) separated by periods (called the *dotted-quad* format). For example, 165.152.36.35.

-subnetmask

Displays the network mask for the specified iSCSI ports. The subnet mask uses the *dotted-quad* format. For example, 255.255.255.0.

-gateway

Displays the network gateway address that the specified iSCSI ports use. The gateway address uses the *dotted-quad* format. For example, 165.152.35.22.

-initiatorAuthentication

Displays the state of the initiator authentication flag for the specified iSCSI ports. **True** indicates that initiator authentication is turned on for the port and that all initiators logging into that port will be required to authenticate against the target storage system. **False** indicates that initiator authentication has been disabled for the port.

Examples

connection -getport displays information about all iSCSI ports configured on the storage system, or nothing if no iSCSI ports are configured.

connection -getport -sp a -portid 0 displays information about port 0 on SP A, or prints an error message if the iSCSI port does not exist.

connection -getport -sp a displays information about all iSCSI ports on SP A, or nothing if no iSCSI ports are configured on that SP.

connection -getport -portid 0 displays information about all iSCSI ports with ID 0, regardless of what SP they are configured on, or nothing if no matching ports are found.

The following example displays port information for the port with IP address 10.14.80.106:

naviseccli connection -getport

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Ouput

```
SP:  A
Port ID:  1
Port WWN:  iqn.1992-04.com.emc:cx.apm00034901792.a1
IP Address:  10.14.80.109
Subnet Mask:  255.255.255.0
```

```
Gateway Address:  10.14.80.1
Initiator Authentication:  false

SP:  B
Port ID:  0
Port WWN:  iqn.1992-04.com.emc:cx.apm00034901792.b0
IP Address:  10.14.80.110
Subnet Mask:  255.255.255.0
Gateway Address:  10.14.80.1
Initiator Authentication:  false

SP:  B
Port ID:  1
Port WWN:  iqn.1992-04.com.emc:cx.apm00034901792.b1
IP Address:  10.14.80.111
Subnet Mask:  255.255.255.0
Gateway Address:  10.14.80.1
Initiator Authentication:  false

SP:  A
Port ID:  0
Port WWN:  iqn.1992-04.com.emc:cx.apm00034901792.a0
IP Address:  10.14.80.108
Subnet Mask:  255.255.255.0
Gateway Address:  10.14.80.1
Initiator Authentication:  false
```

connection -setPort

Modify the properties of a port

Description

The **naviseccli** or **navicli.jar connection** command with the **-setPort** function modifies the properties of a specified SP port.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -setport is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -setport -sp a | b -portid *portid* **-address** *address* **-subnetmask** *subnetmask* **-gateway** *gateway* **[-initiatorAuthentication 0 | 1] [-o]**

where:

-sp a | b

Specifies that the iSCSI port is on either SP A or SP B.

-portid *portid*

Specifies the port on the SP. For example, an SP with one port has port 1; an SP with two ports has port 0 and port 1.

-address *address*

Specifies the IP address of the iSCSI port. The address uses the *dotted-quad* format. For example, 165.152.36.35.

-subnetmask *subnetmask*

Specifies the subnetwork mask for the iSCSI port. The subnet mask uses the *dotted-quad* format. For example, 255.255.255.0.

-gateway *gateway*

Specifies the network gateway address that the iSCSI port uses. The gateway address uses the *dotted-quad* format. For example, 165.152.35.22.

-initiatorAuthentication 0 | 1

If initiator authentication is turned on, all initiators logging into the port must be authenticated by the storage system.

0 = Not required - default
1 = Required

-o

Executes the command without prompting for confirmation. If you include the **-o** switch, the port will be set (configured) without a confirmation prompt. Without the **-o** switch, the software displays confirmation messages that you must respond to.

Example The following example configures the network settings for the port with IP address 10.14.80.110:

naviseccli connection -setport -sp b -portid 0 -address 10.14.80.110 -subnetmask 255.255.255.0 -gateway 10.14.80.1

```
Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

connection -pingnode

Verify that packets reach a destination node without errors

Description

The **naviseccli** or **navicli.jar connection** command with the **-pingnode** function transmits packets to a target node and returns a notification that the packets have reached the node without errors. The **connection -pingnode** command pings a target node from the iSCSI port. Use the **connection -pingnode** and the **connection -traceroute** commands to verify and diagnose network connectivity.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -pingnode is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -pingnode -sp a | b -portid *portid* **-address** *address* [**-packetSize** *packetSize*] [**-count** *count*] [**-timeouts** *timeouts*] [**-delays** *delays*]

where:

-sp A | B

Specifies either storage processor A or storage processor B.

-portid *portid*

Specifies the port on the SP, either 0 or 1. For example, an SP with one port has port 0; an SP with two ports has port 0 and port 1.

-address *address*

Specifies the IP address of the target node that the iSCSI port will ping. The address is a 32-bit numeric address written as four numbers separated by periods, for example, 128.221.56.52. Network names are not supported.

-packetSize *packetSize*

Specifies the size of the packets in bytes. The default is 32 bytes, the minimum is 0 bytes, and the maximum is 2048 bytes.

-count *count*

Specifies the number of pings to send. The default is 4; the minimum is 1.

-timeouts *timeouts*

Specifies the response wait timeout period in seconds. The default is 3 seconds, the minimum is 1 second, and the maximum is 15 seconds.

-delays *delays*

Specifies a delay in seconds between pings. The default is 1 second, the minimum is 1 second, and the maximum is 10 seconds.

Example

The following example transmits packets to a target node, `128.221.92.225`:

naviseccli connection -pingnode -sp a -portid 1 -address 128.221.92.225

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Reply from 128.221.92.225:  bytes=32 time=16ms TTL=30
Reply from 128.221.92.225:  bytes=32 time=1ms TTL=30
Reply from 128.221.92.225:  bytes=32 time=1ms TTL=30
Reply from 128.221.92.225:  bytes=32 time=1ms TTL=30
```

connection -traceroute

Display the route that a packet takes to a destination node

Description

The **naviseccli** or **navicli.jar connection** command with the **-traceroute** function displays the route that packets take to a target node that you specify in the command. The **connection -traceroute** command traces and displays the route from the storage system iSCSI port to the target node. Use the **connection -traceroute** and **connection -pingnode** commands to verify and diagnose network connectivity.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

connection -traceroute is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

connection -traceroute -sp a | b -portid *portid* **-address** *address* [**-packetSize** *packetSize*] [**-timeouts** *timeouts*] [**-delays** *delays*]

where:

-sp A | B

Specifies either storage processor A or storage processor B.

-portid *portid*

Specifies the port on the SP, either 0 or 1. For example, an SP with one port has port 0; an SP with two ports has port 0 and port 1.

-address *address*

Specifies the IP address of the target node that the iSCSI port will attempt to contact. The address uses the *dotted-quad* format, for example, 128.221.56.52. Network names are not supported.

-packetSize *packetSize*

Specifies the size of the echo packets in bytes. The default is 32 bytes, the minimum is 0 bytes, and the maximum is 2048 bytes.

-timeouts *timeouts*

Specifies the response wait timeout period in seconds. The default is 3 seconds, the minimum is 1 second, and the maximum is 15 seconds.

-delays *delays*

Specifies a delay in seconds between datagrams. The default is 1 second, the minimum is 1 second, and the maximum is 10 seconds.

Example

The following example displays the route taken by a packet:

naviseccli connection -traceroute -sp a -portid 1 -address 128.221.92.225

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
1:  10.14.80.1  1 ms
2:  128.221.64.129  1 ms
3:  128.221.64.230  1 ms
4:  128.221.92.225  1 ms
```

isns -addserver

Adds an iSNS server to a storage system's iSNS service configuration

Description

The **naviseccli** or **navicli.jar isns** command with the **-addserver** function, adds an iSNS server to a storage system's iSNS service configuration.

When you add a server, if it is the first server you add to a storage system's iSNS service configuration, it is designated as the primary server. If a server exists in the storage system's iSNS service configuration, any subsequent server you add is designated as a backup.

Note: The primary server is the server the iSNS service actively communicates with.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

isns -addserver is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

isns -addserver *IPAddr* **[-o]**

where:

IPAddr

The IP address of the iSNS server you want to add.

Note: You must identify the iSNS server by the server's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example The following example adds the specified iSNS server, to the storage system's iSNS service configuration.

naviseccli -address ss1_spa isns -addserver 111.222.33.44

```
Adding an iSNS server with the following IP address:
111.222.33.44.

Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

isns -deleteserver

Deletes an iSNS server from a storage system's iSNS service configuration

Description

The **naviseccli** or **navicli.jar isns** command with the **-deleteserver** function, deletes an iSNS server from a storage system's iSNS service configuration.

Note: If the IP address of the server you specify to delete is not configured, you will receive an error message.

If you delete a primary server, the next server listed in the storage system's iSNS service configuration becomes the primary.

Note: The primary server is the server the iSNS service actively communicates with.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

isns -deleteserver is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

isns -deleteserver *IPAddr* **[-o]**

where:

IPAddr

The IP address of the iSNS server you want to delete.

Note: You must identify the iSNS server by the server's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example The following example deletes the specified iSNS server from the storage system's iSNS configuration.

naviseccli -address ss1_spa isns -deleteserver 111.222.33.44

```
Deleting an iSNS server with the following IP address:
111.222.33.44.

Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

isns -listserver

Displays all iSNS servers that are configured in the storage system's iSNS service

Description

The **naviseccli** or **navicli.jar isns** command with the **-listserver** function, lists all servers that are configured in a storage system's iSNS service.

If there are multiple servers configured in the storage system's iSNS service, the **-listserver** operation will list multiple IP addresses and server types. You can only have one primary server, therefore you will only have one server designated as the primary. All other servers are designated as backup servers.

Note: The primary server is the server the iSNS service actively communicates with.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

isns -listserver is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

isns -listserver

Conventions and recommendations

None.

Example

The following example lists the primary and backup iSNS servers for the storage system.

naviseccli -address ss1_spa isns -listserver

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
IP Address: 111.222.33.44
Server Type: Backup

IP Address: 111.222.33.45
Server Type: Primary
```

IP Address is the IP address of the iSNS server. Server type specifies whether the server is set as the primary or backup server.

isns -setprimary

Sets a configured iSNS server, as the primary server for a storage system's iSNS service configuration

Description

The **naviseccli** or **navicli.jar isns** command with the **-setprimary** function, establishes a configured iSNS server as the primary server in a storage system's iSNS service configuration. The primary server is the server the iSNS service actively communicates with. You can only have one primary server.

Note: If the IP address of the server you specify to be the primary server is not configured, you will receive an error message.

You use this command when you want to change the primary server in a storage system's iSNS service configuration. You can also use this command to re-establish a primary server after a failover. When a failure occurs which takes the existing primary server out of service, the iSNS service automatically establishes a backup server as the new primary server. You can use the **isns -setprimary** command to restore the original primary server as the primary server.

Note: If you have more than one backup server, the first backup server listed becomes the new primary server (see **isns -listserver**).

User access

You must have a user account on the storage system on which you want to execute the command.

Format

isns -setprimary is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

isns -setprimary *IPAddr* **[-o]**

where:

IPAddr

The IP address of the iSNS server you want to designate as the primary server.

Note: You must identify the iSNS server by the server's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

The following example establishes the specified iSNS server as the primary server.

naviseccli -address ss1_spa isns -setprimary 111.222.33.44

```
The listed IP Address will become the Primary iSNS
server: 111.222.33.44.

Do you really want to perform this action (y/n)? y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

8

LUN migration (virtual LUN) commands

This chapter explains the Navisphere Manager CLI commands that manage LUN migration.

Note: LUN migration is also referred to as virtual LUNs.

LUN migration lets you improve the performance of a LUN by migrating the data from the source LUN to a destination LUN that has more desirable performance characteristics.

Note: Not supported on AX-series storage systems.

Major sections in the chapter are:

- migrate -start 8-2
- migrate -cancel 8-4
- migrate -modify 8-5
- migrate -list 8-6

migrate -start

Starts a LUN migration session

Description

The **naviseccli** or **navicli.jar migrate** command with the **-start** switch starts a LUN migration session.

Note: If the maximum number of migrations already exists on the subsystem, the new session is still created, but its state is **queued**.

For raw device mapping volumes (RDMs), if you are running VMware ESX Server and you are using the migration feature to copy LUNs to larger LUNs only, after you complete the migration you must rescan the bus at the ESX Server level. You can also rescan at the virtual machine level (optional). You then must expand the file system at the virtual machine level. ESX Server and the virtual machine will now recognize the completed migration.

For configuration specifications, go to the E-Lab Interoperability Navigator on EMC Powerlink.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

migrate -start is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

migrate -start -source *LUN ID* | *WWN* **-dest** *LUN ID* | *WWN* [**-rate low** | **medium** | **high** | **asap** | *value*]

where:

-**source** *LUN ID* | *WWN*

Specifies the source LUN of the migration. You can specify the LUN ID or World Wide Name (WWN).

-**dest** *LUN ID* | *WWN*

Specifies the destination LUN of the migration. You can specify the LUN ID or World Wide Name.

-rate low | medium | high | asap | *value*

Specifies the LUN migration rate. Valid rates are **low** or **0**, **medium** or **1**, **high** or **2**, and **asap** or **3**.

Conventions and recommendations

The destination LUN must be the same size or larger than the source LUN.

Example

naviseccli migrate -start -source 6 -dest 7 -rate low

This command starts a LUN migration session where the source LUN's ID is 6, the destination LUN's ID is 7, and the LUN migration rate is low.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

migrate -cancel

Cancels a LUN migration session

Description

The **naviseccli** or **navicli.jar migrate** command with the **-cancel** switch cancels an in-process LUN migration. The destination LUN is deleted when the cancel occurs.

Note: You can cancel only one migration at a time.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

migrate -cancel is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

migrate -cancel -source *LUN ID | WWN* **[-o]**

where:

-source *LUN ID | WWN*

Specifies the source LUN for migration as the LUN ID or World Wide Name (WWN).

-o

Overrides; does not prompt for confirmation.

Conventions and recommendations

None.

Example

naviseccli migrate -cancel -source 6

This command cancels a LUN migration session whose source LUN's ID is 6.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

migrate -modify

Modifies a LUN migration session

Description

The **naviseccli** or **navicli.jar migrate** command with the **-modify** switch modifies a LUN migration session according to the parameters you specify.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

migrate -modify is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

migrate -modify -source *LUN ID* | *WWN*
[-rate low | **medium** | **high** | **asap** | *value*] **[-o]**

where:

-source *LUN ID* | *WWN*

Specifies the source LUN of the migration you want to modify. You can specify the LUN ID or World Wide Name (WWN).

-rate low | **medium** | **high** | **asap** | *value*

Specifies the LUN migration rate. Valid rates are **low** or **0**, **medium** or **1**, **high** or **2**, and **asap** or **3**.

-o

Overrides; does not prompt for confirmation.

Conventions and recommendations

None.

Example

naviseccli migrate -modify -source 6 -rate medium

This command modifies LUN migration rate to medium.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

migrate -list

Lists LUN migration sessions and their properties

Description

The **naviseccli** or **navicli.jar migrate** command with the **-list** switch lists the existing LUN migration sessions and their properties.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

migrate -list is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

migrate -list [**-source** *LUN ID* | *WWN*] [**-destination**] [**-rate**] [**-state**] [**-percentcomplete**] [**-timeremaining**]

where:

-source *LUN ID* | *WWN*

Specifies the source LUN of the migration. You can specify the LUN ID or World Wide Name (WWN). If you specify the **-source** switch with a LUN, the command lists properties for only that migration. If you do not specify a source LUN, the output lists the properties for all migrations.

-destination

Displays the destination LUN.

-rate

Displays the LUN migration rate as **low**, **medium**, **high**, or **asap**.

-state

Displays the migration state as queued, migrating, migrated, transitioning, or faulted.

-percentcomplete

Displays the percentage of the migration that has completed.

-timeremaining

Displays the estimated time remaining for the migration to complete. For the first poll cycle after the migration is started, the **Time Remaining** field is displayed as ? (question mark).

Conventions and recommendations

None.

Example

naviseccli migrate -list

This command lists the migration sessions and their properties.

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Source LU Name: LUN 6
Source LU ID: 6
Dest LU Name: LUN 7
Dest LU ID: 7
Migration Rate: LOW
Current State: MIGRATING
Percent Complete: 12
Time Remaining: 1 minute(s)
```

9

Domain and security commands

This chapter provides a brief overview of the Navisphere domain and security features, and includes a list of commands you can use to manage storage system domains and user access to storage systems. For a detailed account of the Navisphere domain and security features, refer to the *EMC Navisphere Manager Administrator's Guide* (P/N 300-003-511).

Major sections are:

- About domains and user accounts 9-2
- Domain and security commands overview 9-4
- domain -add 9-5
- domain -list 9-7
- domain -remove 9-9
- domain -setmaster 9-11
- security -adduser 9-13
- security -changeuserinfo 9-15
- security -list 9-17
- security -rmuser 9-18

About domains and user accounts

A domain is a group of one or more storage systems with Storage Management Server software whose SPs are connected to a network and which have been assigned to the domain by Navisphere CLI or Navisphere Manager. Each domain has a master node (master storage system) that maintains the master copy of the domain data — the storage systems and global user accounts that make up the domain.

Note: When you set up a user account, you assign a scope of either global or local. Global user accounts apply to all storage systems within a domain, while local user accounts apply to a specific storage system.

Setting up a domain allows a group of storage systems to be monitored and managed using a single login. Even if you plan to use a storage system by itself (manage it separately), we suggest that you create a domain for that system.

Note: In order to issue domain CLI commands, you must have global administrator privileges.

A user (that is, someone who needs to view or manage storage system operation) can have one of three roles:

- Administrator
- Manager
- Monitor

Note: To issue security CLI commands for user account set-up, modification, or removal you must have administrator privileges. Global administrators can manage both global and local user accounts. Local administrators can only manage local user accounts. See Table 9-1, "Operations that users with different roles can perform," for an explanation of operations that can be performed by role and scope.

You can assign a user a role globally (the user has the role across all storage systems in the domain) or locally (the user has the role on a specific storage system only). Each global username must be unique in the domain; each local username must be unique within the local management server.

Note: Usernames and passwords can be 1 to 32 characters, including letters (case sensitive), numbers, underscores, non-numeric, non-alpha characters, spaces, and must start with a letter.

The following table defines the operations a user can perform by role and scope.

Table 9-1 Operations that users with different roles can perform

User role	Can view	Can add, modify, or delete
Global administrator	All domain and storage-system settings, and global and local accounts	All domain and storage-system settings, and global and local accounts (cannot delete the last global administrator account)
Local administrator	Local storage-system settings and local user accounts	Local storage-system settings and local user accounts
Global Manager	All storage-system settings in domain	All storage-system settings in domain
Local Manager	Local management-server storage system information	Local storage-system settings
Global Monitor	All storage-system settings and accounts in domain	Nothing
Local Monitor	Local storage-system settings and accounts in domain	Nothing

Domain and security commands overview

The **naviseccli** or **navicli.jar** commands in this chapter include the Domain and Security commands. The following table identifies the commands.

Table 9-2 naviseccli or navicli.jar domain and security commands

Command	Description
Domain Commands	
domain -add	Adds one or more storage systems to a domain .
domain -list	Displays all storage systems in a domain.
domain -remove	Removes a storage system from a domain.
domain -setmaster	Sets a storage system as the master storage system in a domain.
Security Commands	
security -adduser	Creates a user account.
security -changeuserinfo	Changes the password and/or role of a user account.
security -list	Displays user accounts.
security -rmuser	Deletes a user account.

domain -add

Adds one or more storage systems to a domain

Description

The **naviseccli** or **navicli.jar domain** command with the **-add** function, adds the storage system you specify to the storage system domain. You can choose to add one or multiple storage systems to the domain. When you add a storage system to the domain, you specify the storage system's IP address.

See **domain -setmaster** if you need to establish a domain. You then can add storage systems to the domain using **domain -add**.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

domain -add is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

domain -add *IPAddr* **[-o]**

where:

IPAddr

The IP address of the storage system you want to add.

Note: You must identify the storage system by the storage system's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example The following example adds the specified storage systems, to the storage system domain.

naviseccli -address ss1_spa domain -add 111.222.33.44 111.222.33.45

```
WARNING: You are about to add following node(s) to the
domain.
111.222.33.44
111.222.33.45

Proceed? (y/n) y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

domain -list

Displays all storage systems in a domain

Description

The **naviseccli** or **navicli.jar domain** command with the **-list** function, lists the IP address, name, port and secure port information for all storage systems in a storage system domain. If you only want to view information about the master storage system in the domain, you can use the optional **-master** switch.

Note: You can only have one master storage system in a domain (see **domain -setmaster**).

User access

You must have a user account on the storage system on which you want to execute the command.

Format

domain -list is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

domain -list [**-master**]

where:

-master

Specifies to display only information about the master storage system in the domain.

Conventions and recommendations

None.

Example

The following example lists the storage systems in the storage system domain.

naviseccli -address 111.222.33.44 domain -list

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Node:            APM00011111111
IP Address:      111.222.33.55 (Master)
Name:            CX300I_33_55
Port:            80
Secure Port:     443
IP Address:      111.222.33.44
Name:            CX300I_33_44
Port:            80
Secure Port:     443
```

domain -remove

Removes a storage system from a domain

Description

The **naviseccli** or **navicli.jar domain** command with the **-remove** function, removes the storage system you specify from a storage system domain. When you remove a storage system from a domain, you specify the storage system's IP address.

If you want to move a storage system to a different domain, use domain -**remove** to remove the system from the current domain, then domain -**add** to add the system to the other domain.

Note: If you remove the master storage system from the domain, you destroy the domain. The CLI warns you before you can complete the operation. If the storage system you want to move is the master storage system in the domain, and you want to retain the domain, then you should change the master storage system to another system in the domain before moving the old master (see **domain -setmaster**).

.User access

You must have a user account on the storage system on which you want to execute the command.

Format

domain -remove is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

domain -remove *IPAddr* **[-o]**

where:

IPAddr

The IP address of the storage system you want to remove.

Note: You must identify the storage system by the storage system's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example The following example removes the specified storage system, from the storage system domain.

naviseccli -address ss1_spa domain -remove 111.222.33.44

```
WARNING: You are about to remove the following node from
the domain: 111.222.33.44

Proceed? (y/n) y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

domain -setmaster

Sets a storage system as the master storage system in a domain

Description

The **naviseccli** or **navicli.jar domain** command with the **-setmaster** function, establishes the storage system you specify as the master storage system in a domain. The master storage system holds the master copy of all global account information in the domain. This information is copied to all member storage systems in the domain. You can only have one master storage system in a domain. You can use **domain -setmaster** to establish a domain or to change the master storage system in an existing domain.

Note: An AX-series storage system can act as the domain master in a single-system domain that contains only an AX-series system. An AX-series system *cannot* act as domain master in a multiple-system domain. You must establish a CX3-series, CX-series, or off-array host to act as the domain master.

If you are using **domain -setmaster** to set up a domain, you specify the IP address of a new or existing storage system, not part of an existing domain. This storage system becomes the master and initializes the domain. You can then use the **domain -add** command to add additional storage systems to the domain.

When you use **domain -setmaster** to change the master storage system in an existing domain, the existing master storage system is automatically demoted, and the storage system you specify becomes the new master storage system.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

domain -setmaster is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

domain -setmaster *IPAddr* **[-o]**

where:

IPAddr

The IP address of the storage system you want to set as master.

Note: You must identify the storage system by the storage system's IP address. Specify the IP address in the form b.c.d.e where b, c, d and e range from 0 through 255. Example 111.222.33.44.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

The following example sets the specified storage system, as the master storage system in a domain.

naviseccli -address ss1_spa domain -setmaster 111.222.33.44

```
WARNING: You are about to set the following node as the
master of the domain: 111.222.33.44

Proceed? (y/n) y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

security -adduser

Creates a user account

Description

The **naviseccli** or **navicli.jar security** command with the **-adduser** function, adds a user account to the storage system you specify. If you create a global account, it replicates to all storage systems in the domain. When you add a user account, you specify the username, password, scope and role.

Note: When you create the initial global administrator user account, you do not need to provide a username and password at login.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

security -adduser is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

security –adduser –user *username* **–password** *password***–scope global | local –role administrator | manager | monitor [-o]**

where:

–user *username*

Specifies the username you want to create for the user account.

–password *password*

Specifies the password you want to create for the user account.

–scope global | local

Specifies the scope, global or local, you want to apply to the user account.

–role administrator | manager | monitor

Specifies the role, administrator, manager, or monitor, you want to apply to the user account.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example The following example creates the initial global administrator account on the storage system. You are then prompted to create a domain for the storage system you specify.

naviseccli -address ss1_spa security -adduser -user a -password b -scope global -role administrator

```
Global security is not initialized. It is highly
recommended that you initialize global security.

Do you still want to continue? y

WARNING: You are about to add user:  a

Proceed?(y/n) y

This storage system is not in a domain. It is highly
recommended you create a new domain for this system.
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output None if the command succeeds; status or error information if it fails.

security -changeuserinfo

Changes the password and/or role of a user account

Description

The **naviseccli** or **navicli.jar security** command with the **-changeuserinfo** function, modifies the password and/or role of a user account. When you modify a user account, you specify the username and scope, then designate a new password and/or role.

Note: You can change the password in a user account without providing the user's current password.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

security -changeuserinfo is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

security –changeuserinfo –user *username* **–scope global | local** [**-newpassword** *password*][**-newrole administrator | manager | monitor**] [**-o**]

where:

–user *username*

Specifies the username of the user account you want to modify.

–scope global | local

Specifies the scope, global or local, of the user account you want to modify. A global account has access to all storage systems in a domain.

-newpassword *password*

Specifies the new password you want to create for the user account.

–newrole administrator | manager | monitor

Specifies the new role, administrator, manager, or monitor, you want to apply to the user account.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

The following example modifies the role of an existing user account.

naviseccli -address ss1_spa security -changeuserinfo -user b -scope local -newrole manager

```
WARNING: You are about to change user:  b (local)
Proceed?(y/n) y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

security -list

Displays user accounts

Description

The **naviseccli** or **navicli.jar security** command with the **-list** function, lists the username, scope and role of user accounts. You can filter your selection using any combination of username, scope and role.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

security -list is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

security –list [–user *username*] **[–scope global | local] [–role administrator | manager | monitor]**

where:

–user *username*

Identifies a specific username for which you want to display information.

–scope global | local

Identifies users with a specific scope for which you want to display information.

–role administrator | manager | monitor

Identifies users with a specific role for which you want to display information.

Conventions and recommendations

None.

Example

The following example lists users with the specified scope and role.

naviseccli -address ss1_spa security -list –role monitor -scope global

---

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

```
Username:  c
Role:      monitor
Scope:     global
```

security -rmuser

Deletes a user account

Description

The **naviseccli** or **navicli.jar security** command with the **-rmuser** function, removes the user account you specify. When you remove a user account, you specify the username and scope.

Note: You must specify a scope for the user you want to remove, since you can establish two user accounts with the same username and varying scopes, one global and one local.

User access

You must have a user account on the storage system on which you want to execute the command.

Format

security -rmuser is used with **naviseccli** (described on page 2-6) or **navicli.jar** (described on page 2-19) as follows.

security –rmuser –user *username* **–scope global | local [-o]**

where:

–user *username*

Identifies the username of the account you want to remove.

–scope global | local

Specifies the scope, global or local, of the account you want to remove.

-o

Executes the command without prompting for confirmation.

Conventions and recommendations

None.

Example

The following example removes the specified user account.

naviseccli -address ss1_spa security -rmuser -user b -scope local

```
WARNING: You are about to remove user:  b (local)
Proceed?(y/n) y
```

Note: To use this command with **navicli.jar**, replace **naviseccli** with **java -jar navicli.jar**.

Output

None if the command succeeds; status or error information if it fails.

A

CLI error codes

This appendix lists the basic and storage group error codes that the CLI returns. It also includes SnapView and MirrorView error codes, although these applications are explained in other manuals. The numbers proceed sequentially.

Major topics are:

- Basic command error codes A-2
- Storage group command error codes A-5
- SnapView, MirrorView, and other command error codes A-7
- Feature command error codes A-15

Basic command error codes

Error value	Description
0	No error.
1	Invalid command line parameters.
2	Too few parameters.
3	Too many parameters.
4	Invalid bind type.
5	Invalid LUN number.
6	Invalid rebuild time.
7	Disk names for groups of RAID type 1/0 must have an even number of arguments.
8	Invalid number of disks in **bind** command.
9	Invalid disk name specified.
10	An enclosure containing one or more of the disks is not present.
11	Disk already bound or binding.
12	Disk is empty or missing.
13	Invalid stripe size.
14	Disk name not unique; all names in disk-name must be unique.
15	Invalid cache flags.
16	Invalid default owner.
17	Incorrect number of **chglun** parameters.
18	Unable to determine name of target host machine.
19	Enable/disable flag invalid.
20	Invalid usable cache size.
21	Invalid page size.
22	Invalid watermark value.
23	High watermark less than low watermark.

Error value	Description
24	No device name listed on command line.
25	Invalid idle threshold.
26	Invalid idle delay.
27	Invalid write aside size.
28	Disks must be on separate buses for bind.
29	The Agent was unable to configure any devices.
30	LUN does not exist.
31	LUN already exists.
32	Cannot get current working directory for firmware command.
33	Illegal position for hot spare.
34	Invalid read cache value.
35	Invalid read cache size.
36	Invalid write cache value.
37	Invalid write cache size.
38	Invalid RAID 3 cache size.
39	Cannot access device.
40	Switch not supported.
41	Command is not supported.
42	Unknown error.
50	Agent - Memory allocation error.
51	Agent - Invalid device name.
52	Agent - Host connection not found.
53	Agent - SP not found.
54	Agent - Invalid SP suffix.
55	Agent - Invalid LUN number.
56	Agent - Invalid page size.

Error value	Description
57	Agent - Invalid command line switch.
58	Agent - Error **bind** command.
59	Agent - Error **chglun** command.
60	Agent - Error **unbind** command.
61	Agent - Error **firmware** command.
62	Agent - Error **trespass** command.
63	Agent - Error **rebootSP** command.
64	Agent - Generic error.
65	Agent - Unknown error.
66	Error returned from Agent.
67	RAID 3 does not support write caching
68	RAID Group - Invalid RAID Group ID.
69	RAID Group - Valid values for trespass option are a and b.
70	RAID Group - Valid values for priority option are ASAP, High, Medium, and Low.
71	RAID Group - Valid values for lex option are yes and no.
72	RAID Group - RAID Group not found.
73	RAID Group - RAID Group not supported on this system.
74	RAID Group - Valid values for rm option are yes and no.
75	RAID Group - Valid values for sq option are mb, gb, sc, and bc.
76	RAID Group - Valid values for pl option are bf, ff.
77	RAID Group - Valid values for sp option are a and b.
78	RAID Group - Specific Disk download not supported.
79	RAID Group - This RAID Group has LUNs in it. Unbind them and run removerg again.
80	Zerodisk command failed.
81	Zeroing not supported.

Storage group command error codes

Error value	Description
82	This version of the FLARE software does not support Access Logix (SAN or shared storage) systems.
83	The group name entered does not match any Storage Groups for this storage system.
84	The HBA UID specified is not known by the storage system.
85	The LUN number specified is not a bound LUN number.
86	Fairness not supported.
87	The retyped password does not match (case sensitivity not checked).
88	Server could not be found, or is not running an Agent.
89	Invalid switch combination.
90	The UID (unique id) you entered does not match any Storage Groups for this storage system.
91	This version of FLARE software does not support the warm reboot feature.
92	Setpath cannot be used to map to the special default Storage Group.
93	Invalid number of disks in RAID Group.
94	This version of FLARE software does not support the Dual Simultaneous Access.
95	This name identifies more than one Storage Group. Please identify the Storage Group that you wish to perform this operation on by providing its unique identifer(uid).
96	Inaccessible command.
97	New storage-system serial number must be a 12-character or less alphanumeric value.
98	Cannot perform inquiry.
99	Cannot read block data.
100	Cannot write to file.
101	Cannot open pipe.

Error value	Description
102	The host specified is not known by the storage system.
103	Network name size is too big.
104	Network admin not configured.
105	Not a privileged user.
106	Read only access.
176	Invalid contact information.
108	Invalid host description.
109	Invalid auto configuration.
110	Invalid privileged user list.
111	Invalid interval.
112	Invalid baud rate.
113	Invalid log size.
114	Invalid managed device.
115	Storage-system option not available.
116	Invalid megapoll value.
117	This version of Agent does not support Remote Agent Configuration.
118	Invalid use of explicit device names value.
119	The valid value of baud rate is 9600 or 19200.
120	This option is not supported.
121	Error while parsing file.
122	All of the specified users are already in the privileged user list.

SnapView, MirrorView, and other command error codes

For additional codes, see the CLI manual for your software.

Error value	Description
123	Snapshot does not exist.
124	This version of FLARE software does not support SnapView.
125	Invalid SP name.
126	Reserved LUN pool does not exist.
127	Package number invalid.
128	This version of FLARE software does not support nondisruptive software installation (NDU).
129	Cannot open this file.
130	File does not exist.
131	RAID type must be **r1** (RAID 1), **r3** (RAID 3), **r5** (RAID 5), or **r1_0** (RAID1/0).
132	Multiple subcommands specified. Check syntax.
133	Disk for PSM must be on DPE bus 0.
134	Configuration does not exist.
135	Configuration already exists.
136	Size specified is too small.
137	Configuration does not exist. Run the navicli **initializearray** command to configure the system.
138	First option must be a subcommand.
139	Cannot create RAID Group for PSM (Persistent Storage Manager).
140	Name or UID (unique ID) is required.
141	Invalid name specified.
142	Image UID is required.
143	Name and LUN are required.
144	Storage-system UID (unique ID) and LUN UID are required.

145	Mirror not found.
146	Image not found.
147	Synchronized rate cannot be changed since input image is primary.
148	Name and UID both specified.
149	Invalid reserved LUN pool.
150	Invalid session.
151	Session does not exist.
152	Session is stopping.
153	Invalid snapshot.
154	Snapshot does not exist.
155	The -o option requires “-all” or “-filename.”
156	Path to store files is required.
157	Cannot specify both “-all” and “-filename.”
158	Enter file index or “quit.”
159	Invalid input.
160	Index is out of range.
161	File not found.
162	Space not available to retrieve file.
163	Specified feature not supported.
164	Feature must be specified.
165	Cannot specify both '-lun' and '-lunuid' .
166	Invalid Storage Processor name.
167	PSM (Persistent Storage Manager) is not broken.
168	PSM (Persistent Storage Manager) is broken. Cannot list or create PSM.
169	LUN cannot be unbound.
170	Operation not supported on this type of storage system.
171	Incompatible arguments. Invalid storage-system serial number.

172	Directory not specified.
173	Invalid number of blocks.
174	Number of blocks not specified.
175	Reading of data not supported on this storage system.
176	Invalid snapshot World Wide Name (WWN).
177	Invalid storage-system serial number.
178	Navicli '-f' option required to store data in file.
179	Invalid IP address format.
180	Storage Group cannot be shared.
181	Invalid HLU number.
182	Invalid ALU number.
183	Invalid port ID.
184	Remote server cannot be managed.
185	Email response test failed.
186	Emailpage response test failed.
187	Modempage response test failed.
188	SNMP response test failed.
189	Phone home response test failed.
190	Mandatory switch for email/emailpage.
191	Mandatory switch for modempage.
192	Mandatory switch for SNMP.
193	Only one message or file can be specified.
194	Valid dial string contains only digits, parentheses, hyphen.
195	File does not exist or cannot open.
196	Specified user already exists.
197	The offset switch is not supported for this storage system.
198	Valid COM port number is 1,2,3,or 4.

199	Valid dial command is atd, atDp or atD.
200	Valid message delay contains only ",,," (one or more commas).
202	Target LUN number is missing.
203	Session name is missing.
204	SnapView multiple session feature is not supported.
205	Cannot specify both snapshot name and snapshot ID.
206	Cannot specify both -mode and -simulation.
207	This command is not supported on remote host.
208	Switch -pathname must be specified.
209	Get local server attributes failed.
210	This version of FLARE software does not support Hi5 RAID type.
211	Only one of the switches -snapshotid, -snapshotname, or -lun can be specified.
212	Specified session and snapshot must be based on the same target LUN.
213	Cannot add LUN to reserved LUN pool; the maximum number of reserved LUNs has been allocated.
214	Cannot add LUN to reserved LUN pool; the maximum number of reserved LUNs that can be added is *n*.
215	The HLU (host LUN) number you specified cannot be found.
216	This command must be issued from the SP to which the LUN will trespass.
217	Invalid bus or enclosure number.
218	Invalid WWN seed.
219	Invalid EMC part number.
220	This RAID Group has maximum number of LUNs already.
221	Not enough reserved LUNs in the specified SP's reserved LUN pool.
222	This LUN cannot be added to the Storage Group since it is participating in a remote mirror.
223	Allocate log must specify LUN with valid owner.

224	This request has been issued through the SP that is not the current owner of the targeted LUN.
226	Invalid NDB password.
227	Insert test event failed.
228	The **-addroffset** switch is supported only for a non-destructive bind.
229	The **-addroffset** switch must be supplied for a non-destructive bind.
230	Cannot unbind LUN, PSM LUN that is not double faulted.
231	Cannot unbind LUN because it is in use as an active hot spare.
232	Cannot unbind LUN because a feature of the storage system is using it.
233	Cannot unbind LUN because it is contained within a Storage Group.
235	Cannot display LUN WWNs and update LUN map information at the same time.
277	Error: **-phonehome** response test is not supported on the targeted Agent. Please use **-ipconnecthome** or **-mdmconnecthome** instead.
278	Response using modem from Agent on SP is not supported.
279	Error: **-ipconnecthome** response test failed.
280	Error: **-ipconnecthome** is not supported.
281	Error: **-mdmconnecthome** response test failed.
282	Error: **-mdmconnecthome** is not supported.
283	Error: **-connecto** and **-routerip** are mandatory.
284	Error: **-modemnum**, **-connectto**, and **-method** are mandatory.
285	Error: **-smtpmailserver**, **-destaddress**, and **-serialnumber** are mandatory
286	Error: **-emailhome** response test failed.
287	Error: invalid modem method. Valid method should be one of **\"Direct Dial\"**, **\"UUNET WAN\"**, **\"UUNET SYM\"**, **\"UUNET EQN\"**, **\"UUNET JTO\"**, **\"UUNET EQT\"**, **\"UUNET GEN\"**,**\"UUNET GRC\"** and case sensitive.
288	Cannot add a hot spare to a Storage Group.
289	**Chglun** parameter not supported on a non-Flare LUN.

290	Unable to bind the metaLUN, use CLE command **metalun -destroy** instead.
291	This version of FLARE software does not support **getsniffer** or **setsniffer** on metaLUNs.
292	You must issue this command from the SP that owns the LUN on which the verfiy will be run.
293	Cannot specify both **-feature** and **-featurename**.
326	Invalid switch specified for a reserved snap session.
327	Invalid switch specified for a reserved snap LUN.
328	Cannot activate reserved snapshot LUN.
329	Cannot deactivate reserved snapshot LUN.
330	Cannot stop a reserved session.
331	Cannot remove a reserved snapshot LUN.
332	Cannot modify a reserved snapshot LUN.
333	Cannot start rollback on a reserved session.
334	Cannot change rollback session as it is reserved.
335	The format of decimal number specified is inappropriate.
336	Precision of the decimal number specified exceeds the maximum precision of *n* (where *n* varies depending upon the situation).
338	Cannot add a snapshot to Storage Group because the snapshot specified is reserved.
344	Use the **-nolocal** switch if Agent version is not at least version 6.5 when setting SPS time.
345	Do not use the **-nolocal** switch if Agent version is version 6.5 or greater when setting SPS time.
346	This storage system does not support any operation on cache memory card.
347	This storage system does not support any operation on shutting down the array.
348	This storage system does not support any operation on LUN cache dirty condition.
349	Error parsing **.lst** file.

350	Cannot open **.lst** file.
351	Syntax error in **.lst** file.
353	The LUN list contains duplicate LUN number.
354	Invalid -autorestart value. Use \"on\" or \"off\"."
355	Cannot start a session while the LUN is migrating.
356	Cannot create a snapshot while the LUN is migrating.
357	These two switches cannot be used together.
358	Cannot add a Hot Spare LUN to the Reserved LUN Pool.
359	Snapshot name with more than 63 characters is invalid.
360	This storage system does not support managedby operation.
361	This storage system does not support any operation on cache memory card.
362	Valid values for sq option on this subsystem type are mb and gb.
363	The specified SAN Copy destination does not exist.
364	Cannot expand raid group with first four disks.
365	Cannot expand raid group with first four disks.
366	Cannot access host.
367	The source LUN for this copy session must be on the SAN Copy/E storage system.
368	Invalid Port WWN or LUN number.
369	Only one of the following parameters can be used to change a source: -chgsrcbywwn and its contents OR -chgsrcbylun and its contents OR -chgsrcbyportwwn and its contents.
370	Failed to remove the following registered initiator record(s) because the host is still logged in.
371	This lun does not have LUN cache dirty condition. No operation is done.
372	The specified host is not currently connected to the storage group.
373	The database drive is double faulted. Cannot unbind LUN.

374	This command must be issued to the SP which is the default owner of the LUN.
375	Only persistent sessions are allowed on this storage system.
376	A destination port WWN, LUN WWN and number must not be specified simultaneously.
377	ID was not specified in the command, an auto generated ID was assigned.
378	RAID Group has 0 LUNs bound.
379	RAID Group does not exist.
380	During the software upgrade few of the pre installation rules have failed.
381	Specified raid group does not contain any luns owned by target SP.
382	Target SP does not own any luns.
383	The RaidGroup list contains duplicate RaidGroup number.
384	Sniff for Hot Spare Luns is no longer under user control.
385	Preinstallation check requires JRE, which is missing, upgrade your machine with JRE version 1.4.2 or higher.
386	Preinstallation check requires a valid scope, username, and password.
387	RebootPeerSP Command Failed.
388	Unknown/unexpected error while running SIW rules check.
389	An array name can not contain a special character.
390	The software performing the preinstallation check failed to login to the array due to a bad username and password or due to an incorrect security file.
391	Resume information not supported on this system.
392	ResetAndHold Command Failed.
393	Invalid Parity Elements value, valid values are 1 or 8.
394	One or more of the specified disks is empty, removed, or bypassed.

Feature command error codes

The following tables list decimal and hexadecimal values and descriptions of feature command errors, which includes mapped RAID errors, LUN migration errors, Connection and iSNS (iSCSI) errors, and Domain and Security errors.

General feature command errors

Error value (decimal)	Error value (hexadecimal)	Description
19712	0x4D00	Management Server is not available.
19713	0x4D01	Error encountered during command execution.
19714	0x4D02	Invalid command entered.
19715	0x4D03	Command is running. Client should poll for status.
19920	0x4DD0	Invalid command.

Mapped RAID errors

Error value (decimal)	Error value (hexadecimal)	Description
19840	0x4D80	Invalid MetaLUN command.
19841	0x4D81	MetaLUN feature object is not available.
19842	0x4D82	MetaLUN feature is not enabled.
19843	0x4D83	Unexpected error occurred during MetaLUN command execution.
19844	0x4D84	Specified MetaLUN is not available.
19845	0x4D85	Specified base LU is not available.
19846	0x4D86	Specified LU is not available.
19847	0x4D87	Destroy multiple ALUs failed.
19848	0x4D88	Destroy multiple ALUs was only partially successful.

LUN Migration errors

Error value (decimal)	Error value (hexadecimal)	Description
21248	0x5300	Invalid LUN Migration command.
21249	0x5301	LUN Migration feature object is not available.
21250	0x5302	LUN Migration feature is not enabled.
21251	0x5303	Unexpected error occurred during LUN Migration command execution.
21252	0x5304	LUN Migration object not available.
21253	0x5305	LUN Migration source LU is not available.
21254	0x5306	LUN Migration base cannot be a hot spare.
21255	0x5307	LUN Migration destination LU is not available.

Connection and iSNS (iSCSI) errors

Error value (decimal)	Error value (hexadecimal)	Description
21280	0x5320	Invalid connection command.
21281	0x5321	Connection feature object is not available.
21282	0x5322	Connection software is not enabled.
21283	0x5323	Unexpected error occurred during connection command execution.
21456	0x53D0	Invalid isns command.
21457	0x53D1	Isns feature object is not available.
21458	0x53D2	Isns enabling software is not installed.
21459	0x53D3	Unexpected error occurred during isns command execution.

Domain and security errors

Error value (decimal)	Error value (hexadecimal)	Description
21408	0x53A0	Invalid domain command.
21409	0x53A1	Domain feature object is not available.
21410	0x53A2	Unexpected error occurred during domain command execution.
21360	0x5370	Invalid security command.
21361	0x5371	Security feature object is not available.
21362	0x5372	Unexpected error occurred during security command execution.

B

Unsupported commands in Secure CLI

This appendix provides a list of commands that are not supported by Secure CLI. In addition, any command not listed in the following table that is issued to a Host Agent, is not supported by Secure CLI.

Unsupported commands

Command	Issue command using
lunmapinfo	Classic CLI (navicli)
managefiles (Java CLI version only)	Java CLI (navicli.jar)
ndu	Classic CLI (navicli)
register	Classic CLI (navicli)

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