D-Link System, Inc.™

xStack Storage DSN-1000 / 2000 / 3000 / 4000 / 5000 series

Command Line Interface User's Guide

Version 1.5

Trademarks

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Preface

This document is intended for storage managers, administrators, and developers responsible for using the command-line interface (CLI) to configure, manage, or develop custom applications for the D-Link storage array from D-Link. This document assumes that the user is computer literate, familiar with storage array products, has a basic understanding of storage products and concepts, and has previous experience using a CLI.

The CLI is intended for users who have significant storage management expertise and previous experience using a CLI. Improper CLI use can cause undesired results.

Document Conventions

This document uses the following conventions to draw your attention to certain information.

Notes

Notes provide information that deserves special attention. They are preceded by:

Cautions

Cautions contain information, which if not followed, can cause damage to the D-Link storage system. They are preceded by:

Warnings

Warnings contain information, which if not followed, can cause damage to the D-Link storage system and to the person installing it. They are preceded by:

Typographic Conventions

The following typographic conventions are used in this document.

- **Bold text** = indicates commands and keywords that you enter literally as shown. When appropriate, bold text is also used to call attention to text.
- *Italics* = indicate arguments for which you supply values.
- < > = angle brackets denote a descriptor to be specified.
- [X] = square brackets enclose an optional item.
- | = a vertical bar indicates a choice within an optional or required set of items.
- [x|y] = square brackets enclosing items separated by a vertical bar indicate an optional choice.
- {x|y} = braces enclosing items separated by a vertical bar indicate a required choice.
- [x {y | z}] = nested sets of square brackets or braces indicate optional or required choices within optional or required items. Braces and a vertical bar within square brackets indicate a required choice within an optional item.
- `Courier` typeface is used to represent commands and command prompts.

How to Use This Document

This CLI User's Guide is intended as a general overview of the operation of the CLI. This User's Guide also provides concepts and terminology specific to understanding the use of the CLI. It is intended that the reader can start to use the CLI with this understanding, and later refer to this User's Guide as a reference for details on the commands.

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Chapter 1 Introduction

The CLI is a line-oriented user interface that provides commands for configuring, managing, and monitoring an D-Link storage array. The CLI can be used as an alternative or supplement to the Management Center graphical user interface (GUI).

Using the CLI can be useful in the following scenarios:

- Users who want to develop tools and applications that utilize D-Link functions.
- Users that do not have access to a Web browser or the Internet.
- Users who prefer to use a CLI rather than a graphical user interface (GUI).
- Users that want to perform multiple tasks. CLI users can create a sequence of commands that are connected together to achieve a very flexible range of results. By comparison, there is no simple way to connect the output of one GUI program to the input of another.
- Users who perform activities using scripts that contain one or more command lines.

For the latest information about the CLI, consult the Interoperability Matrix on the D-Link Web site: www.dlink.com.

This chapter provides an introduction to the CLI. The topics covered in this chapter are:

1.1 Contexts

All actions performed with the CLI are done in a specific "context." A context is a reference to a specific physical or logical object on the system. Examples of contexts are:

- The system itself (referred to as the root context),
- A disk drive in the system.
- A volume that was created on the system.
- An iSCSI Initiator object that has been registered with the system.

When you start the CLI, for example, you interact with the root context. There is one instance of the root context on an D-Link storage array. In this guide, the root context is referred to as `System`.

Every context has a unique ID. When you are in a context, the prompt indicates the specific object with which you are communicating. For example:

- If you communicate with the root object, the prompt takes the form of the IP address of the root. For example:

```
192.168.59.25 ::
```

- In the controller context, the prompt displays the unique ID in brackets. For example:

```
Controller[A] ::
```

- In the volume context, the unique ID is the volume name shown in brackets. For example:

```
Volume[Mynewvolume] ::
```

1.2 Commands

Commands cause some action to happen or a state to change. For example, the command `createVolume` creates a new volume and the command `addInitiator` adds an iSCSI initiator to the list of known initiators for an array. For a complete list of the commands available in the CLI, see Chapter 5.

The CLI provides a special set of commands called global action commands. Global action commands indicate an action that you want to perform and precede other commands and properties on a command line. For example, the global action command `Show` can be used with the property `Controllers` to return information about an array's controller(s) from the `System` context:

```
192.168.59.25 :: show controller[a]
ID          = A
Status      = OK
IsActive    = true
SlotNumber = 0
SerialNumber    = 00001
DriveSlots = 12
NumFrontPorts  = 8
DisplayName     = Blade A
SoftwareVersion     = 2.5.1.21
IsAlternateSoftwareVersionPresent  = true
AlternateSoftwareVersion    = 2.5.1.21
BoardType  = 0009
BoardTypeRevision  = XC05
I8kHwVersion    = 1.0.0.0
I8kSwVersion    = 0.1.0.0
MpuSwVersion    = 2.5.1.21
BindFailReason = Bind_OK
BladeHealth     = Healthy
BladeState = Bound
BladeType  = SFF
PersistenceSetting = Unchanged
BatteryState    = Failed
BufferMemDimmCnt    = 2
BufferMemSize  = 2048
SystemMemDimmCnt    = 2
SystemMemSize  = 512
SystemTime = 13:18:27
Ports       = 8 Ports
LAGs        = 8 LAGs
ManagementPort = ManagementPort [192.168.59.25], Status=OK
BasePool    = [BaseA], 2 disks
```

You can also chain commands on a command line and have the CLI execute them in sequence by separating each command with a semicolon (;). The following command line, for example, tells the CLI to perform two `Pop` operations and then create a 30 GB volume named Engineering.

```
Pop; Pop; createVolume Engineering 30GB mirror
```

For a complete list of the global action commands available in the CLI, see Chapter 4.

1.3 Properties

Properties are items that you show using the global action command Show. For example, the command `Show softwareVersion` returns the current version of software running on the array. Some properties can also be set. For example, the property `Name` in the `Volume` context lets you set the name of an array using the global action command `Set`.

```
Volume[Parity3] :: set name ThisIsMyParityVolume
```

For a complete list of the properties available in the CLI, see Chapter 5. This chapter includes the global action commands used with the properties.

1.4 Understanding the CLI Hierarchy

The CLI consists of a hierarchy of contexts, commands, and properties. For example, Figure 1-1 shows the relationships between contexts, commands, and the properties in the root context. Navigation within the CLI hierarchy is achieved ether by using properties that are of type Context or ContextList, or by using commands that return Contexts (such as `createVolume` and `addInitiator`).

In Figure 1-1, the arrows represent command- and property-based navigation:

- Single arrows show a link from one starting context to one resulting context (for example, from `System` to `diskList`).
- Double arrows show a link from one starting context to one resulting context as a result of selecting from a ContextList (for example, from `System` to a specifically selected controller, from `Controller` to a specifically selected physical port, or from `DiskList` to a specifically selected `Disk`).

Some contexts have both single and double arrows. `PhysicalPort`, for example, has a single LAG associated with it (indicated by a single arrow from `PhysicalPort` to `LAG`). However a LAG can have many physical ports(indicated by a double arrow from `LAG` to `PhysicalPort`).

Navigating within the CLI hierarchy is achieved using the following commands:

- `Push` moves down one level in the CLI hierarchy and adds the context to the push/pop stack.
- `Select` changes to the specified context, without adding the context to the push/pop stack.
- `Pop` moves up either one level in the CLI hierarchy (if you used the `Push` command to navigate down the hierarchy) or to the root level (if you used the `Select` command to navigate down the hierarchy).

For more information about these global action commands, see Chapter 4.

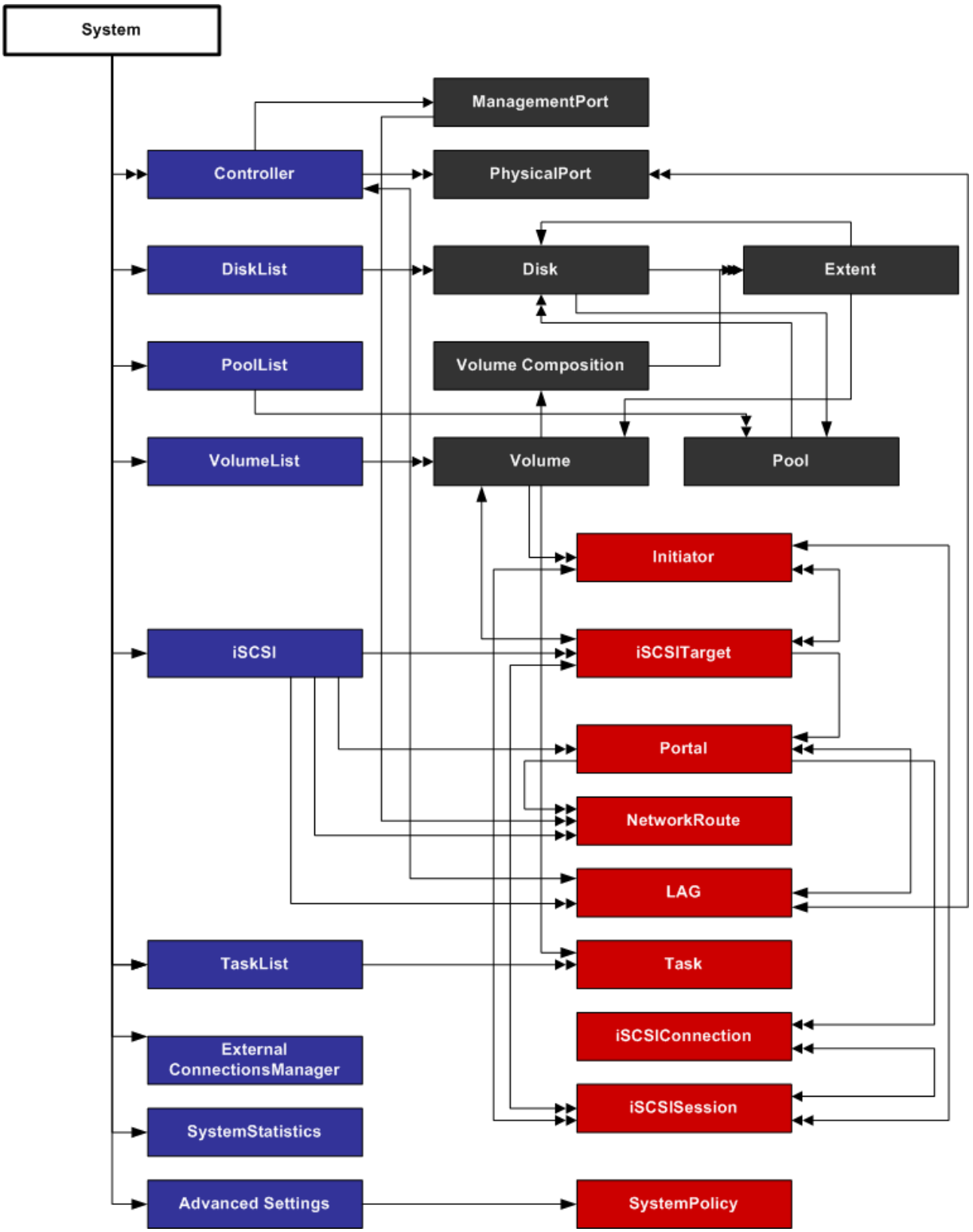


Figure 1-1. Hierarchy of the System Context

1.5 Members

Each context has one or more members associated with it. A member can be a value property, context property, context list, or command. Table 1-1 describes these types of members.

Table 1-1. Members

Member	Description	Examples of Data Types for This Member
Value properties	Value properties can be read-only or read-write: ▪ Read-only properties only support **Show**. ▪ Read-write properties support **Show** and **Set**.	▪ Number ▪ String ▪ Enumeration (see section 1.6) ▪ Boolean ▪ Date/Time
Context property	Context properties can be read-only or read-write.	▪ **DiskList** on the root context. ▪ **LAG** on PhysicalPort
Context lists	Types of entities that can be displayed or operated upon from the current context.	▪ **Controllers** on the root context ▪ **Disks** on **DiskList**
Commands	Commands support **Do**.	▪ **CreateVolume** on the root context ▪ **Reconfigure** on **Volume**

1.6 Enumerators

Enumerators are a data type, much like Number, String, Boolean, and Date/Time. Enumerators have a discrete list of possible values that can be used in a property or command argument . Examples include:

- **`VolumeComposition`** (for example, JBOD, Stripe, Mirror, Parity, StripeMirror)
- **`StripeDepth`** (for example, 32KB, 64KB, 128KB, 256KB, 512KB, 1024KB, 2048KB)

1.7 Special Keywords

When working in a context that can contain one or more members, the special keywords of `$first` and `$last` let you reference the first or last entry in the list of members, although the order of entries in the list may be random. This is useful if you use advanced scripts or perform a repetitive operation that should continue until the entire list is empty, without needing to indicate the names or index values for the specific members of the list. For example, you can delete all volumes on an array by specifying the following command repeatedly until an error occurs (when no more volumes exist):

```
do volumelist.volume[$last].delete
```

Chapter 2 Installing the CLI

This chapter describes how to install the CLI. The topics covered in this chapter are:

2.1 Supported Operating Systems

The CLI supports the following operating systems:

- Microsoft Windows XP Professional Service Pack 2
- Microsoft Windows Server 2003 R2
- Microsoft Windows Server 2008
- Microsoft Windows Vista Business and above

2.2 Installing the CLI

To install the CLI, use the following procedure.

1. Start your Web browser.

   In the browser address field, enter the IP address of the management port. The home page in Figure 2-1 appears.

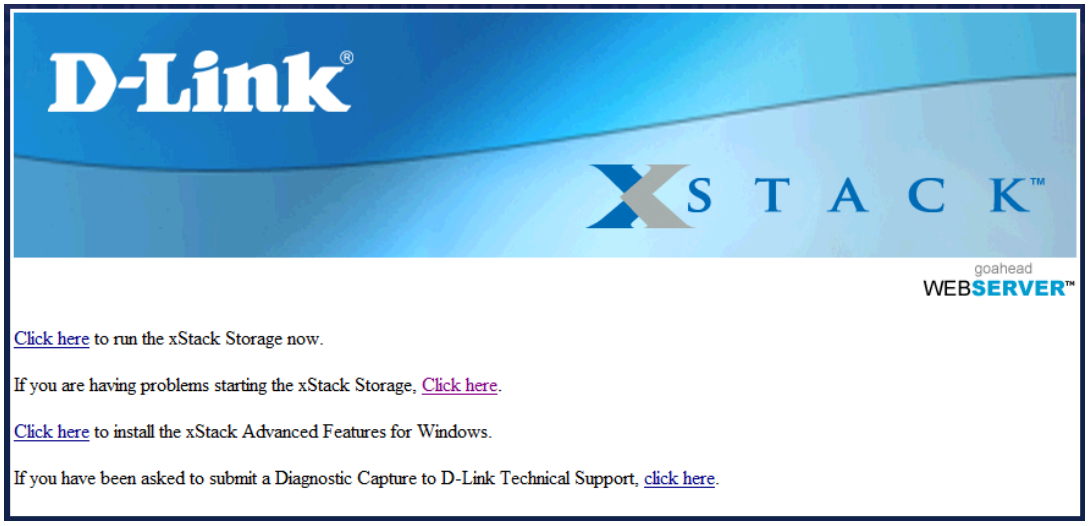


Figure 2-1. Management Center Home Page

2. From the home page, click **Click here to install the Advanced Features for Windows.** The file download security warning message in Figure 2-2 appears.

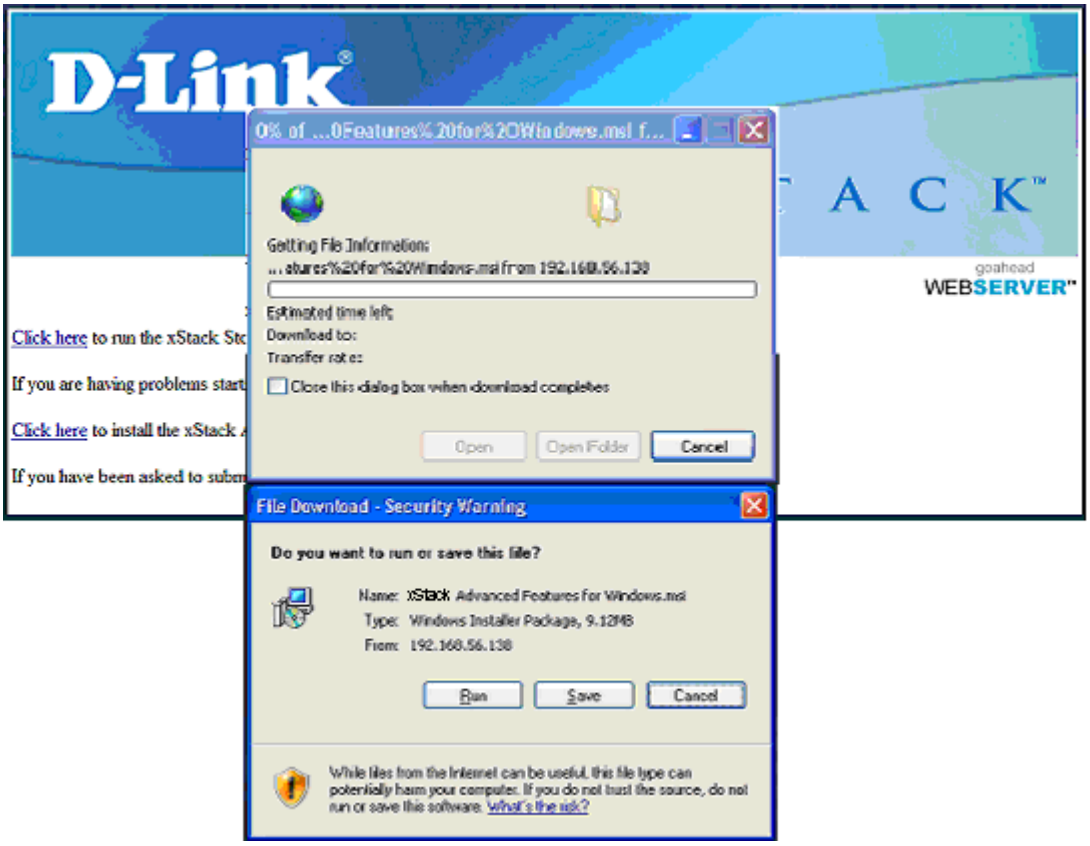


Figure 2-2. File Download Security Warning Message

3. Click **Run** to run the installer.
4. If the security warning appears in Figure 2-3, click **Run**. A Welcome page appears (see Figure 2-4).

Figure 2-3. Secondary Warning Message

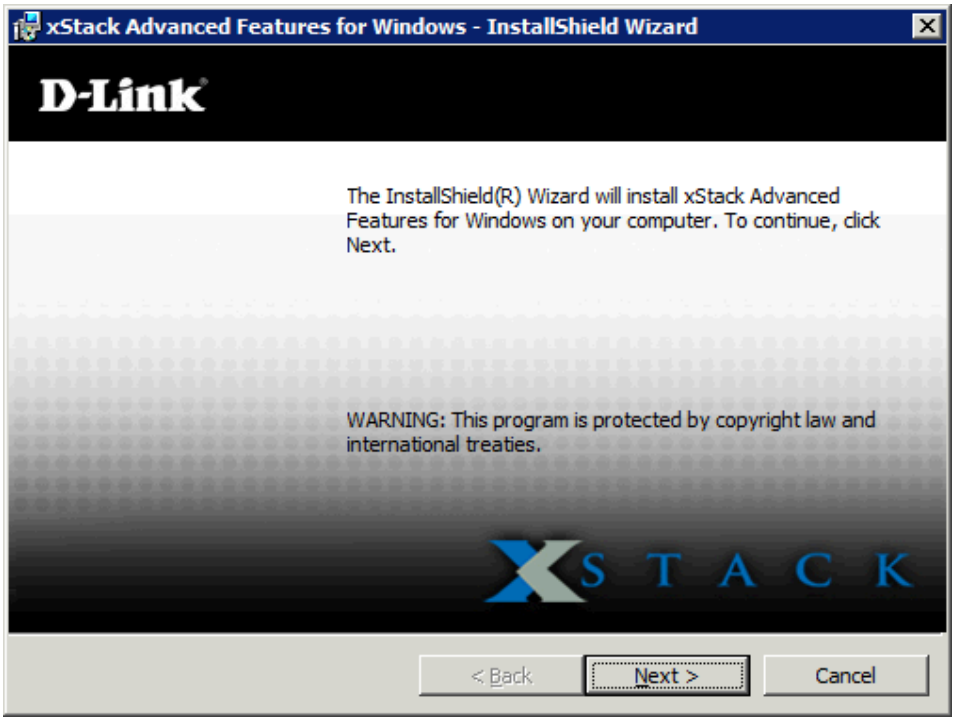


Figure 2-4. Welcome Page

5. Click **Next**. The License Agreement appears (see Figure 2-5).

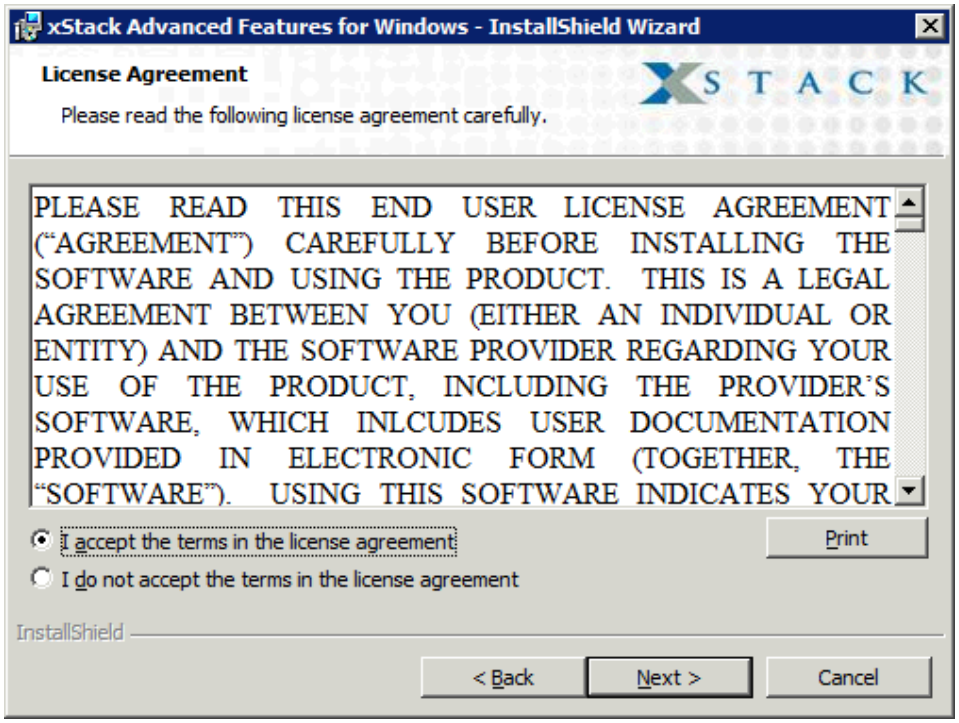


Figure 2-5. License Agreement

6. Read the License Agreement, then click **I accept the terms in the license agreement** and click **Next**. (You must accept the terms of the license agreement to proceed.) The Destination Folder screen appears (see Figure 2-6).

To obtain a printed copy of the License Agreement, click **Print**.

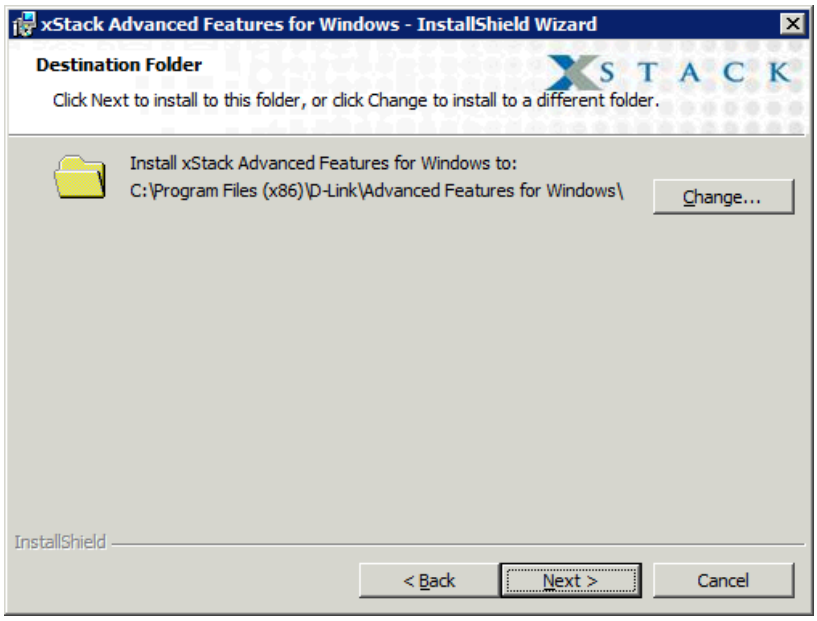


Figure 2-6. Destination Folder Screen

7. Either accept the default destination folder shown, or click the **Change** button and specify a different installation location.
8. Click **Next**. You are prompted to select a setup type (see Figure 2-7).

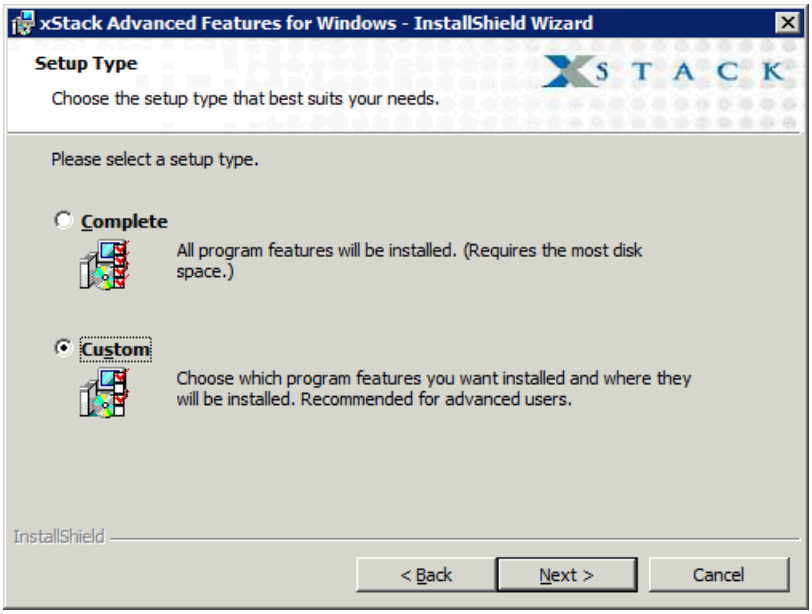


Figure 2-7. Setup Type Screen

9. Select whether you want to perform the complete or custom setup. The complete setup installs the Windows VDS Provider and the CLI, and displays the screen in Figure 2-9. If you only want to install the CLI, select **Custom** and make the appropriate selections in the screens that appear (see Figure 2-8); then click **Next** until the screen in Figure 2-9 appears.

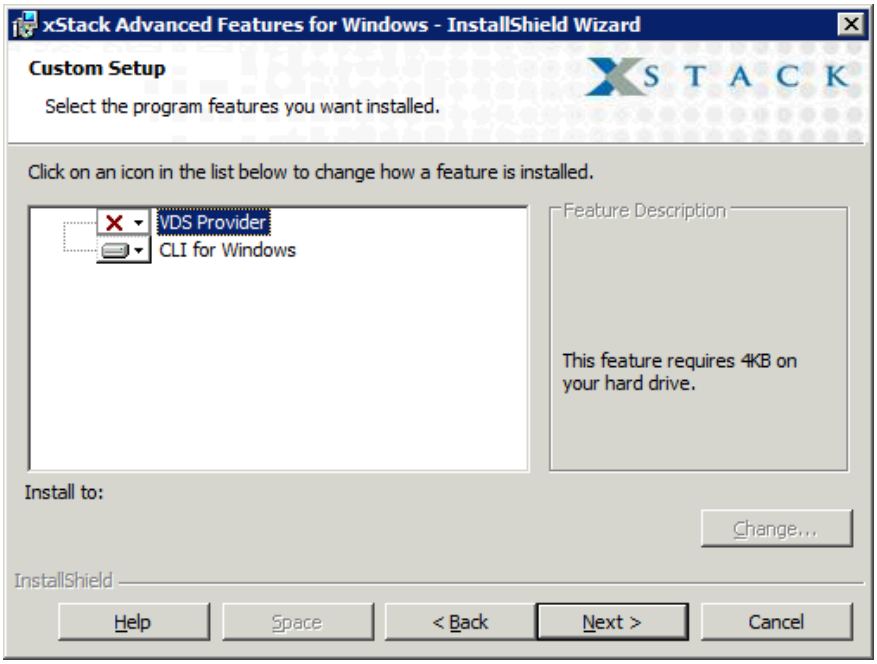


Figure 2-8. Custom Setup Screen

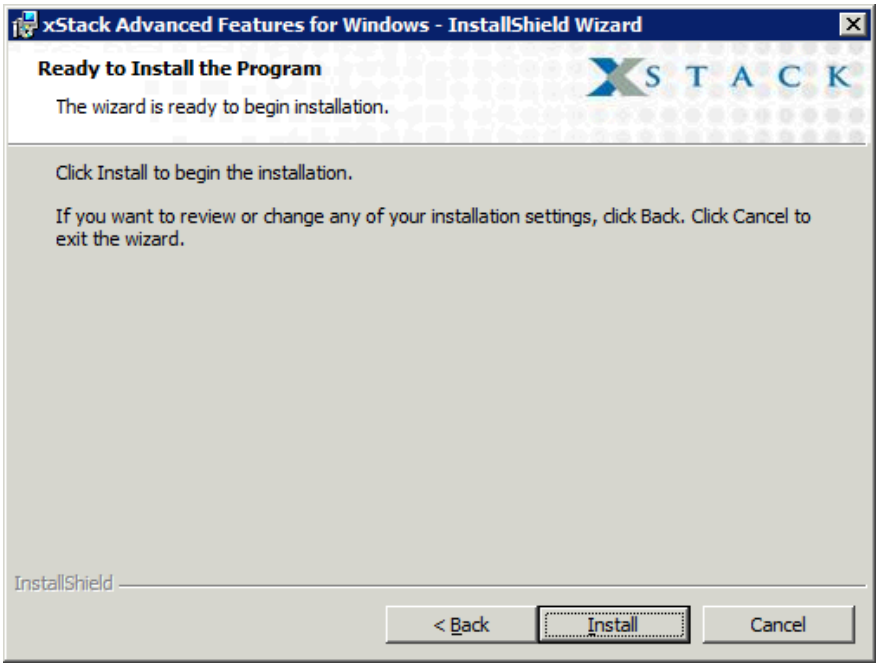


Figure 2-9. Ready to Install the Program Screen

10. With the Ready to Install the Program screen displayed, click **Install**. A progress bar shows the progress of the installation (see Figure 2-10). As part of this process, a shortcut is placed on your Windows desktop for starting the CLI.

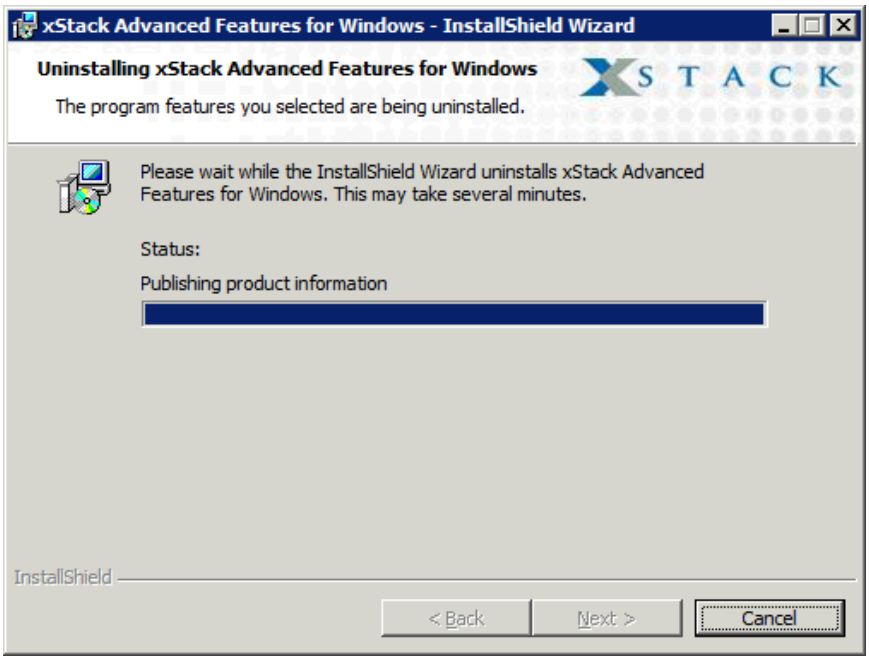


Figure 2-10. Progress Bar

11. When the installation is complete, the screen in Figure 2-11 appears. Click **Finish** to close the screen.

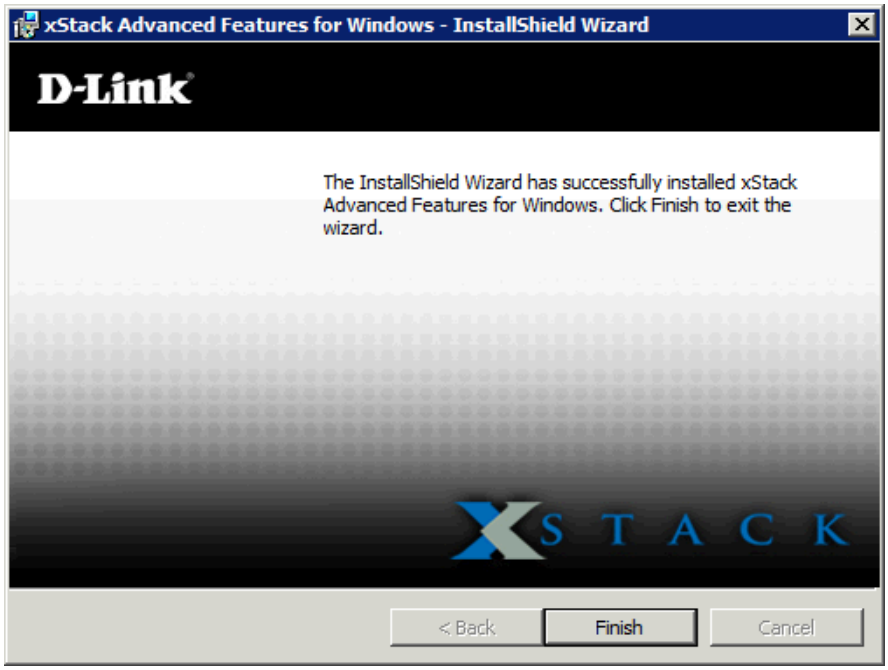


Figure 2-11. InstallShield Wizard Complete Screen

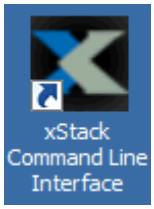
2.3 Starting the CLI

The CLI can be started using either the CLI shortcut installed on your Windows desktop or the Run command. The following sections describe these methods for starting the CLI.

2.3.1 Using the CLI Shortcut to Start the CLI

When you installed the CLI, a desktop shortcut was automatically placed on your desktop. To start the CLI using the shortcut, use the following procedure.

1. Double-click the following shortcut on your Windows desktop:



A **HOSTNAME IP address** prompt similar to the one below appears.

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) :
```

2. Enter the IP address of the management port for the array with which you want to communicate (for example, 192.168.59.25).

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) : 192.168.59.25
```

3. Press the Enter key. You are prompted for a username.

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) : 192.168.59.25
Username :
```

4. Enter a username (the default username is **admin**) and press Enter. You are prompted for a password.

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) : 192.168.59.25
Username : admin
Password :
```

5. Enter a case-sensitive password (the default password is **admin**) and press Enter. For security, each typed password character appears as an asterisk (*). The following actions occur when you press Enter:

- A series of numbers count down from 5 to zero.
- When zero is reached, a **Successful login** message with the IP address of the array you logged in to appears if the login was successful. In the example below, the user has logged in to an array with an IP address of 192.168.59.25.
- A prompt appears that consists of the IP address of the array to which you are logged in followed by two colons (for example, **192.168.59.25 ::**).

You are now at the System level and can issue CLI command lines at the root context, or navigate to and issue commands from subcontexts (see section 1.1).

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) : 192.168.59.25
Username : admin
Password : *****

5-4-3-2-1-0
Successful login to 192.168.59.25 (Name: )
Type "exit" to terminate program, or "help" for supported commands:

192.168.59.25 ::
```

2.3.2 Using the Run Command to Start the CLI

The following procedure describes how to start the CLI using the Windows Run command. With this method, you enter the name of the CLI executable file in the **Open** field of the Windows Run dialog box. If you know the IP address of the array management port, username, and password, you can add them to the command line following the name of the CLI executable file. If desired, you can also specify the name of a script that you want the CLI to automatically run at login.

1. Click the **Start** button and click **Run**. The Run dialog box appears (see Figure 2-12).

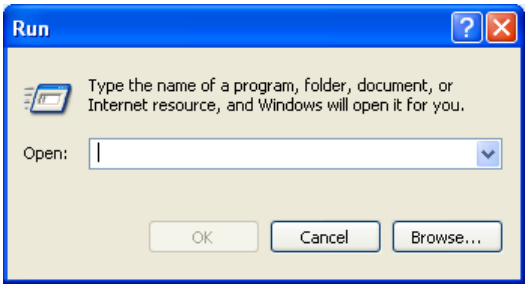


Figure 2-12. Run Dialog Box

2. In the **Open** field, click the **Browse** button. Navigate to the location `Program Files/D-Link, Inc./Advanced Features for Windows` (or the destination location you specified during the installation). Double-click the name of the CLI executable (**cli2.exe**).

3. Optional: To add an IP address of the array management port, username, and password, or script file name after the CLI executable name, or to disable any real-time indications, type the option (which consists of a switch and an entry such as an IP address or hostname) after the name of the CLI executable, as shown in the following steps. Separate the CLI executable filename from these options with a space.

- Adding a system IP address or host name: **`-g <IPAddressOrHostName>`**
  See the example in Figure 2-13. If **`-g`** is omitted, the environment variable **ISA_HOSTNAME** is used. If that environment variable is not defined, you are prompted for an IP address if none is found.

- Adding a username: **`-u <username>`** Adding a password: **`-p <password>`**
  The default username and password are **admin** (see the example in Figure 2-13). If **`-u`** is omitted, the environment variable **ISA_USERNAME** is used. If **`-p`** is omitted, the **ISA_PASSWORD** environment variable is used. If these environment variables are not defined, you are prompted for a username and/or password if none is found.

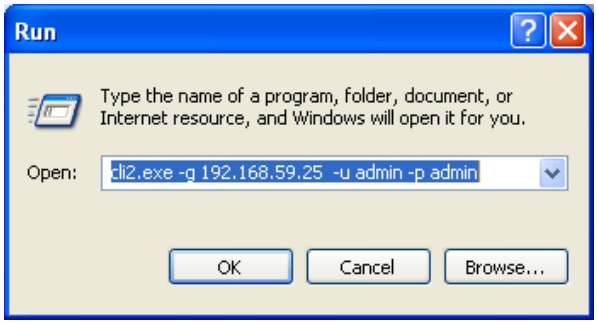


Figure 2-13. Example of Using the –g, -u, and –p Switches

- Running a script: **`-x <scriptFileName>`**
  See the examples in Figure 2-14 and Figure 2-15. The name of the script file referenced in the **Open** field should have the file name **`scriptFileName.cli`**. The file name entered in the **Open** field should not include the **`.cli`** extension. In Figure 2-14, for instance, the command line will have the CLI run a script called `createJbodScript`, which creates a JBOD on the array. The `10GB` following the script name tells the CLI to create a 10 GB volume called `myVolName` on that JBOD. In Figure 2-15, the command line will provide the IP address, username, and password for logging in and run the same script as in Figure 2-14, without creating the 10 GB volume.

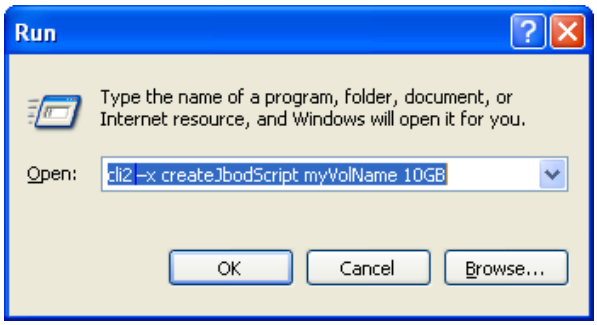


Figure 2-14. Example of Using the –x Switch

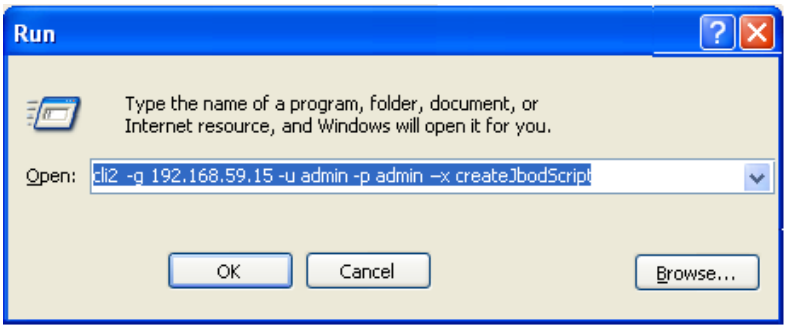


Figure 2-15. Example of Using the –x Switch with the –g, -u, and –p Switches

Because the CLI uses a computer's environment variables if the `-g`, `-u`, and/or `-p` switches are not specified on the command line, it is recommended that you set the environment variables as desired on the machine where the CLI is running. System environment variables are defined by Windows and apply to all computer users. However, you must be an administrator to modify a system environment variable. Changes to the system environment are written to the registry and usually require a restart to become effective.

- Disabling real-time indications: `-I`
  See the example in Figure 2-16. Specify the `-I` switch to enable real-time indications while the CLI is running. This will allow the CLI to provide asynchronous reporting of changed services and may have performance impacts for heavily loaded systems. It is generally recommended that this option not be used unless there is a specific need for it. You can combine the `-I` switch with any other switches.

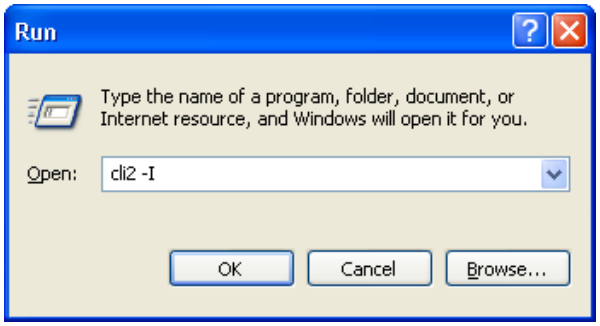


Figure 2-16. Example of Using the –I Switch

4. Click the **OK** button. The following actions occur:

- A series of numbers count down from 5 to zero.
- When zero is reached, a Successful login message with the IP address of the array you logged in to appears if the login was successful. In the example below, the user has logged in to an array with an IP address of 192.168.59.25.
- A prompt appears that consists of the IP address of the array to which you are logged in followed by two colons (for example, **192.168.59.25 ::**).

```
Command Line Interface v2.0.0.119
No HOSTNAME IP address defined (on command line or through ENVIRONMENT)

HOSTNAME IP address (###.###.###.###) : 192.168.59.25
Username : admin
Password : *****

5-4-3-2-1-0
Successful login to 192.168.59.25 (Name: )
Type "exit" to terminate program, or "help" for supported commands:

192.168.59.25 ::
```

You are now at the System level and can issue CLI command lines at the root context, or navigate to and issue commands from sub-contexts (see section 1.1).

If you omitted the IP address, username, and password in step 2, you will be prompted for these before gaining access to the root context.

2.4 Exiting the CLI

To exit a CLI session, type the `Exit` command from the CLI session and press Enter to terminate the CLI program. The `Exit` command is a "global action" command and can be issued from any context.

2.5 Removing the CLI

To remove the CLI from the computer on which it is installed, rerun the installer from the **Advanced Features for Windows** link. When the screen appears with links for repairing or uninstalling the CLI, click the un-installation link to remove the CLI.

You can also use Add/Remove Programs from the Windows control panel to remove the CLI as you would any other Windows application.

Chapter 3 Using the CLI

This chapter describes how to use the CLI. The topics covered in this chapter are:

3.1 General Guidelines

The following sections describe general guidelines to follow when issuing CLI command lines.

3.1.1 Understanding Commands

Commands are organized into two categories, global action commands and context-specific commands. All CLI commands are case-insensitive. For readability, the commands in this guide are shown with a mix of upper-case and lower-case characters.

3.1.2 Global Action Commands

Global action commands can be used within all contexts. For example, the `help` command is a global action command. Issuing this command displays all of the global action and context-specific commands available in the CLI. For a list of all the global action commands, see Table 4-1 on page 34.

3.1.3 Context-Specific Commands

Context-specific commands can be used within the current context only. Context-specific commands are prefaced by the global action command `Do`, `Show`, or `Set`. The following example uses the global command `Show` and the context-specific command `diskList` to get the DiskList information.

```
192.168.59.25 :: Show diskList          ← typed by user
ID = 0                                  ← returned by CLI
Status = OK                             ← returned by CLI
Disks = 4 Disks                         ← returned by CLI
```

For a list of all the context-specific commands, see Chapter 5.

3.1.4 Abbreviating Commands

The CLI lets you abbreviate context-specific command keywords to their fewest unique characters. For example, instead of entering the full command `Show diskList`, you can type `Show d`. If you type an abbreviated command that can match more than one command, an error message is returned and you must retype the command, entering additional characters to make the command unambiguous to the CLI.

```
192.168.59.25 :: Show d                 ← typed by user
ID = 0                                  ← returned by CLI
Status = OK                             ← returned by CLI
Disks = 4 Disks                         ← returned by CLI
```

3.1.5 Editing Command Lines

The CLI allows you to view all previously entered commands by pressing the up-arrow key on your keyboard. Once you have examined a previously entered command, you can move forward in the list by pressing the down-arrow key on your keyboard.

If you view a command you want to reuse, you can edit it or press the Enter key to execute it.

3.1.6 Concatenating Commands

The CLI is ideally suited to handling large batches of tasks by allowing you to chain (or concatenate) commands on a command line using a dot (period). The following command lines provide examples of concatenating commands on a single command line.

Example 1: This command line lists all volumes whose names begin with mynewvol. The square bracket selects a volume that starts with **[mynewvol]**.

```
Show volumeList.Volumes[mynewvol]
```

Example 2: This command line lists all volumes.

```
Show volumeList.Volumes
```

Example 3: This command line grants all iSCSI initiators with access to the volume named mynewvol.

```
volumeList.Volumes[mynewvol].target.grantInitiatorAccess All
```

Example 4: This command line is similar to the one above. However, in this example, quotation marks are added to the `grantInitiatorAccess` argument because it consists of more than one word. The `grantInitiatorAccess` command accepts one argument. In this example, however, the argument consists of two words (**All Initiators**) separated by a space. Including the quotation marks tells the CLI to treat the items between the quotation marks as a single object instead of as two arguments (in which case, the command line would fail).

```
volumeList.Volumes[mynewvol].target.grantInitiatorAccess "All
Initiators"
```

Example 5: This command line deletes the volume mynewvol.

```
volumeList.Volumes[mynewvol].delete
```

3.1.7 Referencing Root Items

There may be times when you are in a subcontext and want to execute commands that are only available at the top (root) context. One way to accomplish this is to use the `Pop` command to reach the root level and then type the command line. Alternatively, you can issue the command line without having to leave the current subcontext by prefacing the command line with the caret (^) character.

The caret character provides a shortcut for executing commands available at the top (root) context from any subcontext. Issuing this command leaves you in the current context. For example, `createVolume` is a command that is available at the root level. If you are in a subcontext and want to issue the `CreateVolume` command, type a caret followed by the command, as shown in the following example.

```
^createVolume Engineering 30GB mirror
```

3.2 Specifying Operating Modes

The CLI provides the following operating modes:

- Output mode – see section 3.2.1.
- Indication mode – see section 3.2.2.
- Stream mode – see section 3.2.3.
- Completion code – see section 3.2.4.
- Echo Command mode – see section 3.2.5.
- Exit Script on Error mode – see section 3.2.6.

Each operating mode operates independently of the other modes, and can be configured independently using the `Mode` command. The following sections describe these operating modes.

To see the status of these operating modes, type **`Mode`** and press Enter. The figure below shows an example of the status information returned.

```
192.168.59.25 :: mode
Mode settings:
        OutputMode = Normal
        IndicationMode = Disabled
        StreamMode = Mixed_STDOUT_STDERR
        CompletionCodeMode = ErrorsOnly
        EchoCommandMode = Disabled
        ExitScriptOnError = Enabled
```

Figure 3-1. Example of Viewing Operating Modes

3.2.1 Output Mode

Output mode allows you to configure the format of the output from the CLI as human-readable, XML, or formatted XML output.

- Normal - output is displayed in human-readable format. This is the default setting and is recommended if the CLI output will be read by people. Figure 3-2 shows an example of this mode when the `Show` command at the root (system) context is issued. If you change to another output mode, type the following command to return to this output mode:

  `Mode outputMode Normal`

```
192.168.59.25 :: show
ID = 192.168.59.25
Status = OK
Controllers = 1 Controllers
DiskList = 4 disks
PoolList = 4 pools
VolumeList = 5 volumes
TaskList = 0 tasks
iSCSI = 1 initiators, 5 targets, 4 ports, 0 portals
ExternalConnectionsManager = ExternalConnectionsManager
Name =
Identity = 192.168.59.25
AdvancedSettings = AdvancedSettings
SystemStatistics = SystemStatistics [0], Status=OK
IsHighAvailabilitySystem = false
```

Figure 3-2. Example of Normal Output

- XML - output is nested together as XML, with XML tags. This selection is useful when a computer program will be receiving and interpreting the output from the CLI. Figure 3-3 shows an example of this mode when the `Show` command is issued. To select the XML output mode, type the following command:

  `Mode outputMode XML`

```
192.168.59.25 :: show
<list type='nameValuePair'><nameValuePair><name>ID</name><value>192.168.59.25</v
alue></nameValuePair><nameValuePair><name>Status</name><value>OK</value></nameVa
luePair><nameValuePair><name>Controllers</name><value>1 Controllers</value></nam
eValuePair><nameValuePair><name>DiskList</name><value>4 disks</value></nameValue
Pair><nameValuePair><name>PoolList</name><value>4 pools</value></nameValuePair><
nameValuePair><name>VolumeList</name><value>5 volumes</value></nameValuePair><na
meValuePair><name>TaskList</name><value>0 tasks</value></nameValuePair><nameValu
ePair><name>iSCSI</name><value>1 initiators, 5 targets, 4 ports, 0 portals</valu
e></nameValuePair><nameValuePair><name>ExternalConnectionsManager</name><value>E
xternalConnectionsManager</value></nameValuePair><nameValuePair><name>Name</name
></value></value></nameValuePair><nameValuePair><name>Identity</name><value>192.1
68.59.25</value></nameValuePair><nameValuePair><name>AdvancedSettings</name><val
ue>AdvancedSettings</value></nameValuePair><nameValuePair><name>SystemStatistics
</name><value>SystemStatistics [0], Status=OK</value></nameValuePair><nameValueP
air><name>IsHighAvailabilitySystem</name><value>false</value></nameValuePair></l
ist>
<nameValuePair type='iStorReturnValue'><name>UA_S_OK</name><value>The action was
 successful</value></nameValuePair>
```

Figure 3-3. Example of XML Output

- Formatted XML - output is similar to XML, but with indentations to enhance human readability and facilitate scripted interaction for parsing. This selection is useful when a computer program and possibly a person will be interpreting the output from the CLI. Figure 3-4 shows an example of this mode when the `Show` command is issued. To select the formatted XML output mode, type the following command:

  `Mode outputMode FormattedXML`

Figure 3-4. Example of Formatted XML Output (Excerpt Shown)

3.2.2 Indication Mode

Enabling indication mode displays messages of changes made to the system as a result of commands executed by you and other CLI users. For example, if you or another user creates a volume with indication mode enabled, messages inform you that the volume list was modified to include the new volume.

By default, indication mode is disabled. To enable it, type:

`Mode indicationMode Enabled`

To disable indication mode, type:

`Mode indicationMode Disabled`

3.2.3 Stream Mode

By default, the CLI directs output to two destinations:

- Error messages go to standard error (STDERR).
- All other output goes to standard out (STDOUT).

This separation may be undesirable for some scripting methods. Therefore, you can enable stream mode to direct all output to STDOUT, obviating the need to read two streams at the same time.

To enable stream mode, type:

```
Mode streamMode Mixed_STDOUT_Only
```

To disable stream mode, type:

```
Mode streamMode Mixed_STDOUT_STDERR
```

If the CLI is invoked with redirection to a file using a standard redirection (greater-than) character, standard out will be directed to the file and error messages will be directed to the screen.

3.2.4 Completion Code Mode

Completion code mode determines whether the CLI returns a text code and text description each time it executes (or tries to execute) a command line, or only when the command line fails due to an error. Figure 3-5 shows examples of error messages returned due to errors in command lines.

```
192.168.55.224 :: create Zeus 3tb jbod

UA_E_REQUEST_FAILED    = Error - CIM_ERR_FAILED: A general error
occurred that is not covered by a more specific error code: "Not
enough space available

192.168.55.224 :: addInitiator

UA_E_INVALIDARG    = Error - Expected 1 arguments

192.168.55.224 :: addInitiator Windows3

UA_E_UNEXPECTED    = Error - CIM_ERR_ALREADY_EXISTS: Operation cannot
be carried out because an object already exists: "An Initiator with
that name already exists"
```

Figure 3-5. Examples of Errors Displayed in Completion Code Mode

By default, completion code mode returns a message when the command line has one or more errors. To enable completion codes for all command lines, type:

```
Mode completionCodeMode Always
```

To display completion codes only when an error occurs, type:

```
Mode completionCodeMode ErrorsOnly
```

3.2.5 Echo Command Mode

Echo command mode repeats everything you type. In the following example, echo command mode repeated the command typed next to the IP address.

```
192.168.59.25 :: Mode EchoCommandMode Enabled     ← typed by user
Mode EchoCommandMode Enabled                      ← returned by CLI
```

By default, echo command mode is disabled To enable it, type:

```
Mode echoCommand Enabled
```

To disable echo command mode, type:

```
Mode EchoCommand Disabled
```

3.2.6 Exit Script on Error Mode

Exit script on error mode allows the CLI to exit a script automatically if the CLI encounters an error in the script. This mode is useful when running the CLI from a shell script.

By default, exit script on error mode is enabled To disable it, type:

```
Mode ExitScriptonError Disabled
```

To enable exit script on error mode, type:

```
Mode ExitScriptonError Enabled
```

3.3 Command Line Syntax

CLI input is case-insensitive, except when otherwise noted. The general CLI syntax format is as follows:

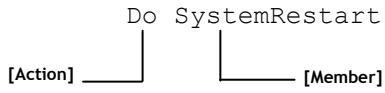
```
{Action} {Member} [Arguments]
```

Table 3-1 describes the items that can be included in a command line. The command `Do` can be omitted for action commands.

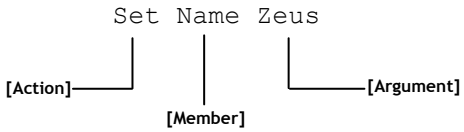
Table 3-1. Items in a Command Line

Item	Description
{Action}	{Action} refers to the global action command `Do`, `Show`, or `Set`. Every member has a default action that is assumed if an action is omitted from the beginning of a command line. One such default is `Show`. If you want to issue a `Show Identity` command, for example, you need only type **ID** at the CLI prompt because `Show` is assumed and `ID` is a sufficient number of characters to make this command unambiguous to the CLI (see section 3.1.4). Note, however, that if you want to issue a `Set` command, you must type `Set`; otherwise, the CLI defaults to `Show`.
{Member}	{Member} is a context member name, such as a property or command. Examples include `Name` on Volume and `CreateVolume` on the root.
[Arguments]	Arguments are extensions that provide extra information needed for the execution of a particular action. Whether or not an argument is required depends on the specific action being executed. For example, `CreateVolume` has arguments for defining characteristics such as the name, size, and composition of the volume to be created. If you omit an argument, the default action is assumed.

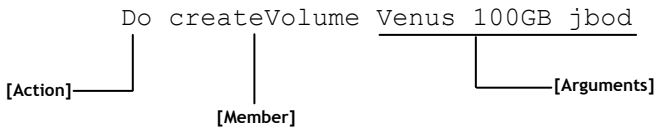
Example 1: The following example shows a command line that has no arguments. This command line restarts the system.



Example 2: The following example shows a command line that has one argument. This command line sets the name of the system to Zeus.



Example 3: The following example shows a command line that has more than one argument. This command line creates a new volume called Venus that is 100 GB large and configured as a JBOD.



3.4 Getting Help with CLI Commands

The help subsystem consists of two levels: help summary and command help.

3.4.1 Help Summary

Typing the global command `help` as the sole command on a command line from any context lists all of the supported global and context-specific commands:

```
192.168.59.25 :: help
Global Commands -----------------------------------------

Help    This help

List    Brief list of current context properties/methods

Exit    To end the session

Echo    Echo a line of text to STDOUT

Execute Execute a CLI script file (same as '@' prefix)

RequireArgs Requires at least # arguments, or exits

ShiftArgs Shifts off # arguments

Mode    Sets some session options

Push    Saves the current context on a LIFO stack and changes context

Pop     Returns to the last pushed context

Select  Changes context

Show    Shows a property in the current context

Set     Sets a property in the current context

Do      Performs a command in current context

System  Invokes a system shell command (same as '!' prefix)


Context Specific Commands ------------------------------

show   ID              - The service's ID
        Returns: ID

show   Status          - The service's Operational Status
        Returns: Status

show   Name            - Gets the user-settable system name
        Returns: name

set    Name            - Sets the user-settable system name
        > name (String)        - Name of the system

show   Identity        - Gets the %productshortname% identity
        Returns: identity

show   DurableName     - Gets the Durable system name
        Returns: name

show   ProductId       - Gets the system ProductId
        Returns: productId

show   RevisionLevel   - Gets the system RevisionLevel
```

```
        Returns: revisionLevel

show   VendorId        - Gets the system VendorId
        Returns: vendorId

show   BindFailReason  - Gets the bind failure/success state detail
        Returns: bindFailReason
(Undefined,Bind_OK,Bind_Error,RCP_Determination,Bind_Not_Possible,Split_RG,Non_Co
nfig_Params,insufficient_resources,system_class_data,pblade_info_unavailable,FW_V
ersions,SM_Size,BM_Size,SM_Dimms,BM_Dimms,Controller_Type,Product_ID,Starting_i8k
,Merge_Bind,Slam_Dunk,Cache,Board_revision,SEP_module_error,Discovered_drives_mis
match,Incorrect_enclosure_cabling,Loss_of_peer_while_binding,Loss_of_comm_chan_wh
ile_binding,Loss_of_rmc_link_while_binding,Message_returned_failure_status,Fatal_
error_on_other,Controller_states_dont_allow_bind,Moved_controller_in_restart_reco
very,Unable_to_determine_seq_to_execute,Controllers_dont_agree_on_seq)

show   BladeType       - Gets the BladeType
        Returns: bladeType
                (Unknown,EBlade,DBlade,xStack,SFF,I386)

show   SerialNumber    - Gets the system SerialNumber
        Returns: serialNumber

show   SystemState     - Gets the SystemState
        Returns: systemState
                (Undefined,Standalone,Bound,Survivor,Not_bound,Split,Failed)

show   Controllers     - Gets a vector of all controllers in the system
        Returns: controllers (Controller list)

show   DiskList        - Gets the DiskList service
        Returns: diskList (DiskList object)

show   PoolList        - Gets the PoolList.
        Returns: poolList (PoolList object)

show   VolumeList      - Gets the VolumeList
        Returns: volumeList (VolumeList object)

show   TaskList        - Gets the TaskList
        Returns: taskList (TaskList object)

show   iSCSI           - Returns the iSCSI Service
        Returns: iSCSI (iSCSI object)

show   EventHD-Linky    - Gets the EventHD-Linky
        Returns: eventHD-Linky (EventHD-Linky object)

show   ExternalConnectionsManager - Gets the ExternalConnectionsManager.
        Returns: externalConnectionsManager (ExternalConnectionsManager object)

show   AdvancedSettings - NO DOC
        Returns: advancedSettings (AdvancedSettings object)

show   SystemStatistics - Gets the SystemStatistics object
        Returns: service (SystemStatistics object)

do     SystemShutdown  - Shuts down the system

do     SystemRestart   - Reboots the system

do     CreateVolume    - Creates a volume.
        > name (String)        - Volume name
        > sizeInBytes (StorageSize) - Volume size in bytes
        > compositionName (UAEnum) - Volume composition
                (JBOD,Stripe,Mirror,StripeMirror,Parity)
        > disks (ServiceList)  - List of disks to use (Disk)
        > stripeWidth (Integer) - Stripe width
        > stripeDepth (UAEnum) - Stripe depth
                (32KB,64KB,128KB,256KB,512KB,1024KB,2048KB)
        Returns: newVolume (Volume object)
```

```
do     GetMaxVolumeStripeWidth - Gets the Maximum StripeWidth supported for a vo
lume type
        > compositionName (UAEnum) - Volume composition
                (JBOD,Stripe,Mirror,StripeMirror,Parity)
        Returns: stripeWidth

do     GetMaxVolumeSize - Gets maximum volume size
        > compositionName (UAEnum) - Volume composition to use
                (JBOD,Stripe,Mirror,StripeMirror,Parity)
        > disks (ServiceList)  - List of disks to use (Disk)
        > stripeWidth (Integer) - Stripe width
        > stripeDepth (UAEnum) - Stripe depth (chunksize)
                (32KB,64KB,128KB,256KB,512KB,1024KB,2048KB)
        Returns: sizeInBytes

do     AddInitiator    - Adds an initiator
        > name (String)        -
        Returns: initiator (Initiator object)
```

3.4.2 Command Help

Typing `help` followed by a global or context-specific command displays help information about the command. The following example displays help for the global command `do`:

```
192.168.59.25 :: help do
Global Commands ----------------------------------------

Do      Performs a command in current context
```

The following example displays help for the context-specific command `createVolume`:

```
192.168.59.25 :: help createvolume
Context Specific Commands ------------------------------

do     CreateVolume    - Creates a volume.
        > name (String)        - Volume name
        > sizeInBytes (_ERROR_) - Volume size in bytes
        > compositionName (UAEnum) - Volume composition
                (JBOD,Stripe,Mirror,StripeMirror,Parity)
        > disks (ServiceList)  - List of disks to use (Disk)
        > stripeWidth (Integer) - Stripe width
        > stripeDepth (UAEnum) - Stripe depth
                (32KB,64KB,128KB,256KB,512KB,1024KB,2048KB)
        Returns: newVolume (Volume object)
```

3.4.3 Advanced Scripting Concepts

The CLI provides the ability to perform environment variable substitution. Variable substitution is the process of replacing a reference to the name of a variable with its actual value. Variable substitution is useful in Python, Perl, Bash, or other scripts that invoke predefined CLI script files and perform substitution at runtime.

The substitution syntax is `${varName}`, with the information typed between the curly brackets specifying the variable name. Any time you use this syntax in a command line, the CLI expects the variable name in curly brackets to be the name of a variable. If you want the dollar sign preceding the first curly bracket to be interpreted as just a simple dollar sign, precede it with the backslash (\) "escape" character.

Example 1: The following example shows how variable substitution might work with a bash script. In this example, assume that a bash script has the following lines:

```
#!/bin/bash
export VolName="MyNewVolName"
cli2 -x DeleteVolume
export VolName="Zeus"
cli2 -x DeleteVolume
```

Also, assume that `DeleteVolume.cli` contains the following line:

```
VolumeList.Volumes[${VolName}].Delete
```

In this example, `${VolName}` will be replaced with the volume named `Zeus`, which will be deleted.

Example 2: The following example shows how the backslash character can be used to have the CLI interpret a dollar sign character as just a simple dollar sign. In this example, assume that an `ENV` variable called `envvar` equals `ABC`. In this case, `abc\${envvar}` becomes `abc${envvar}`, while `abc${envvar}` becomes `abcABC`.

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Chapter 4 Global Action Commands

This chapter describes the global action commands in the CLI. The topics covered in this chapter are:

4.1 List of Global Action Commands

Global action commands help you navigate through the set of contexts, and perform control- and configuration-related activities, such as piping output, setting operating modes, navigating contexts, and executing operating system functions.

Table 4-1 lists the global action commands in alphabetical order, and includes a description of the command and a link to the section that describes each command. The global action commands are described in detail, with examples, in the sections shown in the See Section column.

Table 4-1. Global Action Commands

Command	Description	See Section
Do	Performs a command in the current context.	4.2
Echo	Echoes command lines to Standard Out (STDOUT).	4.2.2
Execute	Executes a CLI script file.	4.2.3
Exit	Ends the current CLI session.	4.2.4
Help	Displays all of the global and context-specific commands that the CLI supports.	4.2.5
List	Displays a brief list of current context properties and methods.	4.2.6
Mode	Sets the session operating modes.	3.2 and 4.2.7
Pop	Returns to the context that was last pushed.	4.2.8
Push	Saves the current context on a last-in-first-out (LIFO) stack and changes context.	4.2.9
RequireArgs	Advanced feature intended for script files.	4.2.10
Select	Changes contexts.	4.2.11
Set	Sets a property in the current context.	4.2.12
ShiftArgs	Advanced feature intended for script files.	4.2.13
Show	Shows a property in the current context.	4.1.14
System	Invokes a system shell command (equivalent to typing the prefix **!**).	4.2.15

4.2 Description of Global Action Commands

4.2.1 Do

Use the `Do` command to perform a command in the current context. The command `Do` is the default action and can be omitted from action commands. For this reason, `Do` is shown within brackets in the syntax below.

Syntax

- `[Do] addInitiator <String>`
- `[Do] createVolume <String> <SizeinBytes> <CompositionName> <Disks> <StripeWidth> <StripeDepth>`
- `[Do] getMaxVolumeSize <CompositionName> <Disks> <StripeWidth> <StripeDepth>`
- `[Do] getMaxVolumeStripeWidth <CompositionName> <Disks> <StripeWidth> <StripeDepth>`
- `[Do] SystemRestart`
- `[Do] SystemShutdown`

Examples

- **`Do SystemRestart`**
  Restarts the system.
- **`Do createVolume Venus 100GB jbod`**
  Creates a new volume called Venus that is 100 GB in size and configured as a JBOD.
- **`createVolume Venus 100GB jbod`**
  Functionally equivalent to the previous command line, but with `Do` omitted.
- **`Help Do`**
  Displays help for the `Do` command.

4.2.2 Echo

Use the `Echo` command to echo command lines to Standard Out (STDOUT). When enabled, a copy of each command line you issue is sent to STDOUT. By default, echo is disabled. Issuing this command enables echo. Issuing the command again disables echo.

Because `Echo` writes to STDOUT, it can be redirected.

Syntax

`Echo`

Examples

- **`Echo`**
  Enables echo to STDOUT (if echo was disabled) or disables echo to STDOUT (if echo was enabled).
- **`Help Echo`**
  Displays help for the `Echo` command.

4.2.3 Execute

Use the `Execute` command to execute a text file containing one or more CLI command lines. Adding command lines to a file is particularly convenient if you will be performing repetitive operations on several systems: just enter the commands into a text file and then execute the text file each time you want to perform those operations. The text file extension must be `.cli`.

The CLI ignores blank lines or lines beginning with two forward slashes (//) in a script file. Therefore, you can add comment (remark) lines to a script file and not have the CLI execute them by starting the lines with //.

Syntax

`Execute <pathname>`

Examples

- **`Execute createVols`**
  Executes a file called `CreateVols.cli` that contains the following two `CreateVolume` commands to be performed:

  ```
  Do createVolume CAD 30000000 mirror
  Do createVolume Exchange 125829120 parity [0,1,2,3] 4 512kb
  ```

  In the command line example above, the `.cli` extension in the file name is assumed and should be omitted from the command line.
- **`Help Execute`**
  Displays help for the `Execute` command.

4.2.4 Exit

Use the `Exit` command to end the current CLI session.

Syntax

```
Exit
```

Examples

- **`Exit`**
  Closes the current `CLI` session.
- **`Help Exit`**
  Displays help for the `Exit` command.

4.2.5 Help

Use the `Help` command to display a list of the global action commands and context-specific commands supported by the CLI. If a global action or context-specific command follows Help, only help for the command is displayed. For more information, see section 3.4.

Syntax

```
Help
```

```
Help <Command>
```
where `<Command>` is either a global action command or a context-specific command.

Examples

- **`Help`**
  Displays all the `global` action and context-specific commands supported by the CLI.
- **`Help Echo`**
  Displays help for the `Echo` command.
- **`Help CreateVolume`**
  Displays help for the `CreateVolume` command.

4.2.6 List

Use the `List` command to list the current contexts and their properties (see the example below).

Syntax

`List`

Examples

- **`List`**
  Displays a list of current contexts and properties.
- **`Help List`**
  Displays help for the `List` command.

4.2.7 Mode

Use the `Mode` command to set the CLI operating modes. Operating modes that can be set with this command include:

- Output mode – configures the output format from the CLI as human-readable, XML, or formatted XML.
- Indication mode – displays messages when changes made to the system as a result of commands executed by you and other CLI users.
- Stream mode – configures the CLI to either output error messages to STDERR and all other output to STDOUT, or direct all output (including error messages) to STDOUT.
- Completion code mode – configures the CLI to return a confirmation message each time it executes (or tries to execute) a command line.
- Echo command mode – repeats every character you type.
- Exit script on error mode - lets the CLI exit a script automatically if the CLI encounters an error in the script.

For more information, see section 3.2.

Syntax

```
Mode outputMode [Normal | XML | FormattedXML]
Mode indicationMode [Enabled | Disabled]
Mode streamMode [Mixed_STDOUT_Only | Mixed_STDOUT_STDERR]
Mode completionCodeMode [Always | ErrorsOnly]
Mode echoCommandMode [Enabled | Disabled]
Mode exitScriptOnError [Enabled | Disabled]
```

Examples

- **`Mode outputMode Normal`**
  CLI output is displayed in human-readable format.
- **`Mode outputMode XML`**
  CLI output is nested together as XML, with XML tags.
- **`Mode outputMode FormattedXML`**
  CLI output is nested together as XML, with XML tags.
- **`Mode indicationMode Enabled`**
  Enables indication mode, which displays messages of changes made to the system as a result of commands executed by you and other CLI users.
- **`Mode indicationMode Disabled`**
  Disables indication mode.
- **`Mode streamMode Mixed_STDOUT_Only`**
  Enables stream mode, directing all output to STDOUT.
- **`Mode streamMode Mixed_STDOUT_STDERR`**
  Disables stream mode, directing error messages to STDERR and all other output to STDOUT.
- **`Mode completionCodeMode Always`**
  Enable completion code mode – return a completion code with each command line.
- **`Mode completionCodeMode ErrorsOnly`**
  Disable completion code mode – return a completion code only when a command line has an error.
- **`Mode echoCommandMode Enabled`**
  Enable echo command mode – repeats every command line character you type.
- **`Mode echoCommandMode Disabled`**
  Disable echo command mode – do not repeat every command line character you type.
- **`Mode exitScriptOnError Enabled`**
  Enable exit script on error – the CLI exits the script if an error is encountered.
- **`Mode exitScriptOnError Disabled`**
  Disable exit script on error – the CLI doe not exit the script if an error is encountered.
- **`Help Mode`**
  Displays help for the `Mode` command.

4.2.8 Pop

As you execute command lines, you may navigate through various CLI context levels. For example, accessing `diskList` from the root level moves you down one level in the CLI hierarchy. From this level, you can access `Disk` (two levels down from the root) and `Extent` (three levels down from the root).

Using the `Pop` command, you can move up in the CLI hierarchy. The number of levels you move up depends on whether you used the `Push` or `Select` command to move down in the hierarchy.

- If you used the `Push` command, the `Pop` command moves you up one level.
- If you used the `Select` command, the `Pop` command moves you to the top (root) level in the CLI hierarchy.

Syntax

```
Pop
```

Examples

- **`Pop`**
  Moves you up one level in the CLI hierarchy (if you previously used a `Push` command) or to the root level (if you previously used a `Select` command). If you are at the root level, issuing this command displays the error message `Content Stack empty`.
- **`Help Pop`**
  Displays help for the `Pop` command.

4.2.9 Push

Use the `Push` command to move down one level in the CLI hierarchy. The context is added to the push/pop stack. Issuing a `Pop` command after a `Push` command moves you up one level at a time in the hierarchy.

Syntax

```
Push <context>
```

where `<context>` is a member of the current context that returns a context. From the root context, for example, you can issue the command `Push diskList` because `diskList` is a property in the root context.

Examples

- **`Push volumeList.volumes[mynewvolume]`**
  Pushes a volume called mynewvolume.
- **`192.168.56.125 :: push iscsi.targets[$first]`**
  Changes the context to the first iSCSI target, which is accessible from the top-level system context, then the iSCSI context, and finally the targets context.

- **`Controller[A] :: push ^iscsi.targets[$first]`**
  Changes the context to the first iSCSI target, even though the current context is Controller[A].
- **`Help Push`**
  Displays help for the `Push` command.

4.2.10 RequireArgs

The `requireArgs` command is an advanced feature intended for use with script files. This command lets you specify the required number of arguments for subsequent commands.

If a CLI script has this command and the number of arguments provided does not provide at least the number of required arguments specified with `RequireArgs`, the script is terminated.

Syntax

```
requireArgs <integer> [optionalDisplayStringOnError]
```

where `<integer>` is the required number of arguments for subsequent commands and `[optionalDisplayStringOnError]` is a string that is displayed to the user if the argument count is not satisfied.

Examples

- **`requireArgs 8`**
  Checks that at least 8 arguments are present for the current script, and terminates the script if not.
- **`Help requireArgs`**
  Displays help for the `RequireArgs` command.

4.2.11 Select

Use the `Select` command to change contexts to the argument specified. The context is not added to the push/pop stack. As a result, issuing a `Pop` command after a `Select` command moves you to the top (root) level context of the CLI hierarchy.

Syntax

```
Select <context>
```

where `<context>` is a member of the current context (or a concatenated member reference) that returns a context. From the root context, for example, you can issue the command `Select diskList` because `diskList` is a property in the root context.

Examples

- **`Select Controller[a]`**
  Displays the new context in the prompt.
- In the following example, at the `System` context of machine 192.168.59.25, the command line jumps directly to the context `Controller`. Then a `show` command displays the properties of the `Controller` context.

```
192.168.59.25 :: Select Controller[a]
Controller[A] :: show
ID          = A
Status      = OK
IsActive    = true
SlotNumber = 0
SerialNumber    = 00001
DriveSlots = 12
NumFrontPorts   = 8
DisplayName     = Blade A
SoftwareVersion     = 2.5.1.21
IsAlternateSoftwareVersionPresent   = true
AlternateSoftwareVersion    = 2.5.1.21
BoardType   = 0009
BoardTypeRevision   = XC05
I8kHwVersion    = 1.0.0.0
I8kSwVersion    = 0.1.0.0
MpuSwVersion    = 2.5.1.21
BindFailReason = Bind_OK
BladeHealth     = Healthy
BladeState = Bound
BladeType   = SFF
PersistenceSetting = Unchanged
BatteryState    = Failed
BufferMemDimmCnt    = 2
BufferMemSize   = 2048
SystemMemDimmCnt    = 2
SystemMemSize   = 512
SystemTime = 13:18:27
Ports       = 8 Ports
LAGs        = 8 LAGs
ManagementPort = ManagementPort [192.168.56.138], Status=OK
BasePool    = [BaseA], 2 disks
```

- **Help Select**
  Displays help for the `Select` command.

4.2.12 Set

Use the `Set` command to set a property in the current context.

Syntax

```
Set <memberName> <newvalue>
```

Examples

- **Set name Zeus**
  Sets the array name to Zeus.
- **Help Set**
  Displays help for the `Set` command.

4.2.13 ShiftArgs

The `shiftArgs` command is an advanced feature intended for use with script files. This command left-shifts off a minimum number of arguments.

This command is useful when working with an external text file containing command line parameters and arguments. It is particularly useful if you will be performing repetitive operations on several systems where argument shifting is required. If **<**`integer`**>** is omitted from the command line, 1 is assumed.

Syntax

```
shiftArgs <integer>
```

Examples

- **shiftArgs**
  If a script has arguments 0, 1, and 2, including this command strips the leftmost argument (0), resulting in arguments 1 and 2 being passed (as arguments #0 and #1).
- **shiftArgs 2**
  If a script has arguments 0, 1, and 2, including this command strips the two leftmost arguments (0,1), resulting in argument 2 being passed (as argument #0).
- **Help shiftArgs**
  Displays help for the `ShiftArgs` command.

4.2.14 Show

Use the `Show` command to show a property in the current context.

Syntax

`Show`

Examples

- **`Show`**
  Displays the properties in the current context, as shown in the following example.
- In the following example, the `show` command displays the properties of the `iSCSITarget` context for the target named "**`myvol`**".

```
iSCSITarget[two] :: show
ID          = myvol
Status      = OK
DurableName     = iqn.2000-03.com.D-Link:myvol:6-001215-0200005d6-484f4348e87aea61
Name        = myvol
Secret      =
IsChapRequired = false
PrimaryAuthenticationMethod     = NO_AUTHENTICATION
SecondaryAuthenticationMethod  = CHAP
MaxReceiveDataSegmentLength     = 32768
PrimaryHeaderDigestMethod  = NO_DIGEST
PrimaryDataDigestMethod     = NO_DIGEST
SecondaryHeaderDigestMethod     = CRC32C
SecondaryDataDigestMethod  = CRC32C
RequestingMarkersOnReceive = false
MaxConnectionsPerSession   = 8
InitialR2TPreference   = true
ImmediateDataPreference     = false
MaxOutstandingR2T  = 8
MaxUnsolicitedFirstDataBurstLength = 8192
MaxDataBurstLength = 262144
DataSequenceInOrderPreference  = true
DataPDUInOrderPreference   = true
DefaultTimeToWaitPreference     = 2
DefaultTimeToRetainPreference  = 20
ErrorRecoveryLevelPreference   = 0
Initiators = 0 Initiators
Sessions   = 0 Sessions
Volume      = [myvol], State=Normal, Composition=JBOD, Size=10.00GB
```

- **`Help Show`**
  Displays help for the `Show` command.

4.2.15 System

Use the `System` command to invoke a system shell command. (This command is equivalent to adding a **!** prefix to a command line.)

Syntax

`System <DOS command>`

where `<DOS command>` is the name of the DOS command you want performed.

Examples

- **`System "dir c:\\"`**
  Displays the results of the DOS command (in this example, the contents of the root directory on the C drive are displayed).
- **`!dir c:\`**
  Displays the results of the DOS command (in this example, the contents of the root directory on the C drive are displayed).
- **`Help System`**
  Displays help for the `System` command.

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Chapter 5 Supported CLI Commands and Properties

This chapter describes the commands and properties supported by the CLI. Each section describes the commands and properties specific to that context.

The topics covered in this chapter are:

5.1 System Commands and Properties

`System` commands and properties let you perform system-related activities, such as creating volumes, configuring, restarting, or shutting down the array. `System` commands are issued at the `System` context.

Table 5-1 provides an alphabetical list of the commands in the `System` context and Table 5-2 provides an alphabetical list of the properties in the `System` context. Both tables include a description of the command or property, and the global action commands that can be used with the command or property, and the return parameter. For example, in Table 5-1, `AddInitiator` can be used with the global action commands `Do`, `Push`, and `Select`, and the command returns a context.

Table 5-1. System Context Commands

System Context Command	Description	Associated Global Action Commands	Return Parameter
AddInitiator	Adds an iSCSI initiator	Do/Push/Select	Context
CreateVolume	Creates a volume	Do/Push/Select	Context
MaxVolumeSize	Obtains the maximum volume size	Do	Value
MaxVolumeStripeWidth	Obtains the maximum stripe width supported for a volume type	Do	Value
SystemRestart	Reboots the system	Do	No Return Value
SystemShutdown	Shuts down the system	Do	No Return Value

Table 5-2. System Context Properties

System Context Property	Description	Associated Global Action Commands	Return Parameter
AdvancedSettings	Lets you access the system's advanced settings	Show/Push/Select	Context
BindFailReason	Displays the reason for a Bind failure (defined for DSN-5000 systems only)	Show/Push/Select	Context
BladeType	Displays the controller type	Show	Value
Controllers	Lets you access a vector of all controllers in the system	Show/Show[ID]/Push[ID]/Select[ID]	Context List
DiskList	Lets you access the DiskList service	Show/Push/Select	Context
DurableName	Displays the durable name of the controller	Show	Value
EventHD-Linky	Lets you access the Event HD-Linky information	Show/Push/Select	Context
ExternalConnectionsManager	Lets you access the External Connections Manager	Show/Push/Select	Context
Identity	Returns the Product Short Name identity.	Show	Value
ID	The IP Address of the Management Port	Show	Value
iSCSI	Lets you access the iSCSI Service	Show/Push/Select	Context
Name	Returns the name of the array	Show	Value
	Sets the name of the array	Set	Value
PoolList	Lets you access the poolList.	Show/Push/Select	Context
ProductID	Displays the controller type	Show	Value
RevisionLevel	Displays the controller software revision	Show	Value
SerialNumber	Displays the system serial number	Show	Context
Status	Displays the system status	Show	Value
SystemState	Displays the system state (e.g., Standalone, Bound, Survivor, etc.)	Show	Value
SystemStatistics	Lets you access the SystemStatistics object	Show/Push/Select	Context
TaskList	Lets you access the TaskList	Show/Push/Select	Context
VendorId	Displays the vendor name of the SCSI Inquiry	Show	Value
VolumeList	Lets you access the VolumeList	Show/Push/Select	Context

5.2 Controller Commands and Properties

`Controller` commands and properties let you perform controller-related activities, such as creating Link Aggregation Groups (LAGs); returning the number of drive slots, serial number, or name of a controller; and restarting the controller. Table 5-3 provides an alphabetical list of the commands in the `Controller` context and

Table 5-4 provides an alphabetical list of the properties in the `Controller` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-3, for example, `CreateLAG` is used with the global action commands `Do`, `Push`, and `Select`.

Table 5-3. Controller Commands

Command	Description	Associated Global Action Commands	Return Parameter
CreateLAG	Lets you create a LAG	Do/Push/Select	Context
ControllerRestart	Restarts the controller	Do	No Return Value
ControllerShutdown	Shuts down the controller	Do	No Return Value

Table 5-4. Controller Properties

Property	Description	Associated Global Action Commands	Return Parameter
AlternateSoftwareVersion	Returns the software version in the alternate partition of the controller	Show	Value
BasePool	Lets you access the system's base pool	Show/Push/Select	Context
BatteryState	Returns the battery state	Show	Value
BindFailReason	Returns the results of the attempted BIND operation (dual controller systems only)	Show	Value
BladeHealth	Returns the health of the controller	Show	Value
BladeState	Returns the Bind status of the controller (Standalone, Bound, Survivor, etc.)	Show	Value
BladeType	Returns the controller hardware type ("SFF" for DSN-5000-series. or "ATX" for DSN-1000/2000/3000 series controllers)	Show	Value
BoardType	Returns the hardware type (a numeric identifier to identify the product configuration)	Show	Value
BoardTypeRevision	Returns the hardware revision	Show	Value
BufferMemDimmCnt	Returns the number of Buffer Memory DIMM modules	Show	Value

Property	Description	Associated Global Action Commands	Return Parameter
BufferMemSize	Returns the amount of Buffer Memory measured in MB	Show	Value
ControllerStatusDescription	Returns controller status	Show	Value
DisplayName	Returns the display name of the controller	Show	Value
DriveSlots	Returns the number of drive bays	Show	Value
I8kHwVersion	Returns the hardware revision of the iSNP8008 ASIC	Show	Value
I8kSwVersion	Returns the software revision of the iSNP8008 ASIC	Show	Value
ID	Returns the controller ID (A or B)	Show	Value
IsActive	Indicates whether a controller in a bound pair is active	Show	Value
IsAlternateSoftwareVersionPresent	Indicates whether an alternate firmware version is present	Show	Value
LAGs	Lets you access array LAGs	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
ManagementPort	Lets you access the service management port	Show/Push/Select	Context
MpuSwVersion	Returns the software version that is running in the controller	Show	Value
NumFrontPorts	Returns the number of iSCSI data ports	Show	Value
PersistenceSetting	Returns the state of the controller's persistence data	Show	Value
Ports	Lets you access array Ports	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
SerialNumber	Returns the serial number of controller	Show	Value
SlotNumber	Returns the slot number of the controller (0 or 1)	Show	Value
SoftwareVersion	Returns the software version in the active partition of the controller	Show	Value
Status	Returns the overall status of the controller	Show	Value
SystemMemDimmCnt	Returns the number of System Memory DIMM modules	Show	Value
SystemMemSize	Returns the amount of System Memory measured in MB	Show	Value
SystemTime	Returns the system time	Show	Value (hh:mm:ss)
	Sets the system time	Set	Value (hh:mm:ss)

5.3 PhysicalPort Commands and Properties

`PhysicalPort` commands and properties let you perform activities related to an array's physical ports, such as returning a port number, port state, or port speed. Table 5-5 lists the command in the `PhysicalPort` context and Table 5-6 provides an alphabetical list of the properties in the `PhysicalPort` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-5, for example, `RemoveFromLAG` is used with the global action command `Do`.

Table 5-5. PhysicalPort Command

Command	Description	Associated Global Action Commands	Return Parameter
Enable	Enables the port	Do	No Return Value
Disable	Disables the port	Do	No Return Value
RemoveFromLAG	Removes the port from its current LAG	Do	No Return Value

Table 5-6. PhysicalPort Properties

Property	Description	Associated Global Action Commands	Return Parameter
IsEnabled	Returns the Is Enabled state	Show	Value
LAG	Returns the LAG	Show/Push/Select	Context
	Sets the LAG	Set	Context
Name	Returns the port name	Show	Value
PortNumber	Returns the port number	Show	Value
PortState	Returns the port state	Show	Value
Speed	Returns the port link speed in bits per second	Show	Value

5.4 PoolList Commands and Properties

`PoolList` commands and properties let you perform activities related to drive pools, such as accessing the global available pool or global unavailable pool, accessing disks, and accessing the global spare pool. Table 5-7 provides an alphabetical list of the commands in the `PoolList` context and Table 5-8 provides an alphabetical list of the properties in the `PoolList` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-7, for example, `CreateVolume` is used with the global action commands `Do`, `Push`, and `Select`.

Table 5-7. PoolList Commands

Command	Description	Associated Global Action Commands	Return Parameter
CreateVolume	Creates a volume.	Do/Push/Select	Context
MaxVolumeSize	Returns the maximum volume size	Do	Value

Table 5-8. PoolList Properties

Property	Description	Associated Global Action Commands	Return Parameter
GlobalAvailablePool	Lets you access the available pool of drives	Show/Push/Select	Context
GlobalSparePool	Lets you access the spares for the system	Show/Push/Select	Context
GlobalUnavailablePool	Lets you access the unavailable pool of drives	Show/Push/Select	Context
Disks	Lets you access drives	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
PoolName	Returns the pool name	Show	
Pools	Lets you access pools	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
PoolType	Returns the pool type	Show	Value

5.5 DiskList Property

The `DiskList` property lets you perform tasks related to arrays of disks. Table 5-9 describes the property in the `DiskList` context, the global action commands that can be used with the property, and the return parameter. In Table 5-9, for example, `Disks` is used with the global action commands `Show`, `Push`, and `Select`.

Table 5-9. DiskList Property

Property	Description	Associated Global Action Commands	Return Parameter
Disks	Lets you access the array of disks in this list	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.6 Disk Commands

`Disk` commands and properties let you perform disk-related activities, such as viewing a drive's capacity or free space, link speed, or a number of an enclosure containing a drive. Table 5-10 provides an alphabetical list of the commands in the `Disk` context and Table 5-11 provides an alphabetical list of the properties in the `Disk` context (although some properties may be unique to SAS or SATA drive types). Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-10, for example, `DownDrive` is used with the global action command `Do`.

Table 5-10. Disk Commands

Command	Description	Associated Global Action Commands	Return Parameter
DownDrive	Downs the drive	Do	No Return Value
InitDrive	Initializes the drive	Do	No Return Value

Table 5-11. Disk Properties

Property	Description	Associated Global Action Commands	Return Parameter
ActualLinkSpeed	Returns the actual link speed	Show	Value
ATAVersion	Returns the ATA version	Show	Value
DriveNumber	Returns the drive number	Show	Value
DriveType	Returns the type of drive	Show	Value
EnclosureNumber	Returns the enclosure the disk is in	Show	Value
Extents	Lets you access all the extents on the disk	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
FreeSpaceSize	Returns the amount of free space	Show	Value
PhysicalCapacity	Returns the total drive capacity	Show	Value
Pool	Lets you access the pool to which the disk belongs	Show/Push/Select	Context
Pool	Sets the pool to which the disk belongs	Set	Context
SASChannelNumber	Returns the channel number of the SAS drive	Show	Value
SATAQueueDepth	Returns the SATA queue depth	Show	Value
SATAQueueingSupport	Returns the SATA queuing support setting	Show	Value
SerialNumber	Returns the serial number	Show	Value
SlotNumber	Returns the slot number in which the disk is installed	Show	Value
State	Returns the drive state	Show	Value
Supports48BitAddress	Returns TRUE if the drive supports 48-bit addressing or FALSE if the drive does not support it	Show	Value
SupportedLinkSpeeds	Returns supported link speeds	Show	Value
Tasks	Returns an array of all the tasks for this disk	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Vendor	Returns the drive manufacturer	Show	Value
VendorModel	Returns the vendor model	Show	Value

5.7 VolumeList Property

The `VolumeList` property lets you access all volumes in a list. Table 5-12 describes the property in the `VolumeList` context, the global action commands that can be used with the property, and the return parameter. In Table 5-12, for example, `Volumes` is used with the global action commands `Show`, `Push`, and `Select`.

Table 5-12. Volume Property

Property	Description	Associated Global Action Commands	Return Parameter
Volumes	Lets you access all the volumes in the list	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.8 Volume Commands and Properties

`Volume` commands and properties let you perform volume-related activities, such a growing, deleting, or scanning a volume for integrity. Table 5-13 provides an alphabetical list of the commands in the `Volume` context and Table 5-14 provides an alphabetical list of the properties in the `Volume` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-13, for example, `Delete` is used with the global action command `Do`. For a detailed description of the syntax and parameters of these commands, refer to the `Help` command.

Table 5-13. Volume Commands

Command	Description	Associated Global Action Commands	Return Parameter
Delete	Deletes the volume	Do	No Return Value
GrowTo	Grows the volume to the specified size	Do	No Return Value
IntegrityScanNow	Scans the volume for integrity (media and possibly parity)	Do	No Return Value
IntegrityScanAt	Scans the volume for integrity (media and possibly parity)	Do	No Return Value
MaxGrowSize	Expands the maximum size to which a volume can grow	Do	Value
Reconfigure	Reconfigures the volume	Do	No Return Value

Table 5-14. Volume Properties

Property	Description	Associated Global Action Commands	Return Parameter
CompositionName	Returns the name of the composition type	Show	Value
DurableName	Returns the durable name	Show	Value
Initiators	Returns all iSCSI initiators for an array	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
IsReadOnly	Returns a flag indicating read only (R/O) or read/write (R/W)	Show	Value
IsReadOnly	Sets the flag indicating R/O or R/W	Set	Value
IsReconfiguring	Returns a Boolean value indicating whether the volume is currently being reconfigured	Show	Value
IsSyncCacheDisabled	Returns a flag indicating whether Sync Cache is disabled (Sync Cache becomes NOP)	Show	Value
IsSyncCacheDisabled	Sets the flag indicating whether Sync Cache is disabled (Sync Cache becomes NOP)	Set	Value
Name	Returns the volume name	Show	Value
Name	Sets the volume name	Set	Value
NSPOF	Returns the No Single Point of Failure flag	Show	Value
State	Shows the volume state	Show	Value
Size	Shows the volume size	Show	Value
StripeDepth	Shows the stripe depth	Show	Value
StripeWidth	Shows the stripe width	Show	Value
Target	Lets you access the associated iSCSI target	Show/Push/Select	Context
Tasks	Lets you access all volume tasks for an array	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
VolumeComposition	Lets you access the VolumeComposition object.	Show/Push/Select	Context
ReadAheadSizeIsAutomatic	Returns a Boolean value to that indicates whether the Read Ahead Cache Size should be determined automatically	Show	Value
ReadAheadSizeIsAutomatic	Sets a flag indicating whether the Read Ahead Cache Size should be determined determined	Set	Value
MaxReadAheadByteCount	Returns the maximum size of the Read Ahead Cache (in megabytes) for the volume	Show	Value
ReadAheadByteCount	Sets the size of the Read Ahead Cache for the volume (“ReadAheadSizeIsAutomatic” must also be set to “FALSE”)	Set	Value
ReadAheadByteCount	Returns a numeric value for the Read Ahead Cache Size (in Kbytes) for the volume	Show	Value
IsOptimizedForMultiTrackAudio	Sets the multi-track audio optimization mode	Set (TRUE or FALSE)	Value
IsOptimizedForMultiTrackAudio	Shows the current mode	Show	Value
BlockSizeBytes	Sets the size of the volume block size to either 512 bytes or 4096 bytes	Set	Value
BlockSizeBytes	Returns the volume block size	Show	Value

5.9 VolumeComposition Properties

`VolumeComposition` properties let you view a volume's composition name and access extents. Table 5-15 provides an alphabetical list of the properties in the `VolumeComposition` context, a description of the property and the global action commands that can be used with the property, and the return parameter. In Table 5-15, for example, `CompositionName` is used with the global action command `Show`.

Table 5-15. VolumeComposition Properties

Property	Description	Associated Global Action Commands	Return Parameter
CompositionName	Returns the name of the composition	Show	Value
Extents	Lets you access all the extents for this volume	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.10 Extent Properties

`Extent` properties let you perform activities related to extents, such as returning the size, state, or composition name of an extent. Table 5-16 provides an alphabetical list of the properties in the `Extent` context, a description of the property and the global action commands that can be used with the command or property, and the return parameter. In Table 5-16, for example, `CompositionName` is used with the global action command `Show`.

Table 5-16. Extent Properties

Property	Description	Associated Global Action Commands	Return Parameter
CompositionName	Returns the volume composition	Show	Value
Disk	Lets you access the disk containing the extent	Show/Push/Select	Context
ExtentMemberElementBlockNumber	Returns the element block number	Show	Value
ExtentState	Returns the current state Enum of the extent	Show	Value
MemberBlockNumber	Returns the member block number within the volume	Show	Value
MirrorElementNumber	Returns the mirror element number	Show	Value
PhysicalBlockNumber	Returns the physical block number on the disk	Show	Value
Size	Returns the size of the extent	Show	Value
StripeElementNumber	Returns the stripe element number	Show	Value
Volume	Lets you access the volume associated with the extent	Show/Push/Select	Context

5.11 TaskList Property

The `TaskList` property lets you access the tasks available for an array. Table 5-17 lists the property in the `TaskList` context, the global action commands that can be used with the property, and the return parameter. In the table below, for example, `Tasks` is used with the global action commands `Show`, `Push`, and `Select`.

Table 5-17. TaskList Properties

Property	Description	Associated Global Action Commands	Return Parameter
Tasks	Lets you access the array of tasks	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.12 Task Commands and Properties

`Task` commands and properties let you perform task-related activities such as scheduling, modifying, and suspending tasks. Table 5-18 provides an alphabetical list of the commands in the `Task` context and Table 5-19 provides an alphabetical list of the properties in the `Task` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-18, for example, `Cancel` is used with the global action command `Do`.

Table 5-18. Task Commands

Command	Description	Associated Global Action Commands	Return Parameter
Cancel	Cancels a task	Do	No Return Value
Delete	Deletes a task	Do	No Return Value
Modify	Modifies a task	Do	No Return Value
Resume	Resumes a suspended task	Do	No Return Value
Suspend	Suspends the task	Do	No Return Value

Table 5-19. Task Properties

Property	Description	Associated Global Action Commands	Return Parameter
EstimatedCompletionTime	Estimate completion time	Show	Value
ObjectName	Returns the object name	Show	Value
PercentComplete	Returns a task's percent completion	Show	Value
PeriodicityType	Returns the units of the periodicity interval	Show	Value
Priority	Returns the task priority	Show	Value
	Sets the task priority	Set	Value
ScheduledStartTime	Returns the scheduled start time	Show	Value
StartTime	Returns the task start time	Show	Value
State	Returns the task state	Show	Value
StatusDescription	Returns the status description	Show	Value
TaskID	Returns the task ID	Show	Value

5.13 iSCSI Commands and Properties

`iSCSI` commands and properties lets you perform iSCSI-related activities such as creating LAGs and accessing ports, portals, targets, and iSCSI initiators. Table 5-20 provides an alphabetical list of the commands in the `iSCSI` context and Table 5-21 provides an alphabetical list of the properties in the `iSCSI` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-20, for example, `CreateLAG` is used with the global action commands `Do`, `Push`, and `Select`.

Table 5-20. iSCSI Commands

Command	Description	Associated Global Action Commands	Return Parameter
CreateLAG	Creates a LAG	Do/Push/Select	Context
CreateStaticRoute	Creates a static route entry	Do	No Return Value

Table 5-21. iSCSI Properties

Property	Description	Associated Global Action Commands	Return Parameter
Initiators	Lets you access the array initiators	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
LAGs	Lets you access the array LAGs	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Portals	Lets you access the array portals	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Ports	Lets you access the array physical ports	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
StaticRoutes	Lets you access the array static routing table entries	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Targets	Lets you access the array targets	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.14 iSCSITarget Commands and Properties

`iSCSITarget` commands and properties let you perform activities related to iSCSI targets such as setting and returning a CHAP secret, setting and viewing authentication and digest methods, and viewing durable names. Table 5-22 provides an alphabetical list of the commands in the `iSCSITarget` context and Table 5-23 provides an alphabetical list of the properties in the `iSCSITarget` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-22, for example, `GrantInitiatorAccess` is used with the global action command `Do`.

Table 5-22. iSCSITarget Commands

Command	Description	Associated Global Action Commands	Return Parameter
GrantInitiatorAccess	Grants initiator access to this target	Do	No Return Value
RevokeInitiatorAccess	Revokes initiator access to this target	Do	No Return Value

Table 5-23. iSCSITarget Properties

Property	Description	Associated Global Action Commands	Return Parameter
DataPDUInOrderPreference	Returns the data PDU in order preference	Show	Value
	Sets the data PDU in order preference	Set	Value
DataSequenceInOrderPreference	Returns the data sequence In order preference	Show	Value
	Sets the data sequence in order preference	Set	Value
DefaultTimeToRetainPreference	Returns the default time to retain preference	Show	Value
	Sets the default time to retain preference	Set	Value
DefaultTimeToWaitPreference	Returns the default time to wait preference	Show	Value
	Sets the default time to wait preference	Set	Value
DurableName	Returns the durable name	Show	Value
ErrorRecoveryLevelPreference	Returns the error recovery level preference	Show	Value
	Sets the error recovery level preference	Set	Value
ImmediateDataPreference	Returns immediate data preference	Show	Value
	Sets the immediate data preference	Set	Value
InitialR2TPreference	Returns the initial R2T preference	Show	Value

Property	Description	Associated Global Action Commands	Return Parameter
	Sets the initial R2T preference	Set	Value
Initiators	Lets you access the array initiators	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
IsChapRequired	Indicates whether the “CHAP is Required” setting is set	Show	Value
MaxConnectionsPerSession	Returns the maximum connections per session	Show	Value
	Sets the maximum connections per session	Set	Value
MaxDataBurstLength	Returns the maximum data burst length	Show	Value
	Sets the maximum data burst length	Set	Value
MaxOutstandingR2T	Returns the maximum outstanding R2T	Show	Value
	Sets the maximum outstanding R2T	Set	Value
MaxReceiveDataSegmentLength	Returns the maximum receive data segment length	Show	Value
	Sets the maximum receive data segment length	Set	Value
MaxUnsolicitedFirstDataBurstLength	Returns the maximum unsolicited first data burst length	Show	Value
	Sets the maximum unsolicited first data burst length	Set	Value
Name	Returns the target name	Show	Value
	Sets the target name	Set	Value
PrimaryAuthenticationMethod	Returns the primary authentication method	Show	Value
	Sets the primary authentication method	Set	Value
PrimaryDataDigestMethod	Returns the primary data digest method	Show	Value
	Sets the primary data digest method	Set	Value
PrimaryHeaderDigestMethod	Returns the primary header digest method	Show	Value
	Sets the primary header digest method	Set	Value
RequestingMarkersOnReceive	Returns the requesting markers on receive	Show	Value
SecondaryAuthenticationMethod	Returns the secondary authentication method	Show	Value
	Sets the secondary authentication method.	Set	Value

Property	Description	Associated Global Action Commands	Return Parameter
SecondaryDataDigestMethod	Returns the secondary data digest method	Show	Value
	Sets the secondary data digest method	Set	Value
SecondaryHeaderDigestMethod	Returns the secondary header digest method	Show	Value
	Sets the secondary header digest method	Set	Value
Secret	Returns a secret	Show	Value
	Sets the secret	Set	Value
Sessions	Lets you access all current sessions	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Volume	Lets you access the associated volume	Show/Push/Select	Context

5.15 iSCSISession Properties

`iSCSISession` properties let you perform activities related to iSCSI sessions such as accessing current connections and viewing session types and error recovery levels. Table 5-24 provides an alphabetical list of the properties in the `iSCSISession` context, a description of the property and the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-24, for example, `Connections` is used with the global action commands `Show`, `Push`, and `Select`.

Table 5-24. iSCSISession Properties

Property	Description	Associated Global Action Commands	Return Parameter
Connections	Lets you access all the current connections in this session	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
CurrentConnections	Returns the current connections count	Show	Value
DataPDUInOrder	Returns the data PDU in order	Show	Value
DataSequenceInOrder	Returns the data sequence in order	Show	Value
DefaultTimeToRetain	Returns the default time to retain	Show	Value
DefaultTimeToWait	Returns the default time to wait	Show	Value
EndPointName	Returns the end point name	Show	Value
ErrorRecoveryLevel	Returns the error recovery level	Show	Value
ImmediateData	Returns the immediate data value	Show	Value
InitialR2T	Returns the initial R2T value	Show	Value
Initiator	Returns the initiator for this session	Show/Push/Select	Context
InitiatorGlobalID	Returns the global initiator ID	Show	Value
MaxConnectionsPerSession	Returns the maximum number of connections per session	Show	Value
MaxDataBurstLength	Returns the maximum data burst length	Show	Value
MaxOutstandingR2T	Returns the maxoutstandingr2t	Show	Value
MaxUnsolicitedFirstDataBurstLength	Returns the maximum unsolicited first data burst length	Show	Value
Name	Returns the name	Show	Value
SessionType	Returns the session type	Show	Value
Target	Returns the target	Show/Push/Select	Context
TSIH	Returns the Target Session Handle (TSIH)	Show	Value

5.16 iSCSIConnection Properties

`iSCSIConnection` properties let you perform activities related to iSCSI connections such as accessing a portal and viewing TCP port numbers and connection IDs . Table 5-25 provides an alphabetical list of the properties in the `iSCSIConnection` context, a description of the property and the global action commands that can be used with the command or property, and the return parameter. In Table 5-25, for example, `ActiveiSCSIVersion` is used with the global action command `Show`.

Table 5-25. iSCSIConnection Properties

Property	Description	Associated Global Action Commands	Return Parameter
ActiveiSCSIVersion	Returns the active iSCSI version	Show	Value
AuthenticationMethodUsed	Returns the authentication method used	Show	Value
ConnectionID	Returns the connection ID	Show	Value
DataDigestMethod	Returns the data digest method	Show	Value
HeaderDigestMethod	Returns the header digest method	Show	Value
InstanceID	Returns the connection instance ID	Show	Value
IPv4Address	Returns the ipv4address for the connection	Show	Value
MaxReceiveDataSegmentLength	Returns the maximum receive data segment length	Show	Value
MaxTransmitDataSegmentLength	Returns the maximum transmit data segment length	Show	Value
MutualAuthentication	Returns the mutual authentication flag	Show	Value
Name	Returns the connection name	Show	Value
Portal	Lets you access the portal	Show/Push/Select	Context
ReceivingMarkers	Returns the receiving markers	Show	Value
SendingMarkers	Returns the sending markers	Show	Value
Session	Returns the session	Show/Push/Select	Context
TcpPortNumber	Returns the TCP port number for the connection	Show	Value

5.17 Portal Commands and Properties

`Portal` commands and properties let you perform portal-related activities such as returning a portal's IP address or ping a port . Table 5-26 provides an alphabetical list of the commands in the `Portal` context and Table 5-27 provides an alphabetical list of the properties in the `Portal` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-26, for example, `Delete` is used with the global action command `Do`.

Table 5-26. Portal Commands

Command	Description	Associated Global Action Commands	Return Parameter
Delete	Deletes the portal	Do	No Return Value
PingRemoteIPAddress	Pings another IP address	Do	Value

Table 5-27. Portal Properties

Property	Description	Associated Global Action Commands	Return Parameter
Connections	Lets you access the array of connections currently associated with this portal	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
DefaultGateway	Lets you access the default gateway for this portal	Show	Value
DynamicRoutes	Lets you access the array of dynamic routing table entries scoped to this portal	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
IPAddress	Returns the IP address of this portal	Show	Value
LAG	Lets you access a LAG	Show/Push/Select	Context
PortNumber	Returns the port number of this portal	Show	Value
SubnetMask	Returns the subnet mask of this portal	Show	Value
VLANID	Returns the VLAN ID of this portal	Show	Value

5.18 Initiator Commands and Properties

`Initiator` commands and properties let you perform iSCSI initiator-elated activities such as setting passwords and viewing iSCSI initiator IDs, names, and passwords. Table 5-28 lists the command in the `Initiator` context and Table 5-29 provides an alphabetical list of the properties in the `Initiator` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-28, for example, `Delete` is used with the global action command `Do`.

Table 5-28. Initiator Command

Command	Description	Associated Global Action Commands	Return Parameter
Delete	Deletes the Initiator entry in the storage system	Do	No Return Value

Table 5-29. Initiator Properties

Property	Description	Associated Global Action Commands	Return Parameter
GlobalID	Returns the global ID	Show	Value
InitiatorID	Returns the initiator ID	Show	Value
IsAllInitiators	Returns the IsAllInitiators flag to identify the special all-access-allowed instance	Show	Value
Name	Returns the initiator name	Show	Value
Sessions	Lets you access the array sessions	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Secret	Returns the password for this initiator	Show	Value
	Sets the password	Set	Value
Targets	Lets you access the array of targets	Show/Show[ID]/Push[ID]/Select[ID]	ContextList

5.19 AdvancedSettings Commands and Properties

`AdvancedSettings` commands and properties let you set and view advanced settings . Table 5-30 provides an alphabetical list of the commands in the `AdvancedSettings` context and Table 5-31 provides an alphabetical list of the properties in the `AdvancedSettings` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-30, for example, `ResetTcpipUpperLayerCounter` is used with the global action command `Do`.

Table 5-30. AdvancedSettings Commands

Command	Description	Associated Global Action Commands	Return Parameter
ForceControllerFailover	Causes a controller failover to occur when a bound pair of controllers exists.	Do	No Return Value
ResetTcpipUpperLayerCounter	Lets you access the Reset TCP/IP Upper Layer counter	Do	No Return Value
RestoreToFactoryDefaults	Restores the array to its factory default settings Paramter: Boolean to include or exclude the Management Port IP Address as one of the parameters to be reset to factory defaults	Do	No Return Value
RestoreConfiguration	Restores the system configuration from a local file. Parameters: **filePath**: String for the path to the file **onlySameChassis**: Boolean to replace the configuration ONLY if the saved data originated from the same chassis	Do	No Return Value
SaveConfiguration	Saves the current system configuration to a local file. Parameters: **filePath**: String for the path to the file	Do	No Return Value
ForceSystemRestart	Forces an orderly system shutdown and restart	Do	No Return Value

Table 5-31. AdvancedSettings Properties

Property	Description	Associated Global Action Commands	Return Parameter
DefaultBackgroundTaskPriority	Returns the default background task priority	Show	Value
	Sets the default background task priority	Set	Value
iScsiPortNumber	Returns the iSCSI port number	Show	Value
	Sets the iSCSI port number	Set	Value
IsVirginConfiguration	Indicates whether the configuration is a virgin configuration	Show	Value
	Sets the configuration is a virgin configuration	Set	Value
SystemPolicy	Lets you access the current battery policy	Show/Push/Select	Context

Property	Description	Associated Global Action Commands	Return Parameter
TcpipMaxIpSegmentation	Returns the TCP/IP Max IP Segmentation value	Show	Value
	Sets the TCP/IP Max IP Segmentation value	Set	Value
TcpipPmtuEnabled	Returns the TCP/IP PMTU Enabled status	Show	Value
	Sets the TCP/IP PMTU Enabled value	Set	Value
TcpipTimestampEnabled	Returns the TCP/IP Timestamp Enabled status	Show	Value
	Sets the TCP/IP Timestamp Enabled value	Set	Value
TcpipTimeToLive	Returns the TCP/IP Time To Live status	Show	Value
	Sets the TCP/IP Time To Live value	Set	Value
TcpipWindowScale	Returns the TCP/IP Window Scale status	Show	Value
	Sets the TCP/IP Window Scale value	Set	Value
UserList	Lets you access the user list	Show/Push/Select	Context
DefaultVolumeBlockSizeBytes	Sets the default volume blocksize of either 512 bytes or 4096 bytes	Set	Value
	Returns the default volume blocksize	Show	Value

5.20 SystemPolicy Properties

`SystemPolicy` properties let you perform activities related to the array's battery policy. Table 5-32 provides an alphabetical list of the properties in the `SystemPolicy` context, along with a description of the property the global action commands that can be used with the property, and the return parameter. In Table 5-32, for example, `BatteryPolicy` is used with the global action commands `Show` and `Set`.

Table 5-32. SystemPolicy Properties

Property	Description	Associated Global Action Commands	Return Parameter
BatteryPolicy	Returns the array battery policy	Show	Value
	Sets the array battery policy	Set	Value

5.21 ExternalConnectionsManager Properties

`ExternalConnectionsManager` properties lets you perform management activities related to external connections such as setting or viewing information email notification settings and iSNS settings. Table 5-33 provides an alphabetical list of the properties in the `ExternalConnectionsManager` context, a description of the property and the global action commands that can be used with the property, and the return parameter. In Table 5-33, for example, `EmailFromAddress` is used with the global action commands `Show` and `Set`.

Table 5-33. ExternalConnectionsManager Properties

Property	Description	Associated Global Action Commands	Return Parameter
EmailFromAddress	Returns the Email From Address value	Show	Value
	Sets the Email From Address value	Set	Value
EmailNotificationEnabled	Returns whether email notification is enabled	Show	Value
	Sets the email notification enabled setting	Set	Value
EmailPassword	Returns the email password	Show	Value
	Sets the email password	Set	Value
EmailServerIPAddress	Returns the email server IP address	Show	Value
	Sets the email server IP address	Set	Value
EmailServerPortNumber	Returns the email port number	Show	Value
	Sets the email port number	Set	Value
EmailToAddress	Returns the address where emails are to be sent	Show	Value
	Sets the address where emails are to be sent	Set	Value
EmailUsername	Returns the username to whom emails are to be sent	Show	Value
	Sets the username to whom emails are to be sent	Set	Value
iSNSHeartbeatIpAddress	Returns the iSNS Heartbeat IP address	Set	Value
	Sets the iSNS Heartbeat IP address	Show	Value
iSNSHeartbeatEnabled	Returns the iSNS Heartbeat Enabled value	Show	Value
	Sets the iSNS Heartbeat Enabled value	Set	Value
iSNSHeartbeatSubnetMask	Returns the iSNS Heartbeat subnet mask	Show	Value
	Sets the iSNS Heartbeat subnet mask	Set	Value
iSNSServerIpAddress	Returns the iSNS server IP address	Show	Value
	Sets the iSNS server IP address	Set	Value
iSNSServerPortNumber	Returns the iSNS server port number	Show	Value
	Sets the iSNS server port number	Set	Value
iSNSServerSubnetMask	Returns the iSNS server subnet mask	Show	Value
	Sets the iSNS server subnet mask	Set	Value
NTPServerIPAddress	Returns the NTP server IP address	Show	Value
	Sets the NTP server IP address	Set	Value

Property	Description	Associated Global Action Commands	Return Parameter
SNMPNotificationEnabled	Returns whether SNMP Trap notification is enabled	Show	Value
	Sets the SNMP Trap notification enabled setting	Set	Value
SNMPClientCommunityString	Returns the SNMP Client Community String	Show	Value
	Sets the SNMP Client Community String	Set	Value
SNMPClientIPAddress	Returns the SNMP Client IP Address	Show	Value
	Sets the SNMP Client IP Address	Set	Value
SNMPClientPortNumber	Returns the SNMP Client Port Number	Show	Value
	Sets the SNMP Client Port Number	Set	Value

5.22 SystemStatistics Properties

`SystemStatistics` properties let you access the system statistics for an array. Table 5-34 provides an alphabetical list of the properties in the `SystemStatistics` context, a description of the property and the global action commands that can be used with the property, and the return parameter. In Table 5-34, for example, `InitiatorsActiveCount` is used with the global action command `Show`.

Table 5-34. SystemStatistics Properties

Property	Description	Associated Global Action Commands	Return Parameter
InitiatorsActiveCount	Returns the number of active iSCSI initiators	Show	Value
InitiatorsCount	Returns the number of iSCSI initiators	Show	Value
StoragePerformance	Returns storage performance information	Show	Value
StorageRedundancy	Returns storage redundancy information	Show	Value
StorageUtilization	Returns storage utilization information	Show	Value
TotalStorageCapacity	Returns the total storage capacity	Show	Value
TotalAvailableCapacity	Returns the total available capacity	Show	Value
TargetsWithoutInitiatorsCount	Returns the number of targets that do not have iSCSI initiators	Show	Value
VolumeCount	Returns the number of volumes	Show	Value
VolumesWithoutAccessCount	Returns the number of volumes that do not have access	Show	Value

5.23 LAG Commands and Properties

`LAG` commands and properties let you perform LAG-related activities, such as creating, disabling, and deleting a portal. Table 5-35 provides an alphabetical list of the commands in the `LAG` context and Table 5-36 provides an alphabetical list of the properties in the `LAG` context. Both tables include a description of the command or property, global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-35, for example, `CreatePortal` is used with the global action commands `Do`, `Push`, and `Select`.

Table 5-35. LAG Commands

Command	Description	Associated Global Action Commands	Return Parameter
CreatePortal	Creates a portal	Do/Push/Select	Context
Delete	Deletes the LAG	Do	No Return Value
Disable	Disables the LAG	Do	No Return Value
Enable	Enables the LAG	Do	No Return Value
ReplaceLAGandChangeVLAN	Changes the VLAN Enabled flag by delete and recreate	Do	No Return Value

Table 5-36. LAG Properties

Property	Description	Associated Global Action Commands	Return Parameter
ActiveMTU	Returns the Active Maximum Transmission Unit	Show	Value
	Sets the Active Maximum Transmission Unit	Set	Value
AutoSense	Returns the AutoSense value in Boolean notation	Show	Value
	Sets the AutoSense value in Boolean notation	Set	Value
FrameType	Returns the Frame Type	Show	Value
IsEnabled	Returns the administrative enabled/disabled state in Boolean notation	Show	Value
MACAddress	Returns the LAG's MAC address	Show	Value
Portals	Lets you access the array of portals	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Ports	Lets you access the array physical ports in the LAG	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
RequestedSpeed	Returns the Requested Speed	Show	Value
	Sets the requested speed	Set	Value
VLANState	Returns the VLAN state	Show	Value

5.24 ManagementPort Commands and Properties

`ManagementPort` commands and properties let you perform activities related to an array's management port, such as viewing or setting the management port's IP address or hostname. Table 5-37 provides an alphabetical list of the command in the `ManagementPort` context and Table 5-38 provides an alphabetical list of the properties in the `ManagementPort` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter. In Table 5-37, for example, `PingRemoteIPAddress` is used with the global action command `Do`.

Table 5-37. ManagementPort Command

Command	Description	Associated Global Action Commands	Return Parameter
PingRemoteIPAddress	Pings another IP address	Do	Value

Table 5-38. ManagementPort Properties

Property	Description	Associated Global Action Commands	Return Parameter
BroadcastIpAddress	Returns the system's management broadcast IP address	Show	Value
DynamicRoutes	Lets you access the array dynamic routing table entries scoped to this port	Show/Show[ID]/Push[ID]/Select[ID]	ContextList
Gateway	Returns the system's management gateway IP address	Show	Value
Gateway	Sets the system's management gateway IP address	Set	Value
HostName	Returns the system's hostname	Show	Value
HostName	Sets the system hostname	Set	Value
IPAddress	Returns the system's management IP address	Show	Value
IPAddress	Sets the system's management IP address	Set	Value
SubnetMask	Returns the system's management subnet mask	Show	Value
SubnetMask	Sets the system's management subnet mask	Set	Value

5.25 NetworkRoute Commands and Properties

`NetworkRoute` commands and properties let you perform tasks related to network routes, such as returning a route's destination IP address or values that indicate whether a network route is dynamic or usable. Table 5-39 lists the command in the `NetworkRoute` context and Table 5-40 provides an alphabetical list of the properties in the `NetworkRoute` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-39, for example, `Delete` is used with the global action command `Do`.

Table 5-39. NetworkRoute Command

Command	Description	Associated Global Action Commands	Return Parameter
Delete	Deletes the route entry	Do	No Return Value

Table 5-40. NetworkRoute Properties

Property	Description	Associated Global Action Commands	Return Parameter
DestinationIpAddress	Returns the destination IP address for this route entry	Show	Value
DestinationIsGateway	Returns the destination is gateway Boolean value for this route entry	Show	Value
DestinationSubnetMask	Returns the destination subnet mask for this route entry	Show	Value
InterfaceName	Returns the interface name for this route entry	Show	Value
IsDynamic	Returns the Is Dynamic Boolean value for this route entry	Show	Value
IsHost	Returns the Is host Boolean value for this route entry	Show	Value
IsInitialRoundTripTime	Returns the Is Initial Round Trip Time Boolean value for this route entry	Show	Value
IsModified	Returns the Is Modified Boolean value for this route entry	Show	Value
IsRouteUsable	Returns the Is Route Usable Boolean value for this route entry	Show	Value
IsSpecificMTU	Returns the Is Specific MTU Boolean value for this route entry	Show	Value
IsWindowClamping	Returns the Is Window Clamping Boolean value for this route entry	Show	Value
NextHopIpAddress	Returns the Next Hop IP Address for this route entry	Show	Value
NumberOfHopsToDestination	Returns the Number of Hops to destination for this route entry	Show	Value
Reinstate	Returns the Reinstate Boolean value for this route entry	Show	Value
RouteIsRejected	Returns the Route Is Rejected Boolean value for this route entry	Show	Value

Property	Description	Associated Global Action Commands	Return Parameter
RouteIsStatic	Returns the Route Is Static Boolean value for this route entry	Show	Value

5.26 ServicePool Commands and Properties

`ServicePool` commands and properties let you perform tasks related to pools of disks, such as accessing disks in a pool or obtaining the name of a pool. Table 5-41 lists the command in the `ServicePool` context and Table 5-42 provides an alphabetical list of the properties in the `ServicePool` context. Both tables include a description of the command or property, the global action commands that can be used with the command or property, and the return parameter (if any). In Table 5-41, for example, `CreateVolume` is used with the global action commands `Do`, `Push`, and `Select`.

Table 5-41. ServicePool Commands

Command	Description	Associated Global Action Commands	Return Parameter
CreateVolume	Creates a volume	Do/Push/Select	No Return Value
GetMaxVolumeSize	Obtains the maximum volume size	Do	Value

Table 5-42. ServicePool Properties

Property	Description	Associated Global Action Commands	Return Parameter
Disks	Lets you access the disks in a pool	Show/Show[ID]/Push[ID]/Select[ID])	Value
PoolName	Obtains the pool name	Show	Value
PoolType	Obtains the pool type	Show	Value

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Chapter 6 Application Examples

This chapter provides examples of entering CLI commands on a command line. In these examples, bold text indicates commands typed by the user.

The topics covered in this chapter are:

6.1 Setting the Name of the System

The following example sets the name of the system to `Garnet`. Systems are named from the `System` context.

```
192.168.59.25 ::  Set Name Garnet
```

6.2 Creating Volumes

The following sections show examples of creating volumes. Volumes are created from the `System` context.

Example 1

The following examples are functionally identical. Both examples create a volume called CAD that is 30,000,000 bytes (30 MB) in size and whose volume composition is mirror.

```
192.168.59.25 ::  Do CreateVolume CAD 30MB mirror
```

```
192.168.59.25 ::  CreateVolume CAD 30MB mirror
```

Example 2

The following example creates a volume named Exchange that is 150 GBytes in size; has a volume composition of parity; is created on disks 0, 1, 2, and 3; and has a stripe width of 4 and a stripe depth of 512 KB.

```
192.168.59.25 ::  Do CreateVolume Exchange 150GB parity [0,1,2,3] 4 512KB
```

Example 3

The following example creates a volume called resumes that is 500 GB in size and has a volume composition of jbod.

```
192.168.59.25 ::  Do CreateVolume resumes 500GB jbod
```

Example 4

The following command lines show examples of creating volumes. The first line creates one 4-wide Parity volume with a 512KB stripeDepth (chunk-size). The second command line creates one JBOD volume.

```
192.168.59.25 :: createVolume my_parity_volume 10GB parity [0,1,2,3] 4 512KB
192.168.59.25 :: createVolume myjbodvolume 5GB jbod
```

6.3 Obtaining the Maximum Size of a Volume

The following example displays the maximum size of a volume called Exchange that:

- Has a volume composition of parity.
- Is created on disks 0, 1, 2, and 3.
- Has a stripe width of 4 and a stripe depth of 512 KB.

```
192.168.59.25 ::  Do GetMaxVolumeSize parity [0,1,2,3] 4 512kb
```

6.4 Obtaining the Maximum Stripe Width of a Volume

Example 1

The following example displays the maximum stripe width supported for a JBOD.

```
192.168.59.25 ::  Do GetMaxVolumeStripeWidth JBOD
```

Example 2

The following example displays the maximum stripe width supported for a mirror configuration.

```
192.168.59.25 ::  Do GetMaxVolumeStripeWidth Mirror
```

Example 3

The following example displays the maximum stripe width supported for a stripe mirror configuration.

```
192.168.59.25 ::  Do GetMaxVolumeStripeWidth StripeMirror
```

Example 4

The following example displays the maximum stripe width supported for a parity configuration.

```
192.168.59.25 ::  Do GetMaxVolumeStripeWidth Parity
```

6.5 Adding an iSCSI Initiator

The following example adds the iSCSI initiator named below as a known iSCSI initiator to the system. iSCSI initiators are added from the `System` context.

```
192.168.59.25 ::  Do AddInitiator iqn.1991-05.com.microsoft:hostname.domain.com
```

6.6 Obtaining a Vector of All Controllers on a System

The following example obtain a vector of all controllers in the system. This command is issued from the `System` context.

```
192.168.59.25 ::  Show Controllers
Controllers:
       controllers = Controller[A], Status=OK, SlotNumber=0
       Summary = 1 Controllers
```

6.7 Restarting the System

The following examples are functionally identical. Both examples restart the system. You restart a system from the `System` context.

```
192.168.59.25 ::  Do SystemRestart
```

```
192.168.59.25 ::  SystemRestart
```

6.8 Shutting Down the System

The following example shuts down the system. You shut down a system from the `System` context.

```
192.168.59.25 ::  Do SystemShutdown
```

6.9 Showing the Status of a Controller

The following example shows how to display the status of a controller A. In addition to the controller's name (ID) and status, the following information is returned:

- The number of ports on the controller
- The IP address and status of the controller's management port
- The number of lAGs (if any) configured on the controller
- The slot number, serial number, number of drive slots, and display name for the controller
- The current software version running on the controller and the version number of any alternate software version configured for the controller
- The board type and controller status description (if any)
- The number of disks that make up the base pool

Showing controller status is performed from the `Controller` context.

```
Controller[A] ::  show
ID          = A
Status      = OK
IsActive    = true
SlotNumber = 0
SerialNumber    = 00001
DriveSlots = 12
NumFrontPorts  = 8
DisplayName     = Blade A
SoftwareVersion     = 2.5.1.21
IsAlternateSoftwareVersionPresent  = true
AlternateSoftwareVersion    = 2.5.1.21
BoardType  = 0009
BoardTypeRevision  = XC05
I8kHwVersion    = 1.0.0.0
I8kSwVersion    = 0.1.0.0
MpuSwVersion    = 2.5.1.21
BindFailReason = Bind_OK
BladeHealth     = Healthy
BladeState = Bound
BladeType  = SFF
PersistenceSetting = Unchanged
BatteryState    = Failed
BufferMemDimmCnt    = 2
BufferMemSize  = 2048
SystemMemDimmCnt    = 2
SystemMemSize  = 512
SystemTime = 13:18:27
Ports       = 8 Ports
LAGs        = 8 LAGs
ManagementPort = ManagementPort [192.168.59.25], Status=OK
BasePool    = [BaseA], 2 disks
```

The information shown to the left of the equals sign in the example above are themselves commands that can be issued from the `Controller` context if you want to view a particular setting only. For example, to return the number of drive slots for the current controller, type **`show driveSlots`**.

6.10 Navigating and Displaying System, Volume, and Drive Information

The following example shows how to display system, volume, and drive information while navigating through the CLI hierarchy.

```
192.168.59.25 :: show
ID = 192.168.56.134
Status = OK
Controllers = 1 Controllers
DiskList = 4 disks
PoolList = 4 pools
VolumeList = 2 volumes
TaskList = 9 tasks
iSCSI = 1 initiators, 2 targets, 4 ports, 1 portals
```

```
ExternalConnectionsManager = ExternalConnectionsManager
Name =
Identity = 192.168.56.134
AdvancedSettings = AdvancedSettings
SystemStatistics = SystemStatistics [0], Status=OK
IsHighAvailabilitySystem = false

192.168.59.25 :: select volumelist

VolumeList :: show
ID = 0
Status = OK
Volumes = 2 Volumes

VolumeList :: show volumes
Volumes:
        volumes = [my_volume], State=Normal, Composition=Parity, Size=10.00GB
        volumes = [mark1], State=Normal, Composition=JBOD, Size=5.00GB
        Summary = 2 Volumes

VolumeList :: select volumes[my_volume]

Volume[my_volume] :: show
ID = my_volume
Status = OK
VolumeComposition = 4 extents
IsReconfiguring = false
Target = [my_volume], durableName=iqn.2000-03.com.D-Link:mynewvolume:6-001215-
 00c000006-484daa3e3a95a6c1, sessionCount=0
Initiators = 0 Initiators
Tasks = 1 Tasks
Name = my_volume
State = Normal
DurableName = 600121500C000006484DAA3E3A95A6C1
CompositionName = Parity
NSPOF = true
Size = 10,736,369,664
StripeWidth = 4
StripeDepth = 524288
IsReadOnly = false
IsSyncCacheDisabled = false

Volume[my_volume] :: pop


192.168.59.25 :: show disklist
ID = 0
Status = OK
Disks = 4 Disks

192.168.59.25 :: select diskList

DiskList :: show disks
Disks:
        disks = [0], Status=OK, State=Normal, Capacity=233.76GB, Free=230.09GB
        disks = [1], Status=OK, State=Normal, Capacity=233.76GB, Free=230.09GB
        disks = [2], Status=OK, State=Normal, Capacity=233.76GB, Free=230.09GB
        disks = [3], Status=OK, State=Normal, Capacity=233.76GB, Free=230.09GB
        Summary = 4 Disks

DiskList :: select disks[0]

Disk[0] :: show
ID = 0
Status = OK
Extents = 2 Extents
Tasks = 0 Tasks
FreeSpaceSize = 247,053,688,832
Pool = [BaseA], 4 disks
State = Normal
DriveType = SATA
PhysicalCapacity = 251,000,193,024
```

```
    SerialNumber = Y65N42TE
    SASChannelNumber = 0
    EnclosureNumber = 0
    SlotNumber = 0
    DriveNumber = 0
    Vendor =
    VendorModel = Maxtor 7Y250M0
    ATAVersion = 7
    ActualLinkSpeed = 0
    SupportedLinkSpeeds = 0 SupportedLinkSpeeds
    SATAQueueingSupport = ENABLED
    SATAQueueDepth = 32
    Supports48BitAddress = true
    SMARTData = SMARTData [0], Status=OK
```

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