

IBM XIV Management Tools
Version 4.6

XCLI Utility User Guide



Note

Before using this information and the product it supports, read the information in Notices.

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About this guide

This document describes how to use the IBM® XIV® Storage System command-line interface (XCLI) to invoke XCLI utility and system commands.

Who should use this guide

This publication is for personnel that are responsible for administering IBM XIV Storage System.

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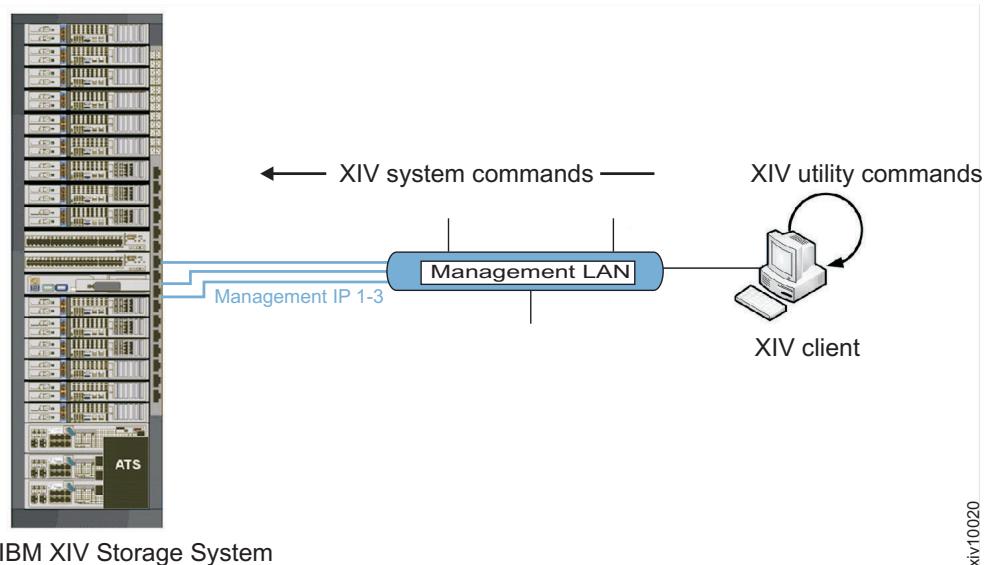
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Chapter 1. Overview of the IBM XIV Storage System command-line interface

The IBM XIV Storage System command-line interface (XCLI) provides a mechanism for issuing commands to manage and maintain the XIV systems. XCLI commands are entered on an XCLI client system (or *XCLI client*) supplied by the customer.

Some XCLI commands run directly on the XCLI client. But usually, XCLI commands are sent by the XCLI client to the XIV system for processing.



The XCLI relies on code running in two places: the XCLI client system and the XIV system. A single XCLI client system usually supports multiple XIV systems, and these XIV systems can be running different microcode versions. The XCLI client code version is independent of the version of microcode firmware that is running on the XIV system. When you receive a new version of XIV system microcode that supports additional XCLI system commands, you do not need to update the XCLI code running on the XCLI client system to use the new commands.

Communication between the XCLI client and the XIV system

The XCLI client and the XIV system communicate using Secure Sockets Layer (SSL) over TCP/IP. Each XIV system has three Ethernet ports used as management interfaces, and each XIV system can be assigned up to three IP addresses – one per management interface. Having three management interfaces provides redundancy so that management interface communication can continue on a different port and IP address if one of the ports or the customer Ethernet network fails. When running a command, the XCLI client receives these three IP addresses and tries each of them until communication with one of the IP addresses is successful.

Interactive and basic modes

You can use the IBM XIV Storage System command-line interface (XCLI) in two modes: interactive and basic.

The differences between these two modes are as follows:

- Basic mode requires you to log in to an XIV system each time that you issue a command, but the interactive mode requires you to log in only once.
- In basic mode, you must enter the entire XCLI command syntax. In interactive mode, you can enter a shorter syntax.
- Interactive mode offers several command and argument completion features.

The following example shows the command syntax for each of these modes:

Basic `xcli -u user -p password -m 127.0.0.1 vol_list`

Interactive
 `vol_list`

Note: Each of the batch-mode parameters in these examples is explained later in this manual.

Chapter 2. Getting started with XCLI

This information gets you started with the IBM XIV Storage System command-line interface (XCLI), including how to install and start the XCLI. It also provides information about interactive and basic modes for running commands in the XCLI and an overview of the XCLI command structure and parameters.

Installing the XCLI

This information describes how to download and install the IBM XIV Storage System command-line interface (XCLI) on the XCLI client system. The XCLI is available on Microsoft Windows, Linux and other operating systems.

About this task

Note: For the installation requirements and a list of available packages, see the *XCLI Release Notes* on the IBM Support Portal website (www.ibm.com/storage/support) website.

Procedure

Perform these steps to download and install the XCLI:

1. Download the IBM XIV Management Tools installation package and *Release Notes* from the IBM Support Portal website (www.ibm.com/storage/support) website.
2. Perform one of the following procedures for your operating system.

- **Windows:** Double-click the installation file, and follow the instructions on the screen.

On the Select Components page in the installation wizard, you can choose which XIV management tools to install:

Full installation

Installs the IBM XIV Storage Management GUI, IBM XIV Storage System online monitoring tool (XIVTop) and IBM XIV command-line interface (XCLI).

CLI installation

Installs only the XCLI.

- **Linux:** Extract the installation file to a designated folder on your system, using the following command:

```
tar -xzf file_name.tar
```

- **AIX®, HP-UX, Solaris:** Extract the installation file using the following command:

```
gunzip file_name.tar.gz
```

Then, extract the file to a designated folder on your system, using the following command:

```
tar -xvf file_name.tar
```

Tip: You can download the GNU Unzip utility (**gunzip**) from the GZIP home page Web site [GZIP home page Web site at www.gzip.org/](http://www.gzip.org/).

3. Optional: Add the installation directory to your PATH environment variable.

4. Start the XCLI.

Starting the XCLI

You start the XCLI in different ways depending on the hosting operating system and operational mode. This information describes how to start the XCLI on Windows and Linux hosts in both interactive and basic modes.

Starting the XCLI on a Windows system

You can start the XCLI on a Windows system in either interactive or basic mode.

Interactive mode

About this task

To run commands in interactive mode, perform the following steps:

Procedure

1. Click **Start > Programs > IBM XIV > XCLI** to open an XCLI session window.
2. Follow the instructions on the screen and type the following information:
 - a. XIV system IP address or DNS
 - b. User name
 - c. Password
3. You are now connected to the specified XIV system. The XCLI prompt appears in the session window. The window title includes the name of XIV system to which the XCLI is connected.
4. Run any XCLI command from this prompt (for example, you can run the **vol_list** command to list volumes).

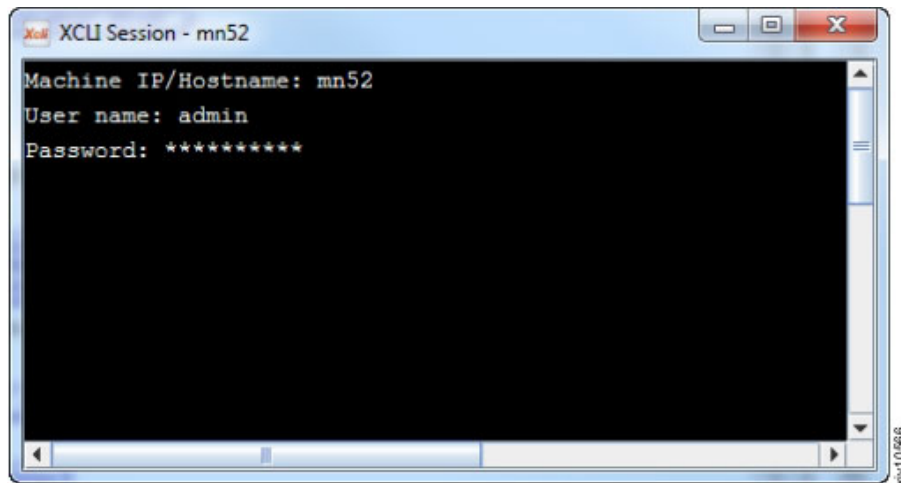


Figure 2. XCLI prompt on Windows

Basic mode

About this task

To run commands in basic mode, perform the following steps:

Procedure

1. Open a Windows command session.
2. Type `cd c:\program files\IBM\Storage\XIV`.
3. Run any XCLI command, including the XCLI identification parameters, for example:

```
xcli -u user -p ***** -m 127.0.0.1 vol_list
```

Starting the XCLI on a Linux system

You can start the XCLI on a Linux system in either interactive or basic mode.

Interactive mode

About this task

To run commands in interactive mode, perform the following steps:

Procedure

1. Type `xcli -w` to open a new session.
2. Follow the instructions on the screen and type the following information:
 - a. User name
 - b. Password
 - c. XIV system IP address or DNS
3. You are now connected to the specified XIV system. The XCLI prompt appears in the session window. You can run any XCLI command from this prompt (for example, you can run the **vol_list** command to list volumes).

Basic mode

About this task

To run commands in basic mode, enter the command including the XCLI identification parameters, for example:

```
xcli -u user -p ***** -m 127.0.0.1 vol_list
```

Exiting an interactive XCLI session

When running the IBM XIV Storage System command-line interface (XCLI) in interactive mode, you can exit the interactive session by either closing the session window or running the **exit** command.

Interactive mode features

Running XCLI commands in interactive mode provides command and argument completion, along with possible values to these arguments.

About this task

XCLI Utility offers several ways to interactively complete command names.

Procedure

1. To complete the name of a command, type one or more characters and press Tab. In the following example, XCLI Utility adds a character to the name of a command that starts with **vol**. The first click on Tab adds a character.

```
>>vol  
>>vol_
```

- Next, to list commands, type one or more characters and press Tab twice (Tab-Tab).

```
>>vol_
vol_by_id      vol_copy      vol_create    vol_delete
vol_format     vol_list     vol_lock      vol_mapping_list
vol_move       vol_rename    vol_resize    vol_unlock
```

Example

- This example lists all commands that start with the letter **v**:

```
>> v
version_get    vol_by_id     vol_copy      vol_create
vol_delete     vol_format    vol_list      vol_lock
vol_mapping_list vol_move      vol_rename    vol_resize
vol_unlock     vpd_config_get vpd_config_set
```

- This example lists all commands that start with the letters **cg**:

```
>> cg
cg_add_vol     cg_create     cg_delete     cg_list
cg_move        cg_remove_vol cg_rename     cg_snapshots_create
```

Command Argument Completion

The XCLI can provide list arguments and argument values to help you complete a command.

About this task

To list arguments for a specific command, type the command name and press Tab. To list values for a specific argument, type the command name and argument, optionally specify one or more characters for the value, and then press Tab.

Procedure

- Listing arguments for a command. This example lists arguments for the **vol_create** command:


```
>> vol_create
vol= size= size_block= pool=
```
- Listing values for a specific argument. This example lists valid values for the **pool** argument that is required for the **pool_create** command:


```
>> pool_create pool=
8058 2nd Pool 8059 pool1
```
- Listing a subset of values for a specific argument. This example lists valid values that start with **v** for the **vol** argument that is required for the **vol_list** command:


```
>> vol_list vol=v
vol1 vol2
```

Understanding the command syntax

This information describes the general syntax for the XCLI command in Basic mode.

When in Basic mode, the XCLI uses the following general syntax:

```
xcli < <[ --file=FILE ] -c CONFIG|-m IP1 [-m IP2 [-m IP3]] >
-L|-a <config> -m IP1 [-m IP2 [-m IP3]]|-d IP1 [-m IP2 [-m IP3]] >|
[ -r ]
[ <-l | --list> | <-s | --csv> | <-x | --xml> ]
```

```
[ <-u | --user> user ]
[ <-p | --password> password ]
[-t [--fields=field1,field2,...]]
[command]
```

Command syntax quick reference

This information describes the command parameters and options that are available in the XCLI Basic mode.

Use the following table as a quick reference to the various parameters and options.

| Options | Values |
|---------|--|
| -f | Specifies the name of a configuration file that lists the XIV system |
| -c | Specifies the XIV system on which the command is to be run |
| -m | Specifies the IP address of the XIV system on which the command runs |
| -L | Lists the XIV systems, as read from the configuration file |
| -a | Specifies the name of the XIV system |
| -d | Removes an XIV system from the configuration file |
| -r | Specifies the name of a batch file that runs XCLI commands |
| -l | Displays the command output in user-readable format |
| -s | Displays the command output in CSV format |
| -x | Displays the command output in XML format |
| -u | Specifies the user |
| -p | Specifies the password |
| -t | Manages the fields of the command output |
| -h | Displays command help |
| -y | Suppresses the Are you sure? prompt |
| -v | Displays the version of the XCLI on the screen |
| command | Runs the specified command |

Syntax example

The XCLI command syntax specifies the command to be run, along with its applicable parameters and their values.

In the following example, the parameters to the left of the **vol_list** command specify the IBM XIV Storage System to which the command is being directed, and also specify the required user and password for this XIV system:

```
xcli -u admin -p ***** -m 127.0.0.1 vol_list
```

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by either its IP address or name of the XIV system as listed in the configuration file. See “Configuration parameters” on page 10 for more information.

- m Specifies the IP address of the XIV system to which this command is directed.

- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

Chapter 3. Using the XCLI

This information describes each XCLI command parameter.

Using identification parameters

This information describes parameters used to set the user, password, and XIV system.

User and password parameters

The XCLI and the IBM XIV Storage System provide a password-controlled user ID as a security mechanism for controlling XCLI operations.

When running in basic mode, specify the user name and password as follows:

```
xcli -u admin -p ***** -c my_system vol_list
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

The password handling mechanism performs as follows:

1. Checking the user:
 - The **-u** or **--user** parameter on the command line is checked first and its value is used as the user name.
 - If the **-u** or **--user** parameter is not specified, the XIV_XCLIUSER environment variable is used as a user name.
2. Checking the password:
 - The **-p** or **--password** parameter on the command line is checked first and its value is used as the password.
 - If the **-p** or **--password** parameter is not specified, the XIV_XCLIPASSWORD environment variable is used as the password.

Note: If you do not specify both the user ID and the password, the command fails.

Defining XCLI configurations

This information describes the parameters used to identify the XIV system on which a command is to run and how to create a configuration file to manage the XIV systems that you can use.

Configuration parameters

Most XCLI commands are directed to a specific XIV system using the IP address. You must provide at least one address and up to three addresses per XIV system.

To provide the XIV system IP address, log in to an interactive session or specify the configuration file that stores the XIV system IP address or addresses.

Specifying an XIV system using its IP address

In the following example, the command is directed to an XIV system with an IP address of 127.0.0.1:

```
xcli -u admin -p ***** -m 127.0.0.1 vol_list
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by its IP address.

- m Specifies the IP address of the XIV system to which this command is directed.

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

Specifying an XIV system by using a configuration file

In the following example, the command is directed to an XIV system that is listed on the my_system configuration file:

```
xcli -u admin -p ***** -c my_system vol_list
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by its name on the configuration file.

- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

Creating a configuration file

You can use the configuration file to manage a list of the XIV systems that you are working with.

Use the following options to add and subtract XIV systems from this file and to list them.

Listing the available XIV systems

In the following example, the configuration information is read from a default file location or from the file that is specified with `[-f file]`.

```
xcli [-f file] -L
```

Adding a new XIV system to the configuration file

In the following example, IP1...IP3 are added to the configuration file at the default file location. If applicable, the addresses are added to the file that is specified in `[-f file]`. The `<config>` variable represents the configuration name of the XIV system that you are adding to the list.

```
xcli [-f file] -a <config> -m IP1 [-m IP2 [-m IP3]]
```

Removing an XIV system from the configuration file

In the following example, IP1...IP3 are removed from the configuration file. If applicable, the addresses are removed from the file that is specified with `[-f file]`.

```
xcli [-f file] -d IP1 [-m IP2 [-m IP3]]
```

Location of the configuration file

The configuration file is located in the following directory, depending on the operating system. You do not specify the location of the configuration file when you add or remove XIV systems from the configuration.

Windows

\Application Data\XIV\GUI12\properties

UNIX In the home folder under `.xiv`

Certificate management

This section describes the way certificates are managed via the XCLI Utility.

The general format of the certificate commands is:

```
xcli -C <command> [ <p1>=<v1> [<p2>=<v2>]...]
```

The available commands are: list, show, import and remove.

List [type=<type>]

This command lists the trusted certificates (global and private). This command accepts the type of list as a parameter.

Type = all (default)

Lists all trusted certificates.

For example:

```
xcli -C list
```

Private

Lists all private trusted certificates.

For example:

```
xcli -C list type=private
```

Global

Lists all global trusted certificates.

Show alias=<alias>

This command displays the certificate details. This command accepts the name of the specific certificate as a parameter. For example:

```
xcli -C show alias=abcd
```

Import pem=<pem_file_path> [alias=<alias>]

This command imports a certificate (in PEM format) into the list of trusted certificates. This command accepts the location of the certificate as a mandatory parameter and the name into which the certificate will be renamed. For example:

```
xcli -C import pem=C:\abc\def\cert.pem  
xcli -C import alias=abcd pem=C:\abc\def\cert.pem
```

Remove alias=<alias>

This command removes a certificate from the list. For example:

```
xcli -C remove alias=abcd
```

Display options

This information describes the formats that you can choose to display the command output.

Using display options

Output from an XCLI command can be displayed in a list, comma-separated value (CSV) and XML formats. You can specify only one format. If you do not specify the format, the output defaults to a list. The display options are:

- l Displays command output in a list (also known as user-readable format).
- s Displays command output in CSV format.
- x Displays command output in XML format.

Use the display options as follows:

Interactive mode

```
vol_list -s
```

Basic mode

```
xcli -u user -p ***** -m 127.0.0.1 -s vol_list
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by either its IP address or name of the XIV system as listed in the configuration file. See “Configuration parameters” on page 10 for more information.

- m Specifies the IP address of the XIV system to which this command is directed.

- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

Display option

- s Displays command output in CSV format.

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

Table display options

The list option displays the command output in a user-readable format. When running a command with a list option, you can specify which table columns are displayed on the screen.

Determine the way that the table is displayed as follows:

Interactive mode

```
vol_list -t "size"
```

Single-command mode

```
xcli -u admin -p ***** -m 127.0.0.1 vol_list -t "size"
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by either its IP address or name of the XIV system as listed in the configuration file. See “Configuration parameters” on page 10 for more information.

- m Specifies the IP address of the XIV system to which this command is directed.
- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

Table display option

-t "size"

Specifies the one or more columns that are to be displayed. In this example, only the Size column is displayed. You can list any combination of the table columns.

Command

vol_list

Specifies the command to be run. For more information about running commands, see “Interactive mode features” on page 5.

Viewing the available columns

You can view all of the available table's columns by running: help command=<command_name> format=full.

The result provides information about the command, including a list of all of its fields. For example, the available fields for the **vol_list** command are: name, size, master_name, cg_name, pool_name, creator, used_capacity, used_capacity_MiB, snapshot_time_on_master, serial, wwn, capacity, mirrored, sg_name, snapshot_time, sg_snapshot_of, locked_by_pool, size_MiB, locked, snapshot_of, modified, delete_priority.

Running commands in batch mode

XCLI commands can be grouped together and run in a batch. For example, you can use batch mode to run an identical set of commands on multiple IBM XIV Storage Systems.

Creating a batch file for the commands

Create a text file and write the commands without the **xcli** prefix or XCLI parameters. For example:

```
pool_create pool=pool_00001 hard_size=171 soft_size=171 snapshot_size=65
vol_create vol=vol_00010 size=17 pool=pool_00001
vol_list vol=vol_00010
```

This example contains the following commands:

- The **pool_create** command, along with its arguments. This command creates a storage pool, which is a prerequisite for creating a volume.
- The **vol_create** command, along with its arguments. This command creates a volume in the pool that has just been created.
- The **vol_list** command displays the details of the newly created volume.

Name the script file and save it.

Running a batch file

To run the batch file, you must specify the XCLI parameters:

```
xcli -u admin -p ***** -m 127.0.0.1 -r
"C:\Documents and Settings\avia\xcli\xcli_script.txt"
```

In this command:

Identification parameters

- u Specifies the user ID.
- p Specifies the password.

XIV system

The XIV system is specified by either its IP address or name of XIV system as listed in the configuration file. See “Configuration parameters” on page 10 for more information.

- m Specifies the IP address of the XIV system to which this command is directed.
- c Specifies the name of the XIV system to which this command is directed, as it is defined in the configuration file (for example, my_system).

The batch parameter

- r Specifies the name of the batch file to run on the XIV system.

Viewing the output

The three commands in the previous example create a pool, then create a volume, then display the volume details. The following output is returned from running these three commands in batch mode:

- Confirmation that a pool was created
- Confirmation that a volume was created
- Table with the details of the newly created volume

Failure of batch mode

When one of the commands that run in batch mode fails, the following actions occur:

1. The script exits immediately.
2. No commands after the failing command are run.
3. An error message is displayed identifying the XCLI command that failed.

Displaying XCLI help and version

This information describes how to display help for the XCLI command and the version of the XCLI code that is running on the XCLI client.

About this task

The following command prints the help text for the XCLI in batch mode:

```
xcli <-h | --help>
```

The following command prints the XCLI version:

```
xcli <-v | --version>
```

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