

**EMC[®]Solutions Enabler
Symmetrix[®] CLI**
Version 6.4

Command Reference
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REV A04

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As part of its effort to continuously improve and enhance the performance and capabilities of the EMC product line, EMC periodically releases new versions of both the EMC Enginuity Operating Environment and EMC Solutions Enabler. Therefore, some functions described in this guide may not be supported by all versions of Enginuity or Solutions Enabler currently in use. For the most up-to-date information on product features, see your product release notes.

If an EMC Solutions Enabler feature does not function properly or does not function as described in this guide, please contact the EMC Customer Support Center for assistance. If you are an EMC Development Partner, refer to the EMC Powerlink website.

Audience

This manual provides reference information for command-line users and script programmers. The manual provides the syntactical reference information for all of the SYMCLI commands in the Solutions Enabler software.

Related documentation

Other Symmetrix publications of related interest are:

- ◆ *EMC Solutions Enabler Installation Guide*
- ◆ *EMC Solutions Enabler Symmetrix Array Management CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix Array Controls CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix SRM CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix TimeFinder Family CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix SRDF Family CLI Product Guide*

Conventions used in this manual

The following conventions are used in this manual:

In this manual, every use of the word SYMCLI means EMC Solutions Enabler.

Note: A note calls attention to any item of information that may be of special importance to the reader.



CAUTION

A caution contains information essential to avoid damage or degraded integrity to storage of your data. The caution might also apply to protection of your software or hardware.

Typographical conventions

EMC uses the following type style conventions in this document:

Normal font

In running text:

- Interface elements (for example, button names, dialog box names) outside of procedures
- Items that user selects outside of procedures
- Java classes and interface names
- Names of resources, attributes, pools, Boolean expressions, buttons, DQL statements, keywords, clauses, environment variables, filenames, functions, menu names, utilities
- Pathnames, URLs, filenames, directory names, computer names, links, groups, service keys, file systems, environment variables (for example, command line and text), notifications

Bold

In procedures:

- Names of dialog boxes, buttons, icons, menus, fields
- Selections from the user interface, including menu items and field entries
- Key names
- Window names

In running text:

- Command names, daemons, options, programs, processes, notifications, system calls, man pages, services, applications, utilities, kernels.

Italic

Used for:

- Full publications titles referenced in text
- Unique word usage in text

Bold Italic

Anything requiring extra emphasis

`Courier`

Used for:

- System output
- Filenames
- Complete paths
- command-line entries
- URLs

`Courier, bold`

Used for:

- User entry
- Options in command-line syntax

`Courier, italic`

Used for:

- Arguments used in examples of command-line syntax
- Variables in examples of screen or file output
- Variables in path names

`Courier, bold, italic`

Variables used in a command-line sample

< >

Angle brackets enclose parameter or variable values supplied by the user

[]

Square brackets indicate optional values

|

Vertical bar indicates alternate selections -the bar means "or"

{ }

Braces indicate content that you must specify (that is, x or y or z)

...

Ellipses indicate nonessential information omitted from the example

Where to get help

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

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

<http://Powerlink.EMC.com>

Technical support — For technical support, go to EMC Customer Service on Powerlink. To open a service request through Powerlink, you must have a valid support agreement. Please contact your EMC sales representative for details about obtaining a valid support agreement or to answer any questions about your account.

Your comments

Your suggestions will help us continue to improve the accuracy, organization, and overall quality of the user publications. Please send your opinion of this document to:
`techpub_comments@EMC.com`



This chapter presents the syntactical form (man page) with argument and option descriptions for each of the SYMCLI commands that span the Solutions Enabler series. The commands appear in alphabetical order:

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SYMCLI Conventions

Categories of information shown below (similar to UNIX man pages) are listed for each command, where applicable.

- ◆ **Command name** appears in **bold** typeface at the top of a page followed by a brief description of what the command does.
- ◆ **SYNTAX** lists the arguments and options for each command.
- ◆ **DESCRIPTION** provides a description of the command.
- ◆ **ARGUMENTS** explains the command arguments.
- ◆ **OPTIONS** explains the command options.
- ◆ **PARAMETERS** explains the command parameters.
- ◆ **RETURN CODES** specifies the primary success and failure codes for each command.
- ◆ **EXAMPLES** provides examples of the syntax and output, if any, of the command.

Related documentation

Figure 1 indicates which CLI product guides to refer to when performing the listed SYMCLI tasks.

Tasks in Symmetrix Storage Management

Product Guide Solutions

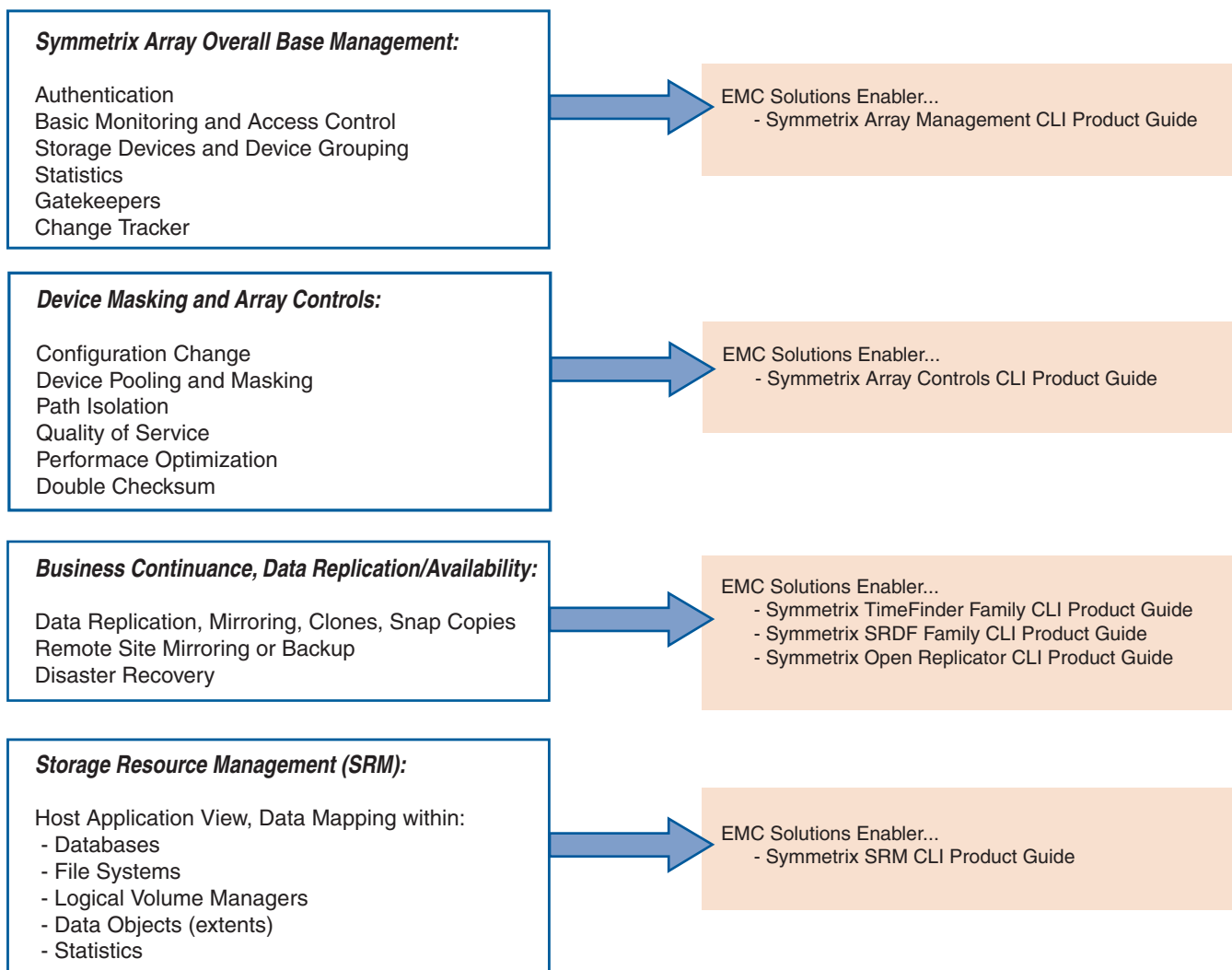


Figure 1 Tasks and their product guide locations

Commands by product guide

Table 1 contains the list of Solutions Enabler product guides and their related CLI commands.

Table 1 Commands by product guide

Solutions Enabler product guide	Commands
<i>Symmetrix Array Management CLI Product Guide</i>	<code>symacl</code>
	<code>symapierr</code>
	<code>symapisrv</code>
	<code>symaudit</code>
	<code>symauth</code>
	<code>symcfg</code>
	<code>symchg</code>
	<code>symcg</code>
	<code>symcli</code>
	<code>symdev</code>
	<code>symdg</code>
	<code>symdisk</code>
	<code>symdrv</code>
	<code>symevent</code>
	<code>symgate</code>
	<code>syminq</code>
	<code>symlabel</code>
	<code>symld</code>
	<code>sympd</code>
	<code>symreturn</code>
	<code>symstat</code>
<i>Symmetrix Array Controls CLI Product Guide</i>	<code>symchksum</code>
	<code>symconfigure</code>
	<code>symconnect</code>
	<code>symmask</code>
	<code>symmaskdb</code>
	<code>symoptmz</code>
	<code>symqos</code>

Table 1 Commands by product guide

Solutions Enabler product guide	Commands
<i>Symmetrix SRM CLI Product Guide</i>	symhost
	symhostfs
	symioctl
	symlv
	sympart
	symrdb
	symrslv
	symvg
<i>Symmetrix TimeFinder Family CLI Product Guide</i>	symbcv
	symclone
	symioctl
	symmir
	symsnap
<i>Symmetrix SRDF Family CLI Product Guide</i>	symioctl
	symstar
	symrdf
	symrecover
	symreplicate
<i>Symmetrix Open Replicator CLI Product Guide</i>	symrcopy
<i>EMC Solutions Enabler Installation Guide</i>	symlmf

symacl

Sets up or updates Symmetrix® access control information.

SYNTAX

```
symacl -h

symacl <-file CommandFile | (redirect stdin)> [-v|-noecho]
    preview

symacl <-sid SymmID [-v|-noecho] <-file CommandFile | (redirect stdin)>
    prepare
    commit [-force] [-restore]

symacl
    release -sid SymmID [-noprompt]

symacl [-sid <SymmID|ALL>]
    list [-accpool | -accgroup | -acl]
    list [-v]
    show accpool <PoolName> [-acl]
    show accgroup <GroupName> [-acl]

symacl
    backup -sid SymmID -file CommandFile

symacl -unique
```

DESCRIPTION

This command allows the user to set up or update Symmetrix access control information. All information regarding access control of the Symmetrix devices is stored within the Symmetrix array.

A lock is taken out by the specified Symmetrix during an access control change session. Only one access control session can be active within a Symmetrix at any one time. When making changes to the access control database, the host making the change must have the ADMIN privilege and the caller must supply an ADMIN PIN. The verbose list option can be used to determine if a host has such an ADMIN privilege. The verbose list option can be used to check if a Symmetrix has been configured for access control.

To execute a change to the Symmetrix access control information, you need to enter the changes in a command file (*CommandFile*) and execute the following operations:

- ◆ preview
- ◆ prepare
- ◆ commit

The `preview` argument is used after you first create the command file. It verifies the syntax and correctness of the contents of the entries in the command file.

The `prepare` argument performs the preview checks and also verifies the appropriateness of the requested access control modifications against the current state of the Symmetrix array.

The `commit` argument performs both the preview and prepare checks and then commits the contents of the command file to the Symmetrix access control database.

Note: It is not mandatory to execute a preview or prepare action prior to a commit. These actions can be used in the debug of the command file entries or ensure that the commit action will not be rejected. If you are the security administrator and you intend to release a lock on the command file session, you must either set environment variable `SYMCLI_ACCESS_PIN` to your access ID or enter your PIN every time `symacl` prompts you.

The command file format contains various command entries terminated with a semicolon (;). The commands are parsed case insensitive, but the data with the commands is parsed case sensitive. The following are various types of changes possible in the command file:

- ◆ Create new access groups
- ◆ Add and remove access IDs to access groups
- ◆ Move an access ID from one group to another
- ◆ Remove access IDs from access groups
- ◆ Create new device pools
- ◆ Add and remove devices to device pools
- ◆ Delete device pools and groups
- ◆ Add ACEs to grant access
- ◆ Remove ACEs to deny access

Redirect stdin

Optionally, for UNIX platforms, you can redirect a number of screen entries to `stdin` to save keystroke entries and not deal with the command file. For example, to prepare a chain of `symacl` commands on the screen to be redirected to `stdin`, use the following syntax:

```
symacl -sid SymmID prepare <<DELIM
create accgroup foo...;
add host accid...;
add user accid...;
add user accid...;
DELIM
```

The backup operation saves the contents of the access control database in the file specified by the file argument. The file must not previously exist. The backup file created is compatible for use with the `symacl` utility.

The restore operation replaces the contents of the access control database with the contents of the file specified by the file argument.

ARGUMENTS

`backup`

Backs up the access control database for the specified Symmetrix array to the specified file.

`commit`

Activates the changes defined in the command file into the specified Symmetrix array.

`list`

Lists all ACEs, device (access) pools, or access groups.

`prepare`

Performs the preview checks and also verifies the appropriateness of the requested access control modifications against the current state of the Symmetrix array.

`preview`

Verifies the syntax of the changes specified in the command file.

`release`

Releases any pending access control session lock and aborts the access control session.

`show`

Shows detail information about the access group or pool.

KEYWORDS

`accgroup`

Returns the access IDs of a specified access group.

`accpool`

Returns the Symmetrix devices in a specified access controlled device pool.

OPTIONS

`-accgroup`

Shows the access group information with a specified Symmetrix array.

`-accpool`

Lists the access pools associated with a specific Symmetrix array.

`-acl`

For `list` and `show` actions, displays access control entries in the output. Also can display all access control entries for a specified access group.

`-file`

Specifies the command file to be processed for changes to the access control.

`-force`

Forces a commit action even if there are non-fatal errors encountered in the prepare stage. Use this flag with discretion.

`-h`

Provides brief, online help information.

`-noecho`

Blocks the printing of session status and progress messages during the access control change session's preview, prepare, and commit actions. Do not use with the `-v` option.

`-noprompt`

When used with the `release` action, suppresses the automatic prompt (reply) to the user for confirmation before executing the indicated operation.

`-restore`

Replaces the contents of the access control database with the contents of the specified file.

`-sid`

Specifies the Symmetrix ID whose access control information will be read or modified. When ALL can be specified, the action is directed to all Symmetrix arrays.

`-unique`

Returns an encrypted 24-digit access ID for the host machine or operating node.

-v

Echoes the contents of the command file to the output terminal. Cannot be used with the -noecho option. When used with list, a more detailed, verbose listing is provided. The verbose list option can be used to verify that the specified Symmetrix complies with the requirements for host-based access control changes.

PARAMETERS

CommandFile

The command file name. The command file contains a set of access control command entries.

GroupName

The access control group name of some common users or hosts (31 character maximum).

PoolName

The pool name of a specific set of devices to be protected.

SymmID

The 12-character ID that specifies the Symmetrix array.

COMMAND FILE SYNTAX

The following are the possible command syntaxes for the command file entries:

Creating a new pool

```
create accpool PoolName;
```

Adding devices to a pool

```
add dev StartDevName[:EndDevName] to accpool PoolName;
```

Removing devices from a pool

```
remove dev StartDevName[:EndDevName] from accpool PoolName;
```

Deleting a pool

```
delete accpool PoolName [remove_aces=true];
```

Creating a new access group

```
create accgroup GroupName
```

Adding an access ID to an access group

```
add user accid Id name IdName to accgroup AdminGrp;  
add host accid Id name IdName to accgroup GroupName;  
add restored accid Id name IdName to accgroup GroupName;  
add default accid name IdName to accgroup GroupName;
```

Removing an access ID from an access group

```
remove accid name IdName from accgroup GroupName;
```

Moving an access ID to a access group

```
move accid name IdName to accgroup GroupName;
```

Deleting an access group

```
delete accgroup GroupName [remove_aces=true];
```

Granting an access control entry

```
grant access=<AccessType,...> to accgroup GroupName  
for <accpool PoolName> | ALL | <NON-POOLED devs>;
```

Removing access control entries

```
remove access=<AccessType,...> from accgroup GroupName
    for <accpool PoolName> | ALL | <NON-POOLED devs>;
remove aces from accgroup GroupName;
remove aces from accpool PoolName;
```

**COMMAND FILE LINE
OPTIONS**

The following are command line options specifically for commands used in the command file:

`remove_aces=true`

When deleting a pool or group, this command option removes any corresponding access control entries. If this action is not done, ACEs must be removed before the pool or group can be deleted.

ALL

When used with the grant command, it creates an ACE for all devices in the Symmetrix array regardless of whether they are already part of a device pool.

When used with the remove access command, it removes the ACE for all devices.

NON-POOLED

When used with the grant command, it creates an ACE for all devices in the Symmetrix array that are not currently part of a device pool.

When used with the remove access command, it removes the ACE.

**COMMAND FILE
PARAMETERS**

The following are command parameters used in the command file only:

AccessType

The rights (type) of access desired for the pool or group. Possible values are:

ADMIN	CREATEDV
ADMINRD	DIRCTRL
ALL	ECC
BASE	OPTMZR
BASECTRL	POWERPATH
BCV (TimeFinder®/Clone operations are controlled via the BCV access type.)	QOS
BDF	RDF
CACHCTRL	SDDF
CFGDEV	SDR
CFGSYM	SNAP
CHECKSUM	VLOGIX

Note: ALL, CFGSYM, CREATEDV, DIRCTRL, POWERPATH, and VLOGIX access types can be specified only for ALL the devices in a Symmetrix array or all NON-POOLED devices not associated with an access control device pool. These types can not be associated with access control device pools.

EndDevName

The last Symmetrix device name in a sequence (such as 02C).

GroupName

The name of the access group (8 characters maximum, no spaces, case sensitive; alphanumeric characters, plus underscore, and dash).

IdName

The name of the access ID (8 character maximum).

Id

The unique ID. If creating a host-based access ID, the ID is obtained by using the `-unique` option of `symacl`. If creating a new user-based access ID for the `AdminGrp`, the ID, which is assigned by the access control administrator, must be between four and twelve characters long.

PoolName

The name of the device pool (8 characters maximum, no spaces, case sensitive; alphanumeric characters, plus underscore, and dash).

StartDevName

The first Symmetrix device name in a sequence (such as 00C).

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES The following examples create pools and groups, add devices and IDs, and assign access control entries to those groups and pools. It also sets up default access for those hosts that are not yet or never will be registered.

Pool examples

To create an access pool named *poola* using a command file, enter:

```
symacl -sid 12345 -file add_new_pool.cmd commit
```

where `add_new_pool.cmd` command file contains:

```
create accpool poola;
```

To add devices to an access pool using a command file, enter:

```
symacl -sid 12345 -file add_new_devices.cmd commit
```

where `add_new_devices.cmd` command file contains:

```
add dev 0A:0B to accpool poola;
```

To remove devices from an access pool using a command file, enter:

```
symacl -sid 12345 -file remove_devices.cmd commit
```

where `remove_devices.cmd` command file contains:

```
remove dev 0A:0B from accpool poola;
```

To delete an access pool and all the ACE's associated with the access pool using a command file, enter:

```
symacl -sid 12345 -file delete_pool_aces.cmd commit
```

where `delete_pool_aces.cmd` command file contains:

```
delete accpool poola remove_aces;
```

To delete an access pool using a command file, enter:

```
symacl -sid 12345 -file delete_pool.cmd commit
```

where `delete_pool.cmd` command file contains:

```
delete accpool poola;
```

Group examples

To create an access group using a command file, enter:

```
symacl -sid 12345 -file add_new_group.cmd commit
```

where `add_new_group.cmd` command file contains:

```
create accgroup groupa;
```

To add a user access ID to an access group using a command file, enter:

```
symacl -sid 12345 -file add_new_id_to_grp.cmd commit
```

where `add_new_id_to_grp.cmd` command file contains:

```
add user accid my_pin name admin1 to accgroup groupa;
```

To add a host access ID to an access group using a command file, enter:

```
symacl -sid 12345 -file add_new_id_to_grp.cmd commit
```

where `add_new_id_to_grp.cmd` command file contains:

```
add host accid 12345678-34567890-08974321 name  
nodea to accgroup groupa;
```

To add the default access ID to an access group using a command file, enter:

```
symacl -sid 12345 -file add_new_id_to_grp.cmd commit
```

where `add_new_id_to_grp.cmd` command file contains:

```
add default accid name unknown to accgroup groupa;
```

To remove an ID from an access group using a command file, enter:

```
symacl commit -sid 12345 -file remove_id_from_grp.cmd
```

where `remove_id_from_grp.cmd` command file contains:

```
remove accid name nodea from accgroup groupa;
```

To move an ID to an access group using a command file, enter:

```
symacl commit -sid 12345 -file move_id_to_group.cmd
```

where `move_id_to_group.cmd` command file contains:

```
move accid name nodea to accgroup groupa;
```

To delete an access group using a command file, enter:

```
symacl -sid 12345 -file delete_group.cmd commit
```

where `delete_group.cmd` command file contains:

```
delete accgroup groupa;
```

To delete an access group and corresponding ACE's (if any exist) using a command file, enter:

```
symacl -sid 12345 -file del_grp_and_aces.cmd commit
```

where `del_grp_and_aces.cmd` command file contains:

```
delete accgroup groupa remove_aces;
```

Add ACE examples

To add an ACE, granting ADMIN privilege, using a command file, enter:

```
symacl -sid 12345 -file add_acl.cmd commit
```

where `add_acl.cmd` command file contains:

```
grant access=ADMIN to accgroup groupa for accpool  
poola;
```

To add an ACE for all Symmetrix devices regardless of whether they are already in a pool and grant BASE access using a command file, enter:

```
symacl -sid 12345 -file grant_all_devs_acl.cmd commit
```

where `grant_all_devs_acl.cmd` command file contains:

```
grant access=BASE to accgroup groupa for ALL devs;
```

To add an ACE granting BASE access for all Symmetrix devices that do not belong to an access pool, using a command file, enter:

```
symacl -sid 12345 -file add_not_in_pool_devs_acl.cmd commit
```

where `add_not_in_pool_devs_acl.cmd` command file contains:

```
grant access=BASE to accgroup groupa for NON-POOLED devs;
```

Remove ACEs examples

To remove an ACE using a command file, enter:

```
symacl -sid 12345 -file remove_acl.cmd commit
```

where `remove_acl.cmd` command file contains:

```
remove access=ADMIN from accgroup groupa for accpool poola;
```

To remove all ACEs for *groupa* using a command file, enter:

```
symacl -sid 12345 -file remove_aces_for_group.cmd commit
```

where `remove_aces_for_group.cmd` command file contains:

```
remove aces from accgroup groupa;
```

To remove all ACEs for *poola* using a command file, enter:

```
symacl -sid 12345 -file remove_aces_for_pool.cmd commit
```

where `remove_aces_for_poola.cmd` command file contains:

```
remove aces from accpool poola;
```

To remove an ACE setup of BASE access for all Symmetrix devices regardless of whether they are already in a pool, using a command file, enter:

```
symacl -sid 12345 -file rem_all_devs_acl.cmd commit
```

where `rem_all_devs_acl.cmd` command file contains:

```
remove access=BASE from accgroup groupa for ALL devs;
```


To remove an ACE setup of BASE access for all Symmetrix devices not already in a pool using a command file, enter:

```
symacl -sid 12345 -file rem_not_in_pool_devs_acl.cmd commit
```

where `rem_not_in_pool_devs_acl.cmd` command file contains:

```
remove access=BASE from accgroup groupa for NON-POOLED devs;
```

symapierr

Translates a CLI return code to a string.

SYNTAX `symapierr [-h] ErrorCode`

DESCRIPTION Returns a string with a detailed description of the return code generated by the CLI executable.

ARGUMENTS None.

OPTIONS -h

Provides brief, online help information.

PARAMETERS *ErrorCode*

A numerical representation of an error.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLE To return a string for error number (10), enter:

```
symapierr 10
```

```
SYMAPI Error Symbol : SYMAPI_C_NO_DEVS_FND_UPGRADE  
SYMAPI Error Message: No Symmetrix devices found with  
microcode version 5x63 or up.
```

symapisrv

Provides script compatibility for starting and stopping the remote SYMAPI server daemon 'storsrvd'. The storsrvd daemon executes remote Symmetrix API functions over TCP/IP connections.

SYNTAX

```
symapisrv [-h]
    start
    start [-service Servicename]
    start [-port Port] [-secllevel Seclevel]

symapisrv [-h]
    stop [-port Port]
```

DESCRIPTION The `symapisrv` command may be used to start or to stop the remote SYMAPI server daemon `storsrvd`. It is provided as a transition tool for scripted operations of starting and stopping `storsrvd`. The `symapisrv` command does not communicate with remote SYMAPI clients. It uses the services of the stordaeon management CLI to start and stop `storsrvd`.

Note: The `symapisrv` command will be eliminated in future versions of Solutions Enabler. EMC strongly recommends the use of the stordaeon CLI to start, manage, and stop the `storsrvd` daemon.

The `symapisrv` command works with the `netcnfg` and `symapinlck` service files, which must be located in the following directory:

<code>/var/symapi/config/</code>	on UNIX
<code>C:\Program Files\EMC\symapi\config\</code>	on Windows NT
<code>SYMAPI\$CONFIG:</code>	on OpenVMS

The `netcnfg` file is an optional network service file that lists the available server services. A service maps a service name to a server node name and port number. Either a service name or a port number is required by the `symapisrv` command to start or stop a server. The file contents are maintained by the System Administrator who has knowledge of the available networks. For more information, refer to the *EMC Solutions Enabler SYMCLI Installation Guide*.

The `netcnfg` file can be modified with an editor. Print the file for a description of its format and content. Enter a service name, a hyphen (-) for domain name that is currently unused, TCPIP for the protocol, the server host name and/or its internet address, and the network port number to use, and a security level to define a service in the `netcnfg` file. Only one service may be defined on a line.

If the `netcnfg` file is used, then it should reside on both the client nodes and server nodes in order to start and stop a server by service name. If a service is specified and is not found (either the `netcnfg` file does not exist or the service name does not exist in the file) the server will start with default values (local host name and port 2707). To stop this instance, you must issue a stop action with no parameters.

Note: The `symapisrv` command provides compatibility for the service definitions in the `netcnfg` file. The server daemon `storsrvd` does not support the `netcnfg` file since its configuration is specified in the `daemon_options` file.

An optional trusted host file (`nethost`) can be placed in the configuration directory described above on the server node. The server uses the `nethost` file to authorize incoming client

connections from applications that are executing remote SYMAPI functions. If this file exists then only nodes and users entered in the file will be allowed to connect to the server to execute remote SYMAPI functions. If this file does not exist, then all SYMAPI clients are allowed to connect to the SYMAPI server.

The following is the format of the trusted host file:

```
node          user-1 [, ..., user-n]
address       user-1 [, ..., user-n]
*            user-1 [, ..., user-n]
node          *
address       *
*            *
```

Where * means wildcard for any host or any user.

Note: For readability, when specifying a long list of users, the node or address can be repeated with additional usernames listed.

The `sympisrv` command will always start `storsrvd` in the background. Even if you do not specify `-back`, `storsrvd` will be started in the background. You can specify the `-back` operand, but it will be ignored.

The `sympisrv` command will write messages to the SYMAPI log file indicating it is being used to start `storsrvd` instead of `stordaemon`. This is done as a reminder to convert uses of `sympisrv` to `stordaemon` for `storsrvd` management.

ARGUMENTS

`start`

Starts the local SYMAPI server image (at the server).

`stop`

Stops the SYMAPI local or remote server image (at the client or server).

ARGUMENTS

`start`

Starts the local SYMAPI server image (at the server).

`stop`

Stops the SYMAPI local or remote server image (at the client or server).

OPTIONS

`-h`

Provides brief, online help information.

`-port`

Applies a port number to the command. This can be specified on both start and stop operations, but it will be ignored on stop. If specified on start, it will be passed to the `storsrvd` command.

`-secllevel`

Specifies the security level of the server. Can only be specified without the `-service` option. If specified, the desired level will be passed to the `storsrvd` command

`-service`

Applies a network service name to the command.

Note: The `-port` and `-seclevel` operands are provided for compatibility and will be passed on to the `storsrvd` command when it is started. When these are specified the values will override the values specified in the `daemon_options` file.

When `-port` and `-seclevel` are NOT specified on the `symapisrv` command, the configured options for `storsrvd` will take effect. Note that the configured options cannot be the same as the defaults for the `symapisrv` command in prior releases. The `storsrvd` daemon will use whatever it finds in `daemon_options` file, as long as there are no command options overriding the options.

PARAMETERS

ServiceName

A specific network service name.

SecLevel

One of the keywords specified in the `netcnfg` file or the SYMAPI options file.

RETURN CODES

None.

EXAMPLES

To start `storsrvd` with its configured options (or defaults if there are no options configured in the `daemon_options` file), enter:

```
symapisrv start
```

To stop `storsrvd`, enter:

```
symapisrv stop
```

To stop the remote SYMAPI server daemon.

```
symapisrv -port 2707 stop
```

Note: Note that the `-port` argument is ignored.

To start `storsrvd` at the default port with the security level set to accept both secure and non-secure (legacy) sessions, enter:

```
symapisrv -seclevel ANY start
```

To start the SYMAPI server in the background at port 2707 with security level set to accept ONLY secure sessions, enter:

```
symapisrv -seclevel SECURE start
```

symaudit

Allows the user to extract records from a Symmetrix audit log file to determine what application on what host initiated actions that directed Symmetrix behavior.

Provides a monitor option for displaying the records as they are written to the log file.

Provides the ability to determine the date and time of the current log file data and its size.

SYNTAX

```
symaudit show -sid SymmID [-h]
```

```
symaudit list -sid SymmID [-v] [-text] [-h]
    [-function_class [-exclude] ClassName] [,ClassName,...]
    [-action_code [-exclude] ActionName] [,ActionName,...]
    [-host HostName]
    [-vendor_id VendorId]
    [-application_id AppId] [,AppId, ...]
    [-activity_id ActivityId]
    [-symdev_range StartDevname:EndDevname]
    [-start_date date_time] [-end_date date_time]
    [-record_num RecordNumber]
    [-n RecordCount]
    [-last_n RecordCount]
    [-user UserName]
```

```
symaudit monitor -sid SymmID [-text | -v] [-h]
    [-i Interval] [-c Count]
```

DESCRIPTION

The `symaudit` command is used to retrieve information from the Symmetrix audit log file. Data is written to the audit file during control operations initiated by host applications. The audit file correlates activity from all hosts into one file.

The `symaudit` command can filter the extracted data through the use of options that specify match criteria. The options include host name, application name, function class, and action code. A combination of filters can be used.

The `monitor` action causes the command to run in the foreground polling the Symmetrix for new audit log records every *Interval* seconds, either until the iteration *Count* is satisfied or the program is stopped.

Verbose mode (`-v`) provides a more detailed output.

ARGUMENTS

`list`

Lists the extracted audit log records.

`monitor`

Monitors the Symmetrix array for new audit log data in real time.

`show`

Shows the time period and quantity of data in the audit log file.

OPTIONS

`-action_code`

Filters the audit log records so that only the records containing the specified action code return.

`-activity_id`

Filters the audit log records to only show records with the matching Activity ID.

`-application_id`

Filters the audit log records so that only the records generated by the specified application return.

`-c`

Specifies the number (count) of times to poll for data. If this option is not specified, the audit log is polled continuously.

`-end_date`

Indicates the date and time of the last audit log record to display. The format is `[mm/dd[/yy]]:[hh:mm[:ss]]`. If only the `hh:mm` is provided, the current day will be assumed. If only `mm/dd` is provided, the current year is assumed. A four-digit year can also be specified. If no time is specified, it will default to `0:0:0`, the very beginning of the day. If the `end_date` and the `-n` options are omitted, the output continues until the end of file.

`-function_class`

Filters the audit log records so that only the records belonging to the specified `function_class` return.

`-h`

Provides brief, online help information.

`-host`

Filters the audit log records so that only the records containing the specified host name return.

`-i`

Specifies the repeat interval in seconds. The default interval is 30 seconds. The minimum interval is 5 seconds.

`-last_n`

Specifies the number of most recent records to display.

`-n`

Specifies the number of records to display.

`-record_num`

Indicates at which record number in the audit log to start processing.

`-sid`

Specifies the Symmetrix ID of the Symmetrix audit log file to process.

`-start_date`

Indicates the date and time of the first audit log record to display. Format is `[mm/dd[/yy]]:[hh:mm[:ss]]`. If only the `hh:mm` is provided, the current day will be assumed. If only `mm/dd` is provided, the current year is assumed. A four-digit year can also be specified. If no time is specified, it will default to `0:0:0`, the very beginning of the day.

`-symdev_range`

Filters the audit log records so that only the records containing the name of a `symdev` within the indicated range in the text field return.

`-text`

Indicates that the text associated with the audit log record should be displayed.

`-user`

Filters the audit log records so that only the records containing the specified user name return.

`-v`

Provides a more detailed, verbose listing.

`-vendor_id`

Filters the audit log records so that only the records containing the specified `vendor_id` return.

PARAMETERS

ActionName

The name of a control action associated with an audit log entry. Valid actions are:

Abort	AbortSnapshot	AbtSnap
Activate	Acquire	Add
ArchiveLog	ArchLog	AuthCtrl
BegBckup	BeginBackup	BeginRestore
BeginSnapshot	BegRestr	BegSnap
BlksIO	Break	Cancel
CheckPoint	Chkpt	ClearStats
ClrStats	CodeLoad	Commit
Connect	Create	CreatePair
CrtPair	Delete	DeletePair
DelPair	Denied	Disable
Diconn	Enable	EndBackup
EndBckup	EndRestore	EndRestr
EndSnapshot	EndSnap	Erase
ExpandDB	Expand	Failover
Failback	FileTrf	Freeze
FSnapRes	FullEstablish	FullEsta
FullRestore	FullRstr	GenSwapList
GnSwpLst	HBASState	HDelPair
Hold	HSwap	IncEstablish

IncEsta	IncRestore	IncRstr
Initialize	Init	Invalidate
Invalidate	ISnapRes	Lock
Login	Logout	Map
Merge	Modify	MscClnup
NotReady	NotRdy	Offline
Online	Other	PhoneHome
PhonHome	PortAccess	PortAccs
Prepare	R1Update	RDFSet
Ready	Recreate	Refresh
Relabel	Release	Relocated
Relocated	Remove	Rename
Replace	Reserve	Reset
Restart	Resume	RWEnable
RWDisable	RWDisabl	Set
SnapCreate	SnapCrea	SnapTerm
Sparint	Split	StarDis
StarEna	Suspend	Swap
Syscalls	Terminate	Thaw
TokenMgt	UnblksIO	Unhold
Unlock	Validate	VolAccess
VolAcces	VTOC	WRDisable
WRDisab		

ActivityID

The activity ID associated with the performed action in the audit log.

ApplId

The name of an application whose activity generated audit log entries.

ClassName

The name of a functional class area. Valid class names are:

Base	BCV	CfgChg
CGRDF	Checksum	Clone
DDF	DevMask	Dir
Erase	Maint	Optmzr
Other	QoS	RCopy
RDF	Recovery	ResvCtrl
Security	Snap	UserFunc
Worm	N/A	

EndDevname

The last Symmetrix device name in a range that should be used to filter log file entries.

HostName

The name of the host system whose application generated the audit log entry.

RecordCount

A count of the number of audit log records that should be returned.

RecordNumber

A record sequence number that is within the audit log file's current range.

StartDevname

The first Symmetrix device name in a range that should be used to filter log file entries.

SymmID

The 12-digit ID of the Symmetrix array.

VendorId

The name of the vendor that produced the application whose activity generated audit log entries.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To show the time period and information for specific array's audit log, enter:

```
symaudit -sid 04 show
```

The following output returns:

```

                A U D I T   L O G   D A T A

Symmetrix ID           : 000000006204

Starting date           : 05/26/2006 12:55:39
Ending date             : 07/11/2006 13:40:37

Starting record number  : 175500
Ending record number    : 237198
Total record count      : 61699
```

To list the time logs for specific array between a specified time period, enter:

```
symaudit -sid 04 list -v -start_time 7/11:9:40 -end_time 7/11:9:45
```

The following output returns:

```

A U D I T   L O G   D A T A

Symmetrix ID                : 000000006204

Record Number                : 237178
Records in Seq               : 1
Offset in Seq                : 1
Time                         : 07/11/06 09:42:37
Vendor ID                   : EMC Corp
Application ID               : SYMAUTH
Application Version          : 6.4.0.10
API Library                  : SDK
API Version                  : X6.4.0.10 (Edit Level: 810)
Host Name                   : api196
OS Name                     : SunOS
OS Revision                  : 5.8Generic
Client Host                  :
Process ID                   : 00001235
Task ID                     : 00000001
Function Class               : ACCESS
Action Code                  : Set
Text                         : Starting a User Authorization
                             operation to modify settings:
                             Enforcement Policy [enforce]

Username                    : H:api196\ruggip
Activity ID                  : SE57a9e3d8d8

Record Number                : 237179
Records in Seq               : 1
Offset in Seq                : 1
Time                         : 07/11/06 09:42:37
Vendor ID                   : EMC Corp
Application ID               : SYMAUTH
Application Version          : 6.4.0.10
API Library                  : SDK
API Version                  : X6.4.0.10 (Edit Level: 810)
Host Name                   : api196
OS Name                     : SunOS
OS Revision                  : 5.8Generic
Client Host                  :
Process ID                   : 00001235
Task ID                     : 00000001
Function Class               : ACCESS
Action Code                  : Set
Text                         : The User Authorization modify
                             settings operation SUCCEEDED

Username                    : H:api196\ruggip
Activity ID                  : SE57a9e3d8d8

```

symauth

Allows the user to set up or update the Symmetrix array user authorization information. All information regarding authorization is stored in the Symmetrix array.

SYNOPSIS

```
symauth -h

symauth [-sid SymmID] [-h] [-noprompt]

    enable
    disable

symauth [-sid SymmID] [-h] [-noprompt]

    set enforcement <advise | enforce>

symauth [-sid SymmID] [-h] [-noprompt]

    set server_policy <trust_client | validate_client>

symauth [-sid SymmID] [-h]

    list

    list -users [-by_role | -by_user | -by_domain]

symauth [-h]

    list -roles

symauth [-h]

    show -username

symauth [-sid SymmID] [-v | -noecho] [-noprompt]
    <-file CommandFile | "redirect stdin">
    preview
    commit
```

DESCRIPTION

This command allows the user to setup or update the Symmetrix array user authorization information. All information regarding user authorization of the Symmetrix devices is stored within the Symmetrix array.

To execute a change to the Symmetrix user authorization information, you need to enter the changes in a command file (*CommandFile*) and execute the `preview` and `commit` operations.

The `preview` argument is used after you first create the command file. It verifies the syntax and correctness of the contents of the entries in the command file.

The `commit` argument performs the preview checks and then commits the contents of the command file to the Symmetrix user authorization database.

Note: It is not mandatory to execute a `preview` action prior to a `commit`. The `preview` action is performed to ensure that the `commit` action will succeed.

The command file format allows various command entries terminated with a semicolon (;). The commands are parsed case insensitive, with the exception of *UserNames*.

The following are various types of changes possible in the command file:

- ◆ Assign a user to a role
- ◆ Delete a user and their corresponding role

- ◆ Set enforcement mode and server policy

The `set` commands can be used outside of the command file.

Optionally, for UNIX platforms, you can redirect a number of screen entries to `stdin` to save keystroke entries and not deal with the command file. For example, to preview a chain of `symauth` commands directly from the command line, use the following syntax:

```
symauth -sid SymmID preview <<DELIM
assign user testuser role...;
DELIM
```

ARGUMENTS

`commit`

Activates the changes defined in the command file into the specified Symmetrix array.

`disable`

Disables user authorization.

`enable`

Enables user authorization.

`list`

Lists user authorization information.

`preview`

Verifies the syntax of the changes specified in the command file.

`set`

Sets the authorization modes (see Keywords).

`show`

Shows the current user name.

KEYWORDS

`enforcement`

Indicates how the authorization rules will be applied. The results of the rule processing will be logged to the SYMAPI log file and to the Symmetrix audit log file only if the action is denied. The possible values are:

advise

Causes authorization rules to not be applied.

enforce

Applies authorization rules to allow or deny user actions. .

`server_policy`

Indicates how authorization rules will be applied in a client/server environment. The possible values are:

trust_client

Indicates that the server will not apply authorization rules against the client.

validate_client

Indicates that the server will apply authorization rules against the client.

OPTIONS**-by_domain**

Used in conjunction with `list` and `-users`. This option causes the list of known users to be sorted by their domain.

-by_role

Used in conjunction with `list` and `-users`. This option causes the list of known users to be sorted by their assigned role.

-by_user

Used in conjunction with `list` and `-users`. This option causes the list of known users to be sorted by their username.

-file

Specifies the command file to be processed for changes to the access control.

-h

Provides brief, online help information.

-noecho

Blocks the printing of session status and progress messages during the access control change session's `preview`, `prepare`, and `commit` actions. Cannot be used with the `-v` option.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-roles

Lists the various user authorization roles available on a Symmetrix along with a short description of that role. Only used with `list`.

-sid

Specifies the Symmetrix ID whose authorization information will be read or modified.

-username

Displays the current user name from which you have logged in. Use only with `show`.

-users

Lists the users currently defined on the Symmetrix unit along with their corresponding role. Only used with `list`.

-v

Echoes the contents of the command file to the output terminal when used with a `preview` or `commit` action. Cannot be used with the `-noecho` option.

PARAMETERS*CommandFile*

The name of the file containing a set of authorization commands.

SymmID

The 12-character ID that specifies the Symmetrix array.

**COMMAND FILE
SYNTAX**

The following are the possible command syntaxes for the command file entries:

To add a user/role to the user authorization database, enter:

```
assign user UserName to role RoleName;
```

To re-assign an existing user/role in the user authorization database, enter:

```
reassign user UserName to role RoleName;
```

To delete a user/role, enter:

```
delete user UserName;
```

To set enforcement, enter:

```
set enforcement <advise | enforce>;
```

To set server policy, enter:

```
set server_policy <trust_client | validate_client>;
```

**COMMAND FILE
PARAMETERS**

The following are command parameters used in the command file only:

UserName

The name of a user, hostname\username, or domainname\username (32 character maximum). Spaces are allowed if the username is quote delimited. Examples of a valid username include:

```
"D:domain\joe"  
"H:host\joe"  
"domain\joe"  
"joe"
```

In the case of "domain\joe", the username is interpreted as "d:domain\joe". in the case of "joe", this username is allowed regardless of domain or host.

Note: When the hostname or domain portion of a username is an asterisk, the asterisk is treated as a wildcard meaning *any host*. Examples of this include: "H:*user", "D:*user" and "*user". In all other cases, the asterisk is treated as a regular character.

RoleName

The name of the role to be assigned to a user. Valid roles include: Admin, SecurityAdmin, Auditor, StorageAdmin, Monitor, and None. These roles are case insensitive.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

The following examples display and change user authorizations.

To add a user authorization using a command file, enter:

```
symauth -sid 12345 -file assign_user.cmd commit
```

where assign_user.cmd contains:

```
assign user John to role Admin;
```

To change an existing user authorization using a command file, enter:

```
symauth -sid 12345 -file reassign_user.cmd commit
```

where reassign_user.cmd contains:

```
reassign user John to role SecurityAdmin;
```

To delete a user authorization using a command file, enter:

```
symauth -sid 12345 -file del_user.cmd commit
```

where `del_user.cmd` contains:

```
delete user John;
```

The remaining examples can be entered on the command line.

To enable user authorization, enter:

```
symauth -sid 12345 enable
```

To disable user authorization, enter:

```
symauth -sid 12345 disable
```

To enforce user authorization checks, enter:

```
symauth -sid 12345 set enforcement enforce
```

To require a server to check the client's authorization, enter:

```
symauth -sid 12345 set server_policy validate_client
```

To list status information, enter:

```
symauth -sid 12345 list
```

To list roles information, enter:

```
symauth -sid 12345 list -roles
```

To list user information by domain, enter:

```
symauth -sid 12345 list -users -by_domain
```

To display the username that is currently logged in, enter:

```
symauth show -username
```


symbcv

Performs operations on one or more Symmetrix BCV (business continuance volume) devices.

SYNTAX

```

symbcv [-sid SymmID] [-h] [-offline] [-v]
      [-resv] [-i Interval] [-c Count]

      list pd
      list [dev]

symbcv -g DgName [-h] [-offline]

      associate pd PdevName [LdevName]

      associateall [pd|-host HostName]
        [-sid SymmID] [-SA <#|ALL>] [-P #]
        [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
        [-RANGE SymDevStart:SymDevEnd]

      disassociate pd PdevName [-force]

      move pd PdevName DestDgName [-force] [-rename]

      copy pd PdevName DestDgName [-force] [-rename]

symbcv -g DgName
      [-h] [-offline]
      [-sid SymmID]
      [[[-rdf] [-bcv]] | [-rrdf]]
      [-rdfg GrpNum] [-remote_RDFG Remote_Grp_num]

      associate dev SymDevName [LdevName]

      associateall [dev|-host HostName]
        [-rdfg GrpNum] [-remote_RDFG Remote_Grp_num]
        [-SA <#|ALL>] [-P #]
        [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
        [-RANGE SymDevStart:SymDevEnd]

      disassociate dev SymDevName [-force]

      move dev SymDevName DestDgName [-force] [-rename]

      copy dev SymDevName DestDgName [-force] [-rename]

symbcv -g DgName
      [-h] [-offline] [[[-rdf] [-bcv]] | [-rrdf] [-force]]

      disassociate ld LdevName [-force]
      move ld LdevName DestDgName [-rename]

      moveall DestDgName [-SA <#|ALL>] [-P #]
        [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
        [-RANGE SymDevStart:SymDevEnd] [-rename]

      copy ld LdevName DestDgName [-rename]

      copyall DestDgName [-SA <#|ALL>] [-P #] [-CAP #] [-N #]
        [-R1|-NOR1] [-R2|-NOR2]
        [-RANGE <SymDevStart>:<SymDevEnd>] [-rename]

      rmall
        [-SA <#|ALL>] [-P #]
        [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
        [-RANGE SymDevStart:SymDevEnd]

```

```

symbcv -cg CgName
        [-h] [-offline]

        associate pd PdevName [LdevName]

        associateall [pd|-host HostName]
            -sid SymmID [-SA <#|ALL>] [-P #]
            [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
            [-RANGE SymDevStart:SymDevEnd]
        disassociate pd PdevName [-force]

        move pd PdevName DestCgName [-force]

        copy pd PdevName DestCgName [-force]

symbcv -cg CgName -sid SymmID [-h] [-offline] [[-rdf]
        [-bcv] | -rrdf][-rdfg GrpNum] [-remote_rdfg Remote_GrpNum]

        associate dev SymDevName [LdevName]

        associateall [dev|-host HostName]
            [-SA <#|ALL>] [-P #]
            [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
            [-RANGE SymDevStart:SymDevEnd]

        disassociate dev SymDevName [-force]

        move dev SymDevName DestCgName [-force]

        disassociate ld LdevName [-force]

        move ld LdevName DestCgName [-force] [-rename]

        copy ld LdevName DestCgName [-force] [-rename]

symbcv -cg CgName -sid SymmID
        [-h] [-offline] [-force]
        [[-rdf] [-bcv] | -rrdf]
        [-rdfg GrpNum] [-remote_rdfg Remote_GrpNum]

        moveall DestDgName
            [-SA <#|ALL>] [-P #]
            [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
            [-RANGE SymDevStart:SymDevEnd] [-rename]

        copyall DestDgName
            [-SA <#|ALL>] [-P #]
            [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
            [-RANGE SymDevStart:SymDevEnd] [-rename]

        rmall
            [-SA <#|ALL>] [-P #]
            [-CAP #] [-N #] [-R1|-NOR1] [-R2|-NOR2]
            [-RANGE SymDevStart:SymDevEnd]

```

DESCRIPTION

The `symbcv` command performs operations on a BCV device. The BCV device can be addressed by its physical (host) name or by its Symmetrix device name. Note that in certain versions of Enginuity™, the BCV device must be local to this host before it can be associated with a group.

These operations include: associating a BCV device with a device group, associating all devices in a Symmetrix array with a device group, listing the BCV devices, disassociating a BCV device from a device group, associating a BCV device with a composite group,

associating all devices in a Symmetrix array with a composite group, and disassociating a BCV device from a composite group.

ARGUMENTS

`associate pd`

Specifies a physical device (host) name to associate a Symmetrix BCV device with an existing group.

Note: You can substitute `add` for the argument `associate`.

`associate dev`

Specifies a Symmetrix device name to associate a Symmetrix BCV device with an existing group.

Note: You can substitute `add` for the argument `associate`.

`associateall pd`

Associates all BCV devices that are visible to the host and are not currently associated with any existing group.

Note: You can substitute `addall` for the argument `associateall`.

`associateall dev`

Associates all BCV devices that are not associated with any existing group. The `dev` specifies all Symmetrix devices, regardless if they are visible to the host.

Note: You can substitute `addall` for the argument `associateall`.

`disassociate dev`

Specifies a Symmetrix device name of the BCV device to disassociate from a group. The BCV device must have been previously associated with an existing group and the BCV device must be in a state that allows it to be disassociated.

Note: You can substitute `remove` for the argument `disassociate`.

`disassociate ld`

Specifies a logical device name of the BCV device to disassociate from a group. The BCV device must have been previously associated with an existing group and the BCV must be in a state that allows it to be disassociated.

Note: You can substitute `remove` for the argument `disassociate`.

`disassociate pd`

Specifies a physical (host) device name of the BCV device to disassociate from a group. The BCV device must have been previously associated with an existing group and the BCV must be in a state that allows it to be disassociated.

Note: You can substitute `remove` for the argument `disassociate`.

`list dev`

Lists all BCV devices that are configured on the Symmetrix arrays attached to this host. This is the default.

`list pd`

Lists all BCV devices that are visible to this host.

`move`

Moves one BCV device from one existing group to another group. The source and destination groups can be of different types. The logical name of the BCV device is preserved unless the `-rename` option is specified.

`moveall`

Moves all BCV devices from one existing device group to another group. The source and destination groups can be of different types. The logical names of the BCV devices are preserved unless the `-rename` option is specified.

`move ld`

Move a logical device from one existing group to another group. The source and destination groups can be of different types.

`rmall`

Removes all BCV devices from the specified group.

OPTIONS

`-bcv`

Indicates that the remotely attached BCV will be paired with the remote mirror of a locally attached BCV RDF device. This option is used in conjunction with the `-rdf` option.

`-c`

Indicates the number (`count`) of times to display. If this option is not specified and an interval (`-i`) is specified, statistics will be displayed continuously.

`-CAP`

Sets the minimum device capacity (in megabytes) for the selection criteria of a number of devices for a group.

`-cg`

Specifies the composite group name.

Note: `-cg` and `-g` cannot be used at the same time.

`-force`

Forces a BCV device to be disassociated from a group. No Symmetrix array access is attempted.

`-g`

Applies a device group name to the operation.

Note: `-cg` and `-g` cannot be used at the same time.

-h

Provides brief, online help information.

-i

Sets the repeat interval in seconds. The default interval is 10 seconds.

-N

Sets the number of BCV devices to associate, move, or remove to/from a specified group.

-NOR1

Indicates that the BCV RDF R1 devices should not be associated via the SRDF[®] links.

-NOR2

Indicates that BCV RDF R2 devices should *not* be associated.

-offline

Makes the Symmetrix data connection offline from the host in-memory database for this action.

-P

Supplies the front-end (SCSI or fiber) director port number to only select devices that are physically connected through this director port. All ports are selected by default.

-R1

Indicates that only BCV RDF R1 devices should be associated.

-R2

Indicates that only BCV RDF R2 devices should be associated.

-RANGE

Applies the action to a number of Symmetrix devices within a contiguous range to associate all, move all, or remove all devices to/from a group.

-rdf

Indicates that the BCV is being remotely associated with the group. In this case, the BCV is reachable by way of the locally attached Symmetrix array and an SRDF link to the remote Symmetrix array. The group must be an RDF type.

-rdfg

Indicates a Symmetrix RDF group number through which the remotely associated BCV is reached. This option can only be used in conjunction with the `-rdf` or `-rrdf` option.

-remote_RDFG

Indicates the Symmetrix RA (RDF) group number to reach the remotely associated RBCV device. This option can only be used in conjunction with the `-rrdf` option.

-rename

Renames the BCV device(s) to the default names as they are moved from their current group to the destination group. By default, they will retain their current logical names.

-resv

Lists the BCV devices that have SCSI reservations.

-rrdf

Indicates that the BCV is being remotely associated with a remote BCV in the group. This option can be used when the BCV device is reachable via the SRDF links two hops away. The group must be an RDF group.

-SA

Supplies the front-end (SCSI or fiber) director number to only select devices that are physically connected through this director. Optionally, if `ALL` (the default) is selected, all devices satisfying various other criteria will be selected.

-sid

Specifies the Symmetrix ID to limit the scope of the operation to the specified Symmetrix array.

-v

Provides a more detailed, verbose listing.

PARAMETERS

DestCgName

The destination composite group into which the BCV device(s) are moved.

DestDgName

The destination device group name.

DgName

The device group name.

LdevName

The BCV logical device name, either named by the user or automatically assigned when a BCV device is associated with a group.

PdevName

The physical device (host) name for the device, such as `/dev/rdisk/c2t0d2s2`.

SymDevname

The Symmetrix device name, unique per Symmetrix array, such as `00C`.

SymDevEnd

The Symmetrix device name, ending the contiguous range of selected devices, such as `00C`.

SymDevStart

The Symmetrix device name, starting the range of selected devices, such as `002`.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To associate a BCV device with device group `ProdDB`, enter:

```
symbcv -g ProdDB associate pd c2t0d2s2
```

To associate a BCV device with device group `ProdDB` and to name it `BCV001`, enter:

```
symbcv -g ProdDB associate dev 000C BCV001
```

To associate all BCV devices from `0009` to `001F` on Symmetrix array `87` with device group `ProdDB` that are not already associated with any group, not `R1` devices, and are visible to this host, enter:

```
symbcv -g ProdDB associateall pd -sid 87 -RANGE 0009:001F -NOR1
```

To list all BCV devices that are visible to this host and have SCSI reservations, enter:

```
symbcv list pd -resv
```

To list (6 times every 10 seconds) all BCV devices regardless of whether they are visible to this host, enter:

```
symbcv list dev -i 10 -c 6
```

To disassociate a BCV device `ProdBCV001` from a device group `ProdDB`, enter:

```
symbcv -g ProdDB disassociate ld ProdBCV001
```

To move BCV device `000E` from device group `ProdDB` to `ProdDB6` and rename the device to the `ProdDB6` convention, enter:

```
symbcv move dev 000E -g ProdDB ProdDB6 -rename
```

To move all BCV devices (not to exceed 300) with Symmetrix device names ranging from `000C` to `01FF` that have at least 4 megabytes of storage from device group `ProdDB` to `ProdDB6`, enter:

```
symbcv -g ProdDB moveall -CAP 4 -RANGE 000C:01FF -N 300 ProdDB6
```

To remove all BCV devices that are mapped to a front-end director `SA-16B` from a device group `ProdDB` (no matter what state they are in), enter:

```
symbcv -g ProdDB rmall -SA 16B -force
```

To associate a BCV device with composite group `MyCg`, enter:

```
symbcv -cg MyCg associate pd /dev/rdisk/c3t0d2s2
```

To associate a BCV device with composite group `MyCg`, enter:

```
symbcv -cg MyCg associate dev 000C -sid 87
```

To associate all BCV devices, that are not already associated with any group and visible to this host on the specified Symmetrix array with composite group `MyCg`, enter:

```
symbcv -cg MyCg -sid 87 associateall
```

symcfg

Discovers or displays Symmetrix configuration information. Refreshes the host's Symmetrix database file or removes Symmetrix information from the database file. Rebuilds the set of devices known to the local host. It can also be used to:

- ◆ View or release a *hanging* Symmetrix exclusive lock.
- ◆ Set online or offline RDF (RA) directors.
- ◆ Set online or offline front-end (SA or FA) director ports.
- ◆ Display available network services entered in the network service file.
- ◆ Display existing UNIX gatekeeper and database semaphores.
- ◆ Display application and host registration information.
- ◆ Display host port connection information.
- ◆ Display mainframe CU image information.
- ◆ Display the state of major components in a configuration (environment data).
- ◆ Manage an authorization file.

SYNTAX

```
symcfg -h

symcfg [-version | -kit | -db]

symcfg
  discover [-all | -symmetrix | -clariion | -pdev [-sid SymmID] |
    -sid SymmID] [-cache | -nocache]

    discover -clariion -file AsstDiscoFile

    scan

symcfg
  sync [-sid SymmID]
    [-rdf | -bcv | -local | -dirsts | -snap | -cfgmgr | -rcopy]

  sync -sid SymmID -env_data

  remove [-sid SymmID] [-noprompt]

  release [-sid SymmID] [-noprompt] [-force] [-lockn <#>]

  verify -sid SymmID

symcfg sync -clarrion [-cid ClarID]

symcfg [-sid SymmID] [-offline]
  list [-CA <#|ALL>] [-v]
  list [-DA <#|ALL>] [-v]
  list [-DIR <#|ALL>] [-v]
  list [-DIR <#|ALL>] [-address [-available] [-fibre]]
  list [-EA <#|ALL>] [-v]
  list [-EA <#|ALL>] [-P #]] [-address [-available]]
  list [-EF <#|ALL>] [-v]
  list [-EF <#|ALL>] [-P #]] [-address [-available]]
  list [-FA <#|ALL>] [-P #]] [-address [-available]]
  list [-FA <#|ALL>] [-P #]] [-v [-ALL]]
  list [-RA <#|ALL>] [-switched] [-v]
  list [-SA <#|ALL>] [-P #] [-v [-ALL]]
  list [-SA <#|ALL>] [-P #] [-address [-available] [-fibre]]
  list [-SE <#|ALL>] [-P #] [-v]
```



```

symcfg list -clarrion [-cid ClarID]

symcfg [-sid SymmID]

    list -memory

    list -rdfg <#|ALL> [-dynamic | -static] [-offline]

    list -status

symcfg [-sid SymmID] [-v] [-offline]

    list [-SA <#|ALL>] [-port]
    list [-FA <#|ALL>] [-port]
    list [-RA <#|ALL>] [-port]

symcfg [-sid SymmID] [-v]

    list [-LRU <#|ALL>] [-offline]
    list [-lock]
    list [-lockn <# | RDFA | RDF | SRDF_MSCS | GNS | ALL>]
    list [ssid]
    list [-connections [-sorthost] [-capacity]]
    list [-applications [-client] [-host HostName] [-offline]]
    list [-cuimage]
    list -env_data
        [-service_state [not]degraded | [not]failed | [not]normal] [-offline]]

    show -applications AppID [-client] [-host HostName]
    show -cuimage cuImageNumber [-ssid_num SSID]

symcfg -sid SymmID [-v] [-offline]

    show -env_data BayName

symcfg [-v]

    list [-services] [offline]
    list [-semaphores]

symcfg [-sid SymmID] [-offline]

    list [-pool [-snap] [-rdfa_dse [-rdfg GrpNum]]
        [-fba] [-ckd3390] [-ckd3380] [-as400] [-all] [-v]]
    list [-savedevs [-fba] [-ckd3390] [-ckd3380] [-as400]]

    show -pool <PoolName> <-snap | -rdfa_dse] [-all]
        [-fba | -ckd3390 | -ckd3380 | -as400]

symcfg -RA <#|ALL> [-sid SymmID] [-noprompt] [-v]

    online
    offline

symcfg -SA # -P # [-sid SymmID] [-noprompt] [-v]

    online
    offline

```

```

symcfg

    authorization list [-vmware]

    authorization <add | update>
        -host HostName -username UserName -password PassWord
        [-vmware -namespace NameSpace -vmport Port]

    authorization delete -host HostName -username UserName
        [-vmware]

```

DESCRIPTION

The `symcfg` command is used to discover a Symmetrix configuration, refresh the Symmetrix configuration database file, and display configuration information about the Symmetrix arrays attached to the host and/or any of its directors.

It includes the ability to rebuild the set of physical disks that are known to the host (`symcfg scan`).

Directed Symmetrix discovery is performed by specifying the `SymmID`, and if Symmetrix devices are freshly mapped to the host (and any host OS required scan operations are performed), the `-pdev` flag can be used to bring the new pdevs into the configuration database.

It can be used to view whether the specified Symmetrix array(s) have an exclusive Symmetrix lock. You can release the lock if it is determined to be hanging.

The `symcfg` command can be used to set one or all RDF (RA or SA) directors on a locally-attached Symmetrix array to either online or offline from the Symmetrix configuration database.

The `symcfg` command can be used to display the LRU cache management configuration of a Symmetrix array.

It can also be used to list the services entered in the network services file (`netcnfg`) or list all the UNIX gatekeeper, database, and lock file semaphores. It can display application and host registration, and port connection information.

In addition, some arrays require authorization information to provide to access the array. The `symcfg authorization` command can be used to supply this information for use in subsequent discovery operations. The `symcfg authorization` command allows you to list, add, update or delete this connectivity information. Update allows you to update the password of an existing entry.

If a configuration has devices mapped to either an EA (ESCON) or EF (FICON) front end directors, the CU image information can be viewed.

Larger Symmetrix systems contain a system bay and a set of drive bays. Environmental data and status for internal modules can be viewed using the `symcfg` command on environments running Enginuity 5771 or higher.

ARGUMENTS

`authorization`

Used to supply and manage connectivity information required by certain arrays for use in subsequent discovery operations. The `symcfg authorization` command allows you to list, add, update, or delete this connectivity information.

`discover`

Scans all devices on the host looking for Symmetrix devices and builds or rebuilds the Symmetrix configuration database. If you reconfigure your Symmetrix array by adding or removing devices that the host sees, you will need to run `symcfg discover` prior to running `symcfg sync` in order to obtain accurate information. This command interrogates all SCSI devices and can take a significant amount of time to complete.

The options `-symmetrix` and `-clariion` give flexibility to the user to discover ONLY Symmetrix arrays or ONLY CLARiiON® arrays. The `-all` option will discover all known storage arrays.

The `-cache` option will attempt to recover the results of a previous SCSI interrogation from a running base daemon for increased speed. Configuration data is always retrieved from cache if possible.

Note: If you need to update the device configuration status information, the `sync` action is a more efficient way. Also, if you had previously run `discover` and had subsequently removed Symmetrix array(s), a later execution of `discover` will not remove information, relating to the removed Symmetrix array(s), from the database.

For selected Symmetrix array discovery, use the `-sid` option.

list

Lists brief or detailed information about your Symmetrix configuration. View whether one or more Symmetrix arrays currently has an exclusive lock, host registration data, and application registration data.

Using the `-lock` option with `list`, you can view whether one or more Symmetrix arrays have an external lock held. By default, only lock 0 is checked. The `-lockn ALL` command checks for all Symmetrix external locks known to SYMAPI. The `-lockn RDF` command checks for locks specific to RDF. The `-lockn GNS` command will list the GNS specific locks. The `-lockn SRDF_MSCS` will list the SRDF/CE for MSCS specific locks.

In addition, the `list` action can be used to list network services available, and the state of gatekeeper and database semaphores. Specifying the `-rdfg` option displays a list of RDF groups for the specified Symmetrix array.

offline

Sets one or all RDF RA directors or a front-end (SA or FA) director port on a locally-attached Symmetrix array to offline status.

Note: Exercise care when applying this action.

online

Sets one or all RDF RA directors or a front-end (SA or FA) director port on a locally-attached Symmetrix array to online status.

Note: Exercise care when applying this action.

release

Releases any existing Symmetrix exclusive lock from the indicated Symmetrix array(s).



CAUTION

Use this action ONLY if you are SURE that no operations using these locks are in progress.

SYMAPI uses several Symmetrix external locks. Use `-lockn` to specify the lock. If `-lockn` is not specified, the lock number defaults to 0.

remove

Removes all information about the indicated Symmetrix array from the Symmetrix configuration database. If there is more than one Symmetrix array attached, then information and definitions about all arrays are removed.

scan

Activates the necessary processing on the host system to recreate a list of accessible devices. It should be initiated when the set of devices that a host can access has changed. It should be followed by a `discover`, if the device changes are associated with Symmetrix devices. Also see the `-pdev` option.

show

Shows the detailed application registration data, CU image definitions, or environment data for a specific system or drive bay.

sync

Refreshes the Symmetrix configuration database file with data from the Symmetrix arrays. The Symmetrix configuration must have been previously discovered, using the `discover` action. If you reconfigure your Symmetrix array by adding or removing devices which the host sees, you will need to run `discover` prior to `symcfg sync` to obtain accurate information.

verify

Verifies whether the Symmetrix configuration and the Symmetrix configuration database file are in sync.

The `verify` action returns the `CLI_C_NOT_IN_SYNC` return code if the Symmetrix configuration and the Symmetrix configuration database file are out of sync:

OPTIONS**-address**

Lists the Vbus, TID, and LUN addresses associated with devices mapped to the front-end directors.

-all

When used with `symcfg discover`, returns all known types of storage arrays. When used with `symcfg list -v` on a front-end director, all port flags will be listed. If used with pool operations, both active and inactive information about the pool(s) will be included in the display.

-applications

Lists the application registrations sorted by Symmetrix ID. Only those applications that have been run will be listed.

-as400

Specifies pools or SAVE devices with emulation type AS400.

-available

Requests the next available Vbus, TID, or LUN address be appended to the output list. Used with the `-address` option.

-bcv

Refreshes (synchronizes) the configuration database file with BCV information.

-CA

Confines the action to a channel director number. To select all channel director numbers, specify `ALL`.

-cache

Attempts to recover the results of a previous SCSI interrogation from a running base daemon for increased speed. Configuration data is always retrieved from cache if possible.

-capacity

Shows the total Symmetrix storage space connected to each registered host based on devices mapped to director/port. For a list of masked devices per host, use the `symmaskdb list capacity` command.

-cid

Supplies the CLARiiON ID to display only information limited to the specified CLARiiON array.

-clariion

Discovers or list only CLARiiON arrays only.

-client

Directs the application registration list and show commands to reference the client application table, instead of referencing the SYMAPI-generated application table.

-ckd3380

Specifies pools or SAVE devices with emulation type CKD3380.

-ckd3390

Specifies pools or SAVE devices with emulation type CKD3390.

-connections

Applies the `list` action to display the host-to-Symmetrix connectivity, sorted by Symmetrix ID. Only those hosts that have at least one registered application will be listed.

-cfgmgr

Refreshes the SYMAPI configuration database file with disk space and Symmetrix configuration metrics gathered from the Symmetrix configuration server.

-CUimage

Lists or shows mainframe CU image information.

-DA

Confines the action to a disk director number. To select all disk director numbers, specify `ALL`.

-db

Displays Symmetrix configuration database information.

-DIR

Confines the action to a director number. To select all director numbers, specify `ALL`.

-dirsts

Refreshes the configuration database file with director status information from the specified Symmetrix array.

-dynamic

Lists Dynamic RDF groups.

-env_data

Display or synchronize the status of the major hardware modules comprising a storage array running Enginuity 5771 or higher. Available in verbose or summarized formats.

-EA

Confines the action to a ESCON director number. To select all ESCON director numbers, specify `ALL`.

-EF

Confines the action to a FICON (Fibre-ESCON) director number. To select all FICON director numbers, specify `ALL`.

-FA

Identifies the front-end (fibre) director number. Use `ALL` to return data for all available fibre front-end directors.

-fba

Specifies pools or SAVE devices with emulation type FBA.

-fibre

Confines the front-end information output to fibre directors only. Used with the `-address` option.

-file

Specifies the use of an assisted discover file to discover CLARiiON arrays.

-force

Forces the release of a Symmetrix external lock (EMC use only). Currently, releasing lock 15 (Symmetrix configuration lock) requires the use of this option.



CAUTION

Use this action ONLY if you are SURE that no operations using these locks are in progress.

-h

Provides brief, online help information.

`-host`

Lists only application information for the specified host or specifies a host name during authorization actions.

`-kit`

Lists the SYMAPI kit details.

`-local`

Refreshes (synchronizes) the configuration database file with local Symmetrix information.

`-lock`

Displays whether the Symmetrix array(s) currently has one or more Symmetrix external locks.

If all or some of the targeted Symmetrix arrays have a Symmetrix exclusive lock, the list action with the `-lock` option returns the following unique return codes:

CLI_C_SYM_NOT_ALL_LOCKED

CLI_C_SYM_NONE_LOCKED

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for more information.

`-lockn`

Specifies the Symmetrix external lock (SEL) number. You can choose to set a specific lock number to return, and if this option is not specified, the lock number defaults to 0. Optionally, you can return only RDF locks by specifying `RDF`, RDFA locks by specifying `RDFA`, or SELs used by GNS by specifying `GNS`, or ALL locks.

`-LRU`

Lists the cache-slot allocation and allocation percentage of a specified Least-Recently-Used (LRU) cache management group number, when used with the `list` action. You can list all the LRUs if you specify `ALL`.

`-memory`

Displays information about the memory boards.

`-nocache`

Bypasses the cache and rescans the devices for configuration information.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-offline`

Sets the operation to work in offline mode utilizing the host configuration database exclusively.

`-P`

Identifies a specific (SCSI or fibre) port of a front-end director.

`-password`

The password associated with the user supplied by the `-username` option.

`-pdev`

For a discover operation, this limits the work performed to collect only the pdev information. In cases where the Symmetrix configuration was changed, a full discovery is performed anyway. When used with `-sid` option, only pdevs for that Symmetrix are updated.

`-pool`

Lists or shows SAVE device pools.

`-port`

Lists the various front-end director port statuses (online/offline) and the associated director numbers when used with the `list -SA` option. Used with `list -FA`, `list -RA`, in addition to port statuses, the connection status of ports is also displayed.

`-RA`

Confines the action to an RDF director number. To select all RDF director numbers, specify `ALL`.

`-rcopy`

Refreshes (synchronizes) the configuration database file with remote copy information from the Symmetrix array(s) and the attached remote Symmetrix array(s).

`-rdf`

Refreshes (synchronizes) the configuration database file with RDF information from the Symmetrix array(s) and the attached remote Symmetrix array(s).

`-rdfg`

Lists RDF groups of the Symmetrix array.

`-rdfa_dse`

Displays SRDF/A DSE pool information.

`-SA`

Confines the action to a front-end (SCSI or fibre) director number. To select all front-end director numbers, specify `ALL`.

`-savedevs`

Displays information about the SAVE devices.

`-SE`

Confines the action to a Gig-E director number. To select all Gig-E director numbers, specify `ALL`.

`-semaphores`

Displays gatekeeper, database, and lock file semaphores.

`-service_state`

Displays of environment data should include only modules that are in the specified service state.

`-services`

Displays configured network services.

`-sid`

Supplies the Symmetrix ID to display only information limited to the specified Symmetrix array; or to discover only one local Symmetrix array. Symmetrix arrays which are attached to the specified array are also discovered.

`-snap`

If used with `sync`, refreshes (synchronizes) the configuration database file with up-to-date TimeFinder/Snap information. If used with `pools`, displays Snap pool information.

`-sorthost`

Sorts a `-connections` list request by host, rather than by Symmetrix ID.

`-ssid`

Displays MVS subsystem information.

`-ssid_num`

Identifies a specific SSID group indicating which group to display if a CU image contains multiple SSID groups.

`-static`

Lists static RDF groups.

`-status`

Display status information referring to whether the configuration has changed and if the Symmetrix was discovered during the last discover action.

`-switched`

Displays the local and remote Symmetrix arrays, their RDF directors, and RA groups that are connected in the open RDF switch fabric.

`-symmetrix`

Discovers only Symmetrix arrays.

`-username`

Specifies the name of the user to authorize.

`-v`

Provides a more detailed, verbose listing.

`-version`

Displays SYMCLI/SYMAPI version information.

PARAMETERS*AppID*

The application ID.

AsstDiscoFile

The fully-qualified pathname of the CLARiiON assisted discover file.

BayName

Name of a Symmetrix cabinet.

HostName

The host name.

*PassWord*The password associated with the *UserName* supplied during authorization actions.*PoolName*

The name of the SAVE device pool.

SSID

The subsystem number.

SymmID

The 12-digit ID of the Symmetrix array.

UserName

The username supplied during authorization actions.

RETURN CODESRefer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.**EXAMPLES**

To discover all Symmetrix arrays connected to this host and to build or rebuild the Symmetrix configuration database file from information gathered, enter:

symcfg discover

To display information about the attached Symmetrix arrays, enter:

symcfg list

To display detailed information about the attached Symmetrix arrays and their directors, enter:

symcfg list -v -dir all

To display detailed information about the attached Symmetrix arrays and director 1B, enter:

symcfg list -v -dir 1B

To display information about all front-end directors for the specified Symmetrix array, enter:

symcfg list -SA ALL -sid 710

To list information about all registered hosts connected to the specified Symmetrix array, enter:

symcfg list -connections -sid 010000658710

To list information about all registered applications on every locally attached Symmetrix array, enter:

symcfg list -applications

To list all configured network services in the network services file, enter:

```
symcfg list -services
```

To list all gatekeeper and database semaphores, enter:

```
symcfg list -semaphores
```

To verify whether the Symmetrix 0098 configuration and the Symmetrix configuration database are in sync, enter:

```
symcfg verify -sid 0098
```

To display the content of CU image 0x00, enter:

```
symcfg -cuimage show 0
```

To display the status of the modules comprising a storage array running Enginuity 5771 that are in a failed state, enter:

```
symcfg -sid 097 -env_data list -service_state failed
```

symcg

Performs operations on a Symmetrix composite group (CG).

SYNTAX

`symcg -h`

`symcg`

```
create CgName [-type REGULAR | RDF1 | RDF2]
               [-apidb | -ppath | -rdf_consistency]
delete CgName [-force] [-symforce]
rename OldCgName NewCgName

export CgName [-f FileName] [-rdf]
exportall [-f FileName] [-rdf]

import CgName [-f FileName] [-apidb | -ppath | -rdf_consistency] [-rename]
importall [-f FileName] [-apidb | -ppath | -rdf_consistency]

list [-apidb | -ppath | -rdf_consistency] [-offline] [-v]
list [-inactive]
show CgName [-inactive] [-offline | -lock]

activate CgName [-noprompt]
activateall [-noprompt]
release CgName [-force] [-noprompt] [-sid SymmID] [-lock #]
```

`symcg -cg CgName`

```
add [pd] PdevName [LdevName]
remove [pd] PdevName [-force] [-symforce]
show ld LdevName
rename ld OldLdevName NewLdevName
remove ld LdevName [-force] [-symforce]
remove [pd] PdevName [-force] [-symforce]
move ld LdevName DestCgName [-force] [-rename]
copy ld LdevName DestCgName [-force] [-rename]
set <-name Name | -recovery_rdfg GrpNum
    [-rdfg SymmID: GrpNum[, GrpNum...] | all[,...] | Name:Name[,Name]]
```

`symcg -cg CgName -sid SymmID [-rdf -rdfg GrpNum]`

```
add dev SymDevName [LdevName] [-vdev | -tgt]
remove dev SymDevName [-force] [-symforce]
```

`symcg -cg CgName [-sid SymmID] [-rdfg GrpNum]`

```
[-RANGE <SymDevStart:SymDevEnd>] [-vdev | -tgt]
addall [[pd] | dev [-rdf]] [-R1 | -R2]
rmall [-rdf] [-force] [-symforce]
```

`symcg -cg CgName [-sid SymmID] [-rdfg GrpNum]`

```
[-RANGE <SymDevStart:SymDevEnd>]
[-vdev | -rvdev | -tgt | -rtgt]
moveall DestCgName [-force] [-symforce]
copyall DestCgName [-force] [-symforce]
```

`symcg -cg CgName [-i Interval] [-c Count] [-noprompt]`

```
[-rdfg Name:Name] [-star] [-v]
enable
disable [-force]
```

`symcg -cg CgName [-sid SymmID] [-noprompt] [-v] [-bcv | -vdev | -tgt]`

```
[-star] [-force]
write_disable [LdevName [LdevName...]]
rw_enable [LdevName [LdevName...]]
relabel [LdevName [LdevName...]]
```

```
symcg -cg CgName [-sid SymmID] [-v] [-noprompt] [-force] [-star]
               [-bcv|-rbcv|-brbcv|-rrbcv|-vdev|-rvdev|-tgt|-rtgt]]
               [-rdfg SymmID: GrpNum[,GrpNum...] | all[,...] |
               Name:Name[,Name]]
ready [LdevName [LdevName...]]
not_ready [LdevName [LdevName...]]
hold [LdevName [LdevName...]]
unhold [LdevName [LdevName...]]
```

DESCRIPTION The `symcg` command can be used to create a new composite group and delete existing composite groups. In addition, it can be used for exporting, importing, listing, naming, and showing information about a composite group, adding devices to a composite group, removing devices from a composite group, and enabling and disabling RDF consistency on a composite group.

The `symcg` command can write disable, read/write enable, ready, not-ready, hold, and unhold a composite group.

ARGUMENTS

`activate`

Activates a specified composite group (imports to GNS).

`activateall`

Activates all the inactive composite groups.

`add pd`

Adds a Symmetrix device, given its physical (host) device name, to an existing composite group.

`add dev`

Adds a Symmetrix device, given its Symmetrix device name, to an existing composite group.

`addall`

Adds all Symmetrix devices that are visible to this host and are not already members of a composite group, and that belong to a specified Symmetrix array to the specified existing composite group.

`addall dev`

Adds all Symmetrix devices that are visible to the host, devices that are not visible to the host, and devices that are not already members of a composite group.

`copy`

Copies one device from one existing composite group to another existing composite group. The source and destination composite groups must have compatible types.

`copyall`

Copies all specified devices from one existing composite group to another existing composite group. The source and destination composite groups must have compatible types.

`create`

Creates an empty composite group. If type REGULAR is specified the composite group will not be stored in PowerPath®. If no type is specified then the group will become a REGULAR group by default. If the host supports RDF consistency groups, and the

options file setting RDF_CG_TO_PPATH is enabled on the host, or the `-ppath` option is specified in the command line, then RDF consistency groups will be stored in PowerPath. A PowerPath consistency group type will be NA until STD devices are added to the group.

delete

Deletes an existing composite group. If the composite group has members, the command will fail, unless the `-force` flag is used. If the force flag is specified, the devices that are members of the group are removed, and the group is deleted. If RDF consistency is enabled and cannot be disabled, the command will fail unless the `-symforce` flag is used.

disable

Disables RDF consistency for all STD device(s) in the composite group.

enable

Enables RDF consistency for all STD device(s) in the composite group.

export

Exports the contents of a composite group to a text file, which can later be used to import the composite group.

exportall

Exports the contents of all composite groups to a text file which can later be used to importall the composite groups.

hold

Holds all devices in the composite group. By default, all devices in the STD device list are acted upon.

import

Imports the composite group described by a text file which was created by the export action. If `-apidb` is specified the non-REGULAR group will not be stored in PowerPath.

importall

Imports all composite group described by a text file, which was created by the exportall action. If the `-apidb` option is specified, the non-REGULAR group will not be stored in PowerPath.

list

Lists all the composite groups that have been created for this host. If `-inactive` is specified, all the inactive composite groups will be listed.

move

Moves one device from one existing composite group to another existing composite group. The source and destination composite groups must have compatible types.

moveall

Moves all specified devices from one existing composite group to another existing composite group. The source and destination composite groups must have compatible types.

not_ready

Places all devices in the composite group in the `not_ready` state. By default, all devices in the STD device list are acted upon.

ready

Makes ready all devices in the composite group. By default, all devices in the STD device list are acted upon.

relabel

Applies the defined Windows device label to the device. Refer to [“symlabel” on page 156](#) for information about how to define a device label.

release

Releases the Device External Lock (DEL) associated with the devices in a composite group.

remove ld

Removes a Symmetrix device from an existing composite group by specifying its logical device name.

remove pd

Removes a Symmetrix device, using its physical (host) device name, from an existing composite group. If RDF consistency is enabled, the command will fail unless the `-force` flag is used. If RDF consistency can not be disabled, the command will fail unless the `-symforce` flag is used.

remove dev

Removes a Symmetrix device, using its Symmetrix device name, from an existing composite group. If RDF consistency is enabled, the command will fail unless the `-force` flag is used. If RDF consistency can not be disabled, the command will fail unless the `-symforce` flag is used.

rename ld

Renames a logical device.

rmall

Removes all Symmetrix devices from an existing composite group. If RDF consistency is enabled, the command will fail unless the `-force` flag is used. If RDF consistency can not be disabled, the command will fail unless the `-symforce` flag is used.

rw_enable

Enables read/write on all devices in the composite group. By default, all devices in the STD device list are acted upon.

set

Associates a logical name or a STAR recovery RDF group number with an RDF (RA) group(s).

show

Shows detailed information about a specified composite group.

`show ld`

Shows status information for a logical device in the composite group.

`unhold`

Releases the hold on all devices in the composite group. By default, all devices in the STD device list are acted upon.

`write_disable`

Write-disables all devices in the composite group. By default, all devices in the STD device list are acted upon.

OPTIONS

`-all`

Activates all inactive composite groups.

`-apidb`

Lists the composite groups that are in the host's SYMAPI configuration database. On a `create` or `import`, overrides the options file setting and stores the RDF consistency groups in the host's configuration database file only.

`-bcv`

Chooses all devices in the BCV device list of a composite group.

`-brbcv`

Chooses all devices in the BRBCV device list of a composite group.

`-c`

Number (count) of times for the operation to acquire an exclusive lock on the Symmetrix host database. If this option is not specified but an interval (`-i`) is specified, the program will loop continuously to display or start the operation.

`-cg`

Targets an operation on a composite group.

`-f`

Specifies the text file to be used with `export` or `import`.

`-force`

Forces a deletion of a composite group, with or without members. Also used with the `disable` action to perform the action when devices are in unexpected RDF modes and states. When used with the `remove` action, if the device is enabled, it will be disabled and removed. Applies to the following actions as well: `write_disable`, `rw_enable`, `ready`, `not_ready`, `hold`, and `unhold`.

`-h`

Provides brief, online help information.

`-i`

Specifies the interval in seconds for the operation to acquire an exclusive lock on the Symmetrix host database. The default interval is 10 seconds. The minimum interval is 5 seconds.

`-inactive`

Lists or shows inactive composite groups.

`-lock`

Displays whether the devices have any exclusive locks.

`-name`

Specifies the RDF group name (s). Reset it by setting to the null string. For example:

```
symcg -cg w1 set -rdfg 13:55
```

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-offline`

Obtains information from the Symmetrix host configuration database.

`-ppath`

Lists the composite groups that are in PowerPath. On a `create` or `import`, overrides the options file setting and store the RDF consistency group in PowerPath, if PowerPath RDF consistency groups are supported on this host.

`-R1`

Adds or removes RDF1 (R1) devices only.

`-R2`

Adds or removes RDF2 (R2) devices only.

`-RANGE`

Specifies the ranges of Symmetrix devices to add and remove.

`-rbcv`

Chooses all devices in the RBCV device list of a composite group.

`-rdf`

Exports the remote Symmetrix ID(s) and remote Symmetrix device names. This allows the composite group to be imported on a host connected to the remote Symmetrix arrays. When used in conjunction with `-vdev`, it indicates that the device is an RVDEV device. When used in conjunction with `-tgt`, it indicates that the device is an RTGT device.

`-rdf_consistency`

Creates or imports the composite group, allowing it to be enabled for RDF consistency once devices have been added to the composite group.

`-recovery_rdfg`

Specifies the Star recovery RDF (RA) group.

-rdfg

Adds or removes devices that belong to this RDF (RA) group. For an add operation, this parameter is only valid with `-vdev` or `-tgt`. For control operations (`ready`, `not_ready`, `hold`, `unhold`) this parameter must be used with a remote device type (`-rbcv`, `-brbcv`, `-rrbcv`, `-rvdev`, `-rtgt`).

-rename

Specifies a new name for the composite group.

-rrbcv

Chooses all devices in the RRBCV device list of a composite group.

-rtgt

Chooses all devices in the RTGT device list of a composite group.

-rvdev

Chooses all device in the remote VDEV device list of a composite group.

-sid

Specifies the unique Symmetrix ID.

-star

Indicates that the action is targeted for devices in Star mode.

-symforce

When used with `remove` or `delete`, if the device is enabled and it can not be disabled, the operation will continue.

-tgt

Chooses all devices in the TGT device list of a composite group.

-type

Identifies a composite group type. Values are: `REGULAR`, `RDF1`, `RDF2`.

-v

Provides a more detailed, verbose listing.

-vdev

Chooses all devices in the VDEV device list of a composite group.

PARAMETERS

CgName

Composite group name. The name must be unique to this host.

DestCgName

The destination composite group name for a `copy`/`copyall` or `move`/`moveall` actions.

FileName

Text file to be used with `export` or `import`.

GrpNum

The RDF (RA) group number.

LdevName

Device logical name, either named by the user or automatically assigned, when a device is added to a composite group.

Name

The logical name associated with the RDF (RA) group(s).

NewCgName

The new composite group name.

OldCgName

The current composite group name.

PdevName

Host name for the device, such as `/dev/rhdiskpower61`.

SymDevName

Symmetrix device name, unique per Symmetrix array, such as 01C.

OUTPUT FILE FORMAT

The output file created by `export` and read by `import` is of the following format:

```
<CG TYPE>
S <SYMMETRIX ID> <SYMMETRIX DEVICE NAME>
B <SYMMETRIX ID> <SYMMETRIX DEVICE NAME>
R <SYMMETRIX ID> <SYMMETRIX RA GROUP NUM>      /
                  <SYMMETRIX DEVICE NAME>
Z <SYMMETRIX ID> <SYMMETRIX RA GROUP NUM>      /
                  <SYMMETRIX DEVICE NAME>
Y <SYMMETRIX ID> <SYMMETRIX RA GROUP NUM>      /
                  <REMOTE SYMMETRIX RA GROUP NUM> /
                  <SYMMETRIX DEVICE NAME>
V <SYMMETRIX ID> <SYMMETRIX DEVICE NAME>
W <SYMMETRIX ID> <SYMMETRIX RA GROUP NUM>      /
                  <SYMMETRIX DEVICE NAME>
T <SYMMETRIX ID> <SYMMETRIX DEVICE NAME>
X <SYMMETRIX ID> <SYMMETRIX RA GROUP NUM>      /
                  <SYMMETRIX DEVICE NAME>
. . .
```

Valid values for `<CG TYPE>` are:

```
CGTYPE_NA
CGTYPE_REGULAR
CGTYPE_RDF1
CGTYPE_RDF2
```

The following labels are defined as:

```
S identifies a STD device
B identifies a local BCV device
R identifies a RBCV device
Z identifies a BRBCV device
Y identifies a RRBCV device
Z identifies a VDEV device
W identifies an RVDEV device
T identifies a TGT device
V identifies a VDEV device
X identifies an RTGT
```

<SYMMETRIX ID> is the 12 digit identifier of the Symmetrix upon which the local STD devices reside.

<SYMMETRIX RA GROUP NUM> is the RDFG (RA) number which can be used in combination with the local Symmetrix ID to get to the remote Symmetrix array.

<REMOTE SYMMETRIX RA GROUP NUM> is the RDFG (RA) number that can be used in combination with the local RA group number and the local Symmetrix ID to get to the Symmetrix array that is 2 hops away.

<SYMMETRIX DEVICE NAME> is the Symmetrix device number.

The file will have as many device description lines as the composite group has members. Blank lines will have a pound sign (#) in the first column and will be ignored.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To create a REGULAR Symmetrix composite group, `mycg1`, enter:

```
symcg create mycg1
```

To list all Symmetrix composite groups in detailed format, enter:

```
symcg -v list
```

To show information about composite group `oracg`, enter:

```
symcg show oracg
```

To export composite group `oracg` to a text file, `oracg.txt`, enter:

```
symcg export oracg -f oracg.txt
```

To delete Symmetrix composite group `oracg`, regardless whether the group has devices in it, enter:

```
symcg -force delete oracg
```

To import composite group `oracg` from a text file, `oracg.txt`, enter:

```
symcg import oracg -f oracg.txt
```

To add a device to Symmetrix composite group `oracg`, enter:

```
symcg -cg oracg add pd /dev/rhdiskpower61
```

To remove a device from a Symmetrix composite group `oracg`, enter:

```
symcg -cg oracg -sid 55 remove dev 00C
```

symchg

Marks areas of Symmetrix disk storage so that objects occupying those areas can be monitored for changes by the Change Tracker.

SYNTAX

```
symchg -h

symchg [-v] [-sid SymmID]
    create    dev SymDevname
    delete   dev SymDevname
    mark      dev SymDevname
    remove    dev SymDevname

symchg <-g DgName | -cg CgName> [-bcv] [-v]
    create    ld LdevName
    delete    ld LdevName
    mark      ld LdevName
    remove    ld LdevName

symchg <-file DevFile> -sid SymmID [-v]
    create
    delete
    mark
    remove

symchg [-v] [-sid SymmID]
    list      [-session [dev]]

symchg [-v] [-session] [[-reset | -multi] [-i Interval] [-c Count]]
    view      dev SymDevname [-sid SymmID]
    view      <-g DgName | -cg CgName> [-bcv] [-log LogFile]
    view      <-g DgName | -cg CgName> ld LdevName
    view      -file DevFile [-log LogFile]

symchg [-ra NumRAs] [-rate KB/s] [-resync [mmm|hh:mm]]
    [-start mmddyyyy hh:mm] [-stop mmddyyyy hh:mm]
    [-backend] [-range start:end] [-v]
    report    -log LogFile <-g DgName | -cg CgName> [-bcv]
    report    -file DevFile -log LogFile [-sid SymmID]
```

DESCRIPTION

The `symchg` command (also known as Change Tracker) time stamps and marks an area of Symmetrix disk storage occupied by a disk storage object using a DeltaMark (SDDF) bitmap. This allows a marked area to be examined at a later time to view changes to the stored object. You can mark storage objects such as Symmetrix devices, lists of Symmetrix devices in a device file, and the standard or BCV devices of a Symmetrix device group or a composite group.

When viewing the changes for an object, the output can either be sent to `stdout` or saved to a user-defined log file. The information saved to the log file is stored in a comma-separated format. This enables the data to be imported into a spreadsheet for analysis. The results in the logfile can be summarized by specifying the `report` argument to `symchg`.

The information saved to the log file can be the number of tracks (delta) changed between sample intervals, by specifying the `-reset` option, or the cumulative tracks changed over time (sum), or both, by specifying `-multi`. The sum method is default.

The `symchg` command can calculate certain RDF capacity planning values based on the amount of change to the monitored objects. The RDF values that can be calculated are re-synchronization time, the number of Remote Adapters (RAs), and the RA transfer rates.

ARGUMENTS**create**

Creates a Change Tracker session that monitors changes to logical objects. Simultaneously, you can mark and examine more than one object per session. This command supports Symmetrix devices, using their Symmetrix device name, logical device name, device group, or just BCV devices of a device group.

delete

Unmarks the disk storage and deletes the DeltaMark session.

list

Lists all disk storage objects that have been marked. It can list all Symmetrix devices that have an established DeltaMark session.

mark

Marks the area of disk storage to be monitored. First, a session must be created for the device containing the object to be marked.

remove

Removes the marked object from the symchg database without terminating the DeltaMark session.

report

Generates a report on the amount of change for the specified object in a specified log file. Reports are generated for device groups only.

view

Processes the bitmap that corresponds to the disk storage object and displays the amount and rate of change. Also shows whether a DeltaMark session exists for a specified disk device. The possible storage objects are specified selecting a Symmetrix device name, logical device name, device group, or just BCV devices of a device group.

OPTIONS**-backend**

Displays the DA and Back-end disk address of the device whose changes are being measured.

-bcv

Confines the action to just the BCV devices of the device group.

-c

Applies a count for the number of times to repeat execution of the `view` action. If `-c` is not specified and the `-i` option is specified, the change information for the object continues to be re-displayed indefinitely at every `-i` interval.

-cg

Specifies the composite group name.

-g

Applies the action to a Symmetrix device group name.

`-h`

Provides brief, online help information.

`-i`

Applies a repeat interval (seconds) between the executions of the `view -c` action. The default interval value between counts is 60 seconds. The minimum value between counts is 30 seconds. If the `-c` option is not specified and `-i` is specified, the change information for the object continues to be re-displayed indefinitely at every `-i` interval.

`-log`

Specifies a log file (owned by the user) that is read (`report` action) from or written (`view` action) to.

`-multi`

Reports changed tracks per both the Sum and the Delta method. This option requires the `-i` or `-c` options.

`-ra`

Applies a number to specify the quantity of RA directors in your Symmetrix configuration for the `report` action.

`-range`

Specifies the start and end Symmetrix device names. Applies to `report` action.

`-rate`

Applies the RA director's transfer rate (in KB/sec) to the `report` action.

`-reset`

Causes the specified storage device or object to be marked unchanged. This option requires the `-i` or `-c` options.

`-resync`

Applies a specific time window (in minutes, or hours and minutes) to synchronize the RDF pair to the `report` action.

`-session`

Causes the `list` argument to list all physical devices with created DeltaMark sessions. Causes the `view` argument to show if a DeltaMark session exists for the devices that the object spans.

Note that the `-i` and `-c` options are not allowed when viewing a `-session` option.

`-sid`

Applies a Symmetrix ID to the action, limiting the scope of the operation to a specific Symmetrix array.

`-start`

Applies a start date/time to begin processing data in the log file. The default operation is to start at the beginning of the log file.

`-stop`

Applies a stop date/time to stop processing data in the log file. The default operation is to stop at the end of the log file.

`-v`

Provides a more detailed, verbose listing.

PARAMETERS

CgName

Composite group name given by user.

DevFile

Device list file containing the list of devices to be acted upon. The file should have one *SymDevName* per line.

DgName

A device group name.

LogFile

A log file name.

LdevName

A logical device name either named by the user or automatically assigned when a logical device is added to a device group.

SymDevname

A Symmetrix device name.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To create a DeltaMark session for just Symmetrix device 17C, enter:

```
symchg create dev 017C
```

To create a DeltaMark session for each Symmetrix device in a device group, enter:

```
symchg create -g ProdDB
```

To examine the amount and rate of change for logical device Ldev1 in device group ProdDB, enter:

```
symchg view -g ProdDB ld Ldev1
```

To save changed information in log file `/tmp/logfile` for device group ProdDB, performing ten samples and resetting the changed information after each sample, enter:

```
symchg view -g ProdDB -reset -log /tmp/logfile -c 10
```

To list all the disk storage objects that are currently marked, enter:

```
symchg list
```

To list all the disk storage objects for each DeltaMark session that are currently marked, enter:

```
symchg list -session
```


To generate a summary report on each of the Symmetrix devices of device group `ProdDB` for `/tmp/logfile`, enter:

```
symchg report -g ProdDB -log /tmp/logfile -v
```

To generate a summary report (`/tmp/logfile`) on device group `ProdDB`, with an RA transfer of 1000 KB/sec and perform a resync of the changed tracks every 10 minutes, enter:

```
symchg report -g ProdDB -log /tmp/logfile -rate 1000 \ -resync 10
```

To delete the marks and terminate the DeltaMark session for Symmetrix device `14D`, enter:

```
symchg delete dev 14D
```

To unmark all the Symmetrix devices associated with device group `ProdDB` without deleting the DeltaMark session for these devices, enter:

```
symchg remove -g ProdDB
```

symchksum

Controls Symmetrix EMC® Double Checksum operations on the RDBMS database devices, RDBMS tablespace devices, or Symmetrix devices.

SYNTAX

```
symchksum [-h]

symchksum [-sid SymmID]

    list [-v]

    show dev SymDevName [-blocks|-kb|-mb]

symchksum -type generic -sid SymmID [-g DeviceGroup]
        [dev SymDevName] [-range startdev:enddev]

    enable

    disable

symchksum [-type RdbType] [-db DbName] [-tbs TbsName]
        [-control] [-redo] [-h]

    enable [-reject_io] [-fractured_reject_io] [-discard] [-phone_home] [-v]
        [-check_dba] [-check_all_blocks] [-straddle]
        [-suppress_feature Keyword[,Keyword]]

    disable [-v]

    validate [-v]

    verify [-v]

    disable -force -sid SymmID dev SymDevName
```

DESCRIPTION

The `symchksum` command enables checksum checking, and other checks, on a set of Symmetrix devices. Relational databases or generic applications are selected using the `-type` option.

For a generic type, the feature is enabled or disabled on a device basis. Devices can be specified as a single device, a range of devices, or a group of devices. The generic type does not have check or action options. The generic type is useful for applications that update blocks the size of 32 KB or less. It is not recommended to enable EMC Double Checksum generic type on journals or logs.

For relational types, the I/O of enabled extents on a specified device are checked by executing a specified checksum algorithm. When checksum errors are detected an error is logged to the Symmetrix array. The user can decide if they would like to reject the I/O or have the Symmetrix phone home when a checksum error is detected.

The `symchksum` command also performs the following two operations automatically:

- ◆ Verify the magic number in Oracle data blocks (MagicNumber)

Note: Not available for redo logs.

- ◆ Check for non-zero data block address (NonZeroDba)

To suppress one or both of these operations, use the `-suppress_feature` option and supply the name of the feature, for example:

```
symchksum -suppress_feature MagicNumber, NonZeroDba
```

In addition, the following three operations can be manually enabled:

1. Check all blocks in the I/O: This option causes MagicNumber and NonZeroDbas checks to be performed on all blocks in the write. Normally, these checks are performed on the first block of the write only.

To select the check all blocks feature, use `-check_all_blocks`.

2. Check for I/O straddling of Oracle extents: If a single I/O spans beyond the bounds of defined EMC DoubleChecksum extents, the I/O is said to straddle. To check for straddle I/O, select this feature. Do not use this feature if autoextend is used on the RDBMS datafiles.

To select the straddle feature, use `-straddle`.

3. Compare data block address and target block of I/O (`-check_dba`).

Note: If `-check_dba` is selected, extents from separate datafiles cannot be collapsed. The `-check_dba` option requires data specific to each datafile, which would be lost in an extent collapse.

As a result, each datafile will occupy at least one Symmetrix device extent.

When using a logical volume manager and `-check_dba`, this creates a limitation of 200 datafiles per volume group or disk group.

If an I/O is not a multiple of the object block size, you can choose to reject the I/O. This is called a fractured I/O, and is selected with the `-fractured_reject_io` option. When using this option, the `-reject_io` option must also be used.

The `-reject_io` has an optional clause, `-discard`. When extents are enabled with `-discard`, EMC Double Checksum writes blocks to disk until an error is detected. If an I/O is larger than 32 KBs, the `-discard` option divides a large I/O into smaller units of 32 KBs each. When a checksum failure is detected, all blocks in that unit, and subsequent units, are discarded. If `-discard` is not specified, failed bytes will likely be transferred to disk per SCSI convention.

Note: Check with your EMC Representative for up-to-date availability information for `-discard`, MagicNumber, and NonZeroDbas on your Engenuity release level.

Database objects can be specified using restrictors. The options `-tbs`, `-redo`, and `-control` are all restrictors. If these restrictors are not used, the entire database is implied. If the `-tbs` restrictor is used, it must be used by itself. The `-redo` and `-control` restrictors can be used together.

These restrictors can also be used with the `disable` argument.

When the database control files, redo logs, or tablespace name is specified, the device information that defines those objects is obtained with the SYMAPI database mapping functions. The extents of those devices are used when defining the set of extents to be checked for checksum errors.

When a Symmetrix device is specified with the `disable` action, the `-force` flag is required. Disabling extents in this way can cause a mapped tablespace or database to be only partially protected, so use with caution. All the extents being monitored for checksum errors on the specified Symmetrix device will be disabled.

Note: Exercise care when disabling checksum on a specified device. This capability is provided only for unusual cases. For example, if a tablespace is dropped before disabling checksum, normal methods can't be used to disable checksum because the tablespace no longer exists. In such a case, disabling by device must be used.

After using `disable` by device, it is very likely that other objects have been unintentionally disabled. Check to make sure the objects that should be enabled are still completely enabled.

There is a maximum of 200 extents per device that can be monitored at one time for Enginuity 5x70 revision 50 and higher. The maximum is 31 extents for earlier Enginuity versions.

When listing the physical devices that have checksum checking enabled, the information reported is from the first extent encountered. If you want to see all the extent details for a particular device, use the `show` command.

Environment variables

You need to define the UNIX environment variables for the Oracle database for the database mapping commands to succeed (refer to [Table 2](#)).

Table 2 UNIX environment variables

For database	Set variables
Oracle	ORACLE_HOME ORACLE_SID PATH

See your System Administrator for more specific information about setting these variables for your system platform and database.

[Table 3](#) lists the various environment variables that you should set to eliminate the repetition of argument entries or options in your command line sequences. The database user login information must be supplied using the SYMCLI_RDB_CONNECT variable.

Table 3 symchksum DB environment variables

Variable name	Description	Default
SYMCLI_RDB_CONNECT	Specifies a user name, password, and remote service name for a user's relational database account (<i>user/password@service</i>).	None. Must be specified by user.
SYMCLI_RDB_NAME	Specifies the default relational database name (<i>DbName</i>). Possible value: Oracle	NULL
SYMCLI_RDB_TYPE	Specifies a specific type (<i>DbType</i>) of database. Possible value: Oracle	NULL

Note: SYMCLI_RDB_CONNECT must be set with your user name and password for you to access the specified database with this command.

For any individual command, you can override the variable value of SYMCLI_RDB_TYPE to explicitly specify the option in the command argument.

If `symchksum` is being run in client/server mode and the required RDBMS environment variables are properly set in the client machine, they will also be applied to the server.

An Oracle database user must have one of the following to run this utility:

- ◆ "Select any table" privilege (Oracle8i and earlier)
- ◆ "SELECT_CATALOG_ROLE" (Oracle9i and newer)
- ◆ DBA role
- ◆ SYSDBA system role

If ASM is used to store datafiles, the power level must be set to zero so that datafiles will remain in its original locations. Three environment variable are also required in order to contact the ASM instance:

SYMAPI_ASM_HOME - Oracle Home of ASM instance

SYMAPI_ASM_SID - Oracle Sid of ASM instance

SYMCLI_ASM_CONNECT - username/password of ASM instance

ARGUMENTS

`disable`

Disables checksum checking on the extents of the specified devices.

`enable`

Enables checksum checking on the extents of the specified devices.

`list`

Lists all devices that currently have checksum checking enabled.

`show`

Shows the extents of a specified device that are having checksum checking performed.

`validate`

Validates that a specified database or tablespace is able to have checksum checking enabled. This is a way to determine if an installation is a candidate for EMC Double Checksum. Validate does not make any changes.

`verify`

Verifies whether the specified database or tablespace has checksum checking enabled on all their devices.

The verify action returns the following unique return codes if the verify criteria was not met:

Code#	Code symbol and description
14	CLI_C_NOT_ALL_VALID Returned if only some of the specified RDBMS extents are checksum enabled.
15	CLI_C_NONE_VALID Returned if none of the specified RDBMS extents are checksum enabled.

OPTIONS

`-check_all_blocks`

Checks all blocks in the I/O. Otherwise, only the first block is checked.

`-check_dba`

Compares the data block address and target block of I/O.

`-control`

Specifies a relational database control file.

`-db`

Applies a specific relational database name.

`-discard`

Discards bytes in the current buffer and subsequent buffers, when a checksum failure is detected.

`-force`

Applies force with the disable action on all of the extents of the Symmetrix device.

`-fractured_reject_io`

Rejects I/O if not a multiple of Oracle blocksize.

`-g`

Specifies a device group.

`-h`

Provides brief, online help information.

`-phone_home`

Phones home when a checksum error is detected.

`-range`

Specifies a range of devices.

`-redo`

Specifies relational database redo logs.

`-reject_io`

Rejects I/O when a checksum error is detected.

`-sid`

Specifies a Symmetrix ID.

`-straddle`

Checks for writes that straddle defined database extents.

`-suppress_feature`

Turns off a default operation.

`-tbs`

Specifies a relational database tablespace name.

`-type`

Specifies a relational database or generic application.

`-v`

Provides a more detailed, verbose listing.

KEYWORDS

MagicNumber

A default operation that verifies the 3-bit magic number.

NonZeroDb

A default operation that checks for non-zero data block addresses.

PARAMETERS

DbName

The specific relational database name.

RdbType

An application type, such as Oracle or generic.

SymDevName

The specific Symmetrix device name.

SymmID

The 12-digit ID of the Symmetrix array.

TbsName

The specific tablespace name.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To list the devices on Symmetrix 3890 that have extents being checked for checksum errors, enter:

```
symchksum -sid 3890 list
```

To show all the extents of Symmetrix device 0A1 that are being checked for checksum errors, enter:

```
symchksum show dev 0A1
```

To enable Oracle checksum checking on the extents of all the devices that define the current database instance, and then to phone home on error, enter:

```
symchksum -type Oracle -phone_home enable
```

To enable Oracle checksum checking on the extents of all the devices that define the tablespace, and to log any errors, enter:

```
symchksum -type Oracle -tbs SYSTEM enable
```

To enable Oracle checksum type checking on the extents of all the devices that house the Oracle control files, and to log any errors, enter:

```
symchksum -type Oracle -control enable
```

To verify that Oracle tablespace USER01 has checksum checking on all the devices that have defined it, enter:

```
symchksum -type Oracle -tbs USER01 verify
```

To disable Oracle checksum checking on the current database instance, enter:

```
symchksum -type Oracle disable
```

To disable (with force) checksum checking for all checksum extents on Symmetrix device 0A1, enter:

```
symchksum -sid 3890 disable dev 0A1 -force
```

To check and determine if the Oracle tablespace is a candidate for Double Checksum, enter:

```
symchksum validate -tbs ACCOUNTING_1
```

To enable Oracle checksum and add the optional operations of check DBA and check all blocks, enter:

```
symchksum -type Oracle enable -check_dba -check_all_blocks
```

symcli

Provides a brief description of all the commands included in the Symmetrix Command Line Interface (SYMCLI).

SYNTAX `symcli [-env] [-def] [-h] [-v]`

DESCRIPTION The `symcli` command provides a brief explanation of the commands included in the Symmetrix Command Line Interface. Manual pages are available for each individual command listed using the `symcli` command.

ARGUMENTS None.

OPTIONS `-def`

Displays the SYMCLI environmental variable values that are currently set.

`-env`

Displays the list of environmental variables that can be used with SYMCLI commands.

`-h`

Provides brief, online help information.

`-v`

Provides a brief description of all the SYMCLI commands.

PARAMETERS None.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To obtain a list of the SYMCLI commands, enter:

```
symcli -v
```

To obtain a list of the environment variables that can be set, enter:

```
symcli -env
```


symclone

Performs TimeFinder/Clone control operations on a device group, composite group, devices within the device group, or devices in a device file.

SYNTAX

symclone -h

```
symclone -g DgName [-v] [-noprompt] [-force] [-i Interval] [-c Count] [-star]
    [-preserveTGTLocks -lockid LockNum][[-rdf [-bcv] [-tgt]] | -rrbcv] [-tgt]

    create    [-opt|-exact] [[-differential] [-copy|-precopy]] [-skip] [-concurrent]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    split     [skip]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    activate  [-vxfs <MountPoint...>]
              [-ppath <SRCDEVS|PowerPathPdevName...>]
              [-rdb -dbtype DbType [-db DbName]]
              [-consistent [-both_sides]]
              [-preaction Script] [-postaction Script]
              [-not_ready] [-skip] [-concurrent]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    terminate [-symforce] [-skip]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    recreate  [-skip] [-precopy]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    establish [-vxfs <MountPoint...>]
              [-ppath <SRCDEVS|PowerPathPdevName...>]
              [-rdb -dbtype DbType [-db DbName]]
              [-consistent [-both_sides]]
              [-preaction Script] [-postaction Script]
              [-not_ready] [-skip]
              [-full [-opt|-exact]] [-concurrent]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>

    restore   [-preaction Script] [-postaction Script]
              [-full]
              <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
              <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
              <<[LdevName [[SYM|BCV] ld LdevName]]>...>
```

```

symclone -g DgName [-offline] [-i Interval] [-c Count]
                [[-rdf [-bcv] [-tgt]] | -rrbcv][-tgt]

query          [LdevName [LdevName...]] [-multi]

verify         [-created|-copied|-copyinprog|-copyonaccess|-copyonwrite | -precopy
                [-cycled] | -recreated | -restored | -restinprog | split] [-force]
                [-concurrent]
                <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
                <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
                <<[LdevName [[SYM|BCV] ld LdevName]]>...>

symclone -g DgName [-h] [copy | precopy | nocopy] [-force]
                [[-rdf [-bcv] [-tgt]] | -rrbcv][-tgt]

set mode       <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
                <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
                <<[LdevName [[SYM|BCV] ld LdevName]]>...>

symclone -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
                [-force] [-noprompt] [-i Interval] [-c Count] [-star]
                [-preserveTGTLocks -lockid LockNum] [-v] [-h]

create         [[-differential] [-copy | -precopy]] [-skip]

split          [skip]

activate       [-vxfs <MountPoint...>] |
                [-ppath <SRCDEVS | PowerPathPdevName...> |
                [-rdb -dbtype DbType [-db DbName] ] |
                [-consistent [-both_sides]]
                [-preaction Script] [-postaction Script]
                [-not_ready] [-skip]

terminate      [-symforce] [-skip]

recreate       [-skip] [-precopy]

establish      [-vxfs <MountPoint...>] |
                [-ppath <SRCDEVS | PowerPathPdevName...> |
                [-rdb -dbtype DbType [-db DbName] ] |
                [-consistent]
                [-preaction Script] [-postaction Script]
                [-not_ready] [-skip]
                [-full [-opt | -exact]]

restore        [-preaction Script] [-postaction Script]
                [-full]

symclone -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
                [-h] [-force] [-i Interval] [-c Count]

query          [-multi]

verify         [-created | -copied | -copyinprog | -copyonaccess | -copyonwrite
                -precopy [-cycled] | -recreated | -restored | -restinprog | -split]
                [-force] [-concurrent]

set mode       [precopy|copy|nocopy]

symclone [-sid SymmID] [-h] [-i Interval] [-c Count]
                [-offline] [-v]

list

symclone -cg CgName [-h] [-v] [-noprompt]
                [-force][-i Interval][-c Count][-star] [[-rdf [-bcv] [-tgt]] | -rrbcv][-tgt]
                [-sid SymmID | -rdfg <SymmID:<GrpNum[,GrpNum,...] | all> [,...] |

```

```

        name:Name[,Name,...]>]]
create    [-opt | -opt_rag | -exact] [[-differential] [-copy | -precop] [-skip]
          [-concurrent]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

split     [skip]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

activate  [-vxfs <MountPoint...>] |
          [-ppath <SRCDEVS | PowerPathPdevName...> |
          [-rdb -dbtype DbType [-db DbName] ] |
          [-consistent]
          [-preaction Script] [-postaction Script]
          [-not_ready] [-skip] [-concurrent]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

terminate [-symforce] [-skip]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

recreate  [-skip] [-precop]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

establish [-vxfs <MountPoint...>] |
          [-ppath <SRCDEVS | PowerPathPdevName...> |
          [-rdb -dbtype DbType [-db DbName]] |
          [-consistent]
          [-preaction Script] [-postaction Script]
          [-not_ready] [-skip] [-full [-opt | -opt_rag | -exact]]
          [-full [-opt | -exact]] [-concurrent]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

restore   [-preaction Script] [-postaction Script]
          [-full]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

symclone -cg CgName [-h] [-offline] [-i Interval][[-rdf [-bcv] [-tgt]] | -rrbcv][-tgt]
          [-c Count] [-sid SymmID |
          -rdfg <SymmID:<GrpNum[,GrpNum,...] | all> [,...] |
          name:Name[,Name,...]>]]

query     [-multi] [LdevName [LdevName...]]

verify    [-created | -copied | -copyinprog | -copyonaccess | -copyonwrite
          -precop [-cycled] | -recreated | -restored | -restinprog | -split]
          [-force] [-concurrent]
          <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
          <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
          <<[LdevName [[SYM|BCV] ld LdevName]]>...>

symclone -cg CgName [-h] [copy | precop | nocopy][-force]
          [[-rdf [-bcv] [-tgt]] | -rrbcv][-tgt]

```

```

setmode    <<[LdevName [[SYM|BCV] pd PdevName]]>...> |
           <<[LdevName [[SYM|BCV] dev SymDevName]]>...> |
           <<[LdevName [[SYM|BCV] ld LdevName]]>...>

```

DESCRIPTION

The `symclone` command performs TimeFinder Clone operations on a device or composite group, on a device within a device or composite group, or on pairs listed in a device file. These operations include creating and activating a source device with a target device in a copy session, terminating the session, and querying the state of the device pair.

All Clone operations can be performed on a group or individual device basis. Before a target device can be cloned from a source device, the target must have previously been associated with the device group. The target and source devices must be of the same size and emulation type.

ARGUMENTS

`activate`

Activates an internal copy session with the devices in the device or composite group with one or more target devices that are associated with the group.

While the operation is in progress, the state of the device pair is either `CopyInProgress` or `CopyOnAccess`. When the operation completes, the state changes to `Copied`.

`create`

Creates an internal copy session with the devices in the device or composite group with one or more target devices that are associated with the group. While the operation is in progress, the state of the device pair is `CreateInProgress`. When the operation completes, the state changes to `Created`.

`establish`

Creates and activates an internal copy session with the devices that are in the group with one or more target devices that are associated with the group. Without the `-full` option, causes a `recreate` followed by an `activate` operation.

`list`

Lists all copy sessions that have been created on the Symmetrix array.

`query`

Returns information about the state of mirroring of one or all device pairs in a group.

`recreate`

Requests that just the changed tracks since the last `activate` action be copied over to the target device. The session must have been created with the `-differential` option. A subsequent `activate` action must be issued to establish a new point-in-time copy.

`restore`

Causes a copy from the target device to a source device to take place. With `-full`, a full copy of the data currently on the target device will take place. The device must be in a `Copied` state for a restore to take place.

`set mode`

Allows the session to be changed to `Precopy`, `Copy`, or `NoCopy` while in the `Created` state. Once a session is in the `Precopy` state, it is not allowed to go into one of the other states.

`split`

Splits a clone device pair which is in the `Restored` state. Once in the `Split` state, the pair can either be recreated, or restored.

terminate

Terminates (stops) the existing internal copy session between the specified source and target devices in a group.

verify

Verifies whether one device pair is or all device pairs in a group are in the Copied state. The verify action returns the following unique return codes if the verify criteria was not met:

Code #	Code Symbol
53	CLI_C_NOT_ALL_COPYINPROG
54	CLI_C_NONE_COPYINPROG
55	CLI_C_NOT_ALL_COPIED
56	CLI_C_NONE_COPIED
57	CLI_C_NOT_ALL_COPYONACCESS
58	CLI_C_NONE_COPYONACCESS
60	CLI_C_NOT_ALL_CREATED
61	CLI_C_NONE_CREATED
68	CLI_C_NOT_ALL_RECREATED
69	CLI_C_NONE_RECREATED
73	CLI_C_NOT_ALL_PRECOPY
74	CLI_C_NONE_PRECOPY
75	CLI_C_NOT_ALL_PRECOPY_CYCLED
76	CLI_C_NONE_PRECOPY_CYCLED

Refer to RETURN CODES for more information.

OPTIONS**-bcv**

When used with `-rdf`, causes `symclone` to execute the operation on the remote BCV device(s), RBCVs.

BCV

Specifies a BCV target device.

-both_sides

Activates all locally and remotely associated clone pairs in an RDF group.

-c

Specifies the number (count) of times to display or to acquire an exclusive lock on the Symmetrix devices (when used with control actions). If this option is not specified but an interval (`-i`) is specified, the program will loop continuously to display or start the mirroring operation.

-cg

Applies a composite group name to the command.

-concurrent

Verifies the standard device and multiple target devices, when used with `verify`. Creates a session with an additional available target device, when used with `create`. Establishes an additional available target device, when used with `establish`.

-consistent

Causes the source and target pairs to be consistently activated.

-copied

Verifies that the device pair(s) are in the Copied state.

-copy

Causes the device copy to take place in the background. Normally, the copying of tracks is not completed unless the source device is written to or the target device is read or written to. When the `symclone create -copy` operation is executed, the state of the device pair is CopyInProgress. The state changes to Copied when all the tracks are moved to the target device.

-copyinprog

Verifies that the copy session(s) are in the CopyInProgress state.

-copyonaccess

Verifies that the copy session(s) are in the CopyOnAccess state.

-copyonwrite

Verifies that the copy session(s) are in the CopyOnWrite state.

-created

Verifies that the copy session(s) are in the Created state.

-cycled

Verifies that the Copy session(s) have completed one precopy cycle. Requires the `-precopy` option.

-db

Specifies the name of the relational database. This is not required for Oracle.

-dbtype

Specifies the relational database type.

dev

Indicates a Symmetrix device name.

-differential

Creates SDDF sessions for maintaining changed track information. This option requires the `-copy` or `-precopy` option.

-exact

Applies to group operations that causes the clone (source and target devices) pairing algorithm to select the pairs according to the exact order in which the source and target devices were added to the specified group. This option overrides all other pairing algorithms.

Note: When using this option with a composite group, there is no guarantee that the exact pairing will be preserved.

`-file`

Applies a device file to the command. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the source device first, a space, and the target device last within each line entry). Device files can include comment lines that begin with the pound sign (#).

`-force`

Attempts to force the operation even though one or more paired devices in the device group may not be in the normal, expected state(s) or the specified operation.

`-full`

Causes a data copy of all tracks to the target device. This option is only valid with a `Restore` or `Establish` command.

`-g`

Applies a device group name to the command.

`-h`

Provides brief, online help information.

`-i`

Specifies the repeat interval, in seconds, to display or to acquire an exclusive lock on the Symmetrix devices. The default interval is 10 seconds. The minimum interval is 5 seconds. When used with the `verify` action, the number of seconds specified indicates the interval of time (in seconds) to repeat the verify command(s) before the verify action finds and reports the pairs fully synchronized.

`ld`

Indicates a logical device name.

`-lockid`

Specifies the lock holder ID for preserving the target locks on the control operation. Lock number ID must be provided as a hexadecimal number.

`-multi`

Applies to a `query` operation in a multi-copy session environment to show all targets that are paired with source devices. It lists the devices in chronological order.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-not_ready`

Performs the Clone activation operation but leaves the target devices as Not Ready to their hosts.

`-offline`

Specifies that the Symmetrix data connection is offline from the host in-memory database.

`-opt`

Applies to the `symclone create` command to optimize the device pair selection (source and target devices) to achieve the highest copy speed between them. For remote BCV operations, use the `-opt_rag` option.

`-opt_rag`

Applies to the full create or establish operations for remote device optimization to distribute the I/O load in that the remote adapters are not connected to the same devices of the selected pair. Requires that you also specify the `-rdf` or `-rrbcv` options.

`pd`

Indicates a physical device name.

`-postaction`

Causes the script argument to be executed after an activate command.

`-ppath`

Lists one or more PowerPath devices for which I/O is to be suspended just before the activate is performed and resumed, as soon as activate completes.

As an alternative to the list, the key word `SRCDEVS` can be supplied, which will use the pathnames from the standard devices being controlled.

`-preaction`

Causes the script argument to be executed before an activate command.

`-precopy`

Used with `create` and `recreate`. Causes the device copy to take place in the background before the activate starts. Normally, the copying of tracks is not started until the activate occurs. The precopy process continuously runs in the background until the activate is called. The `-precopy` option implies the `-copy` option.

`-preserveTGTLocks`

Causes the action not to take out device locks on the target devices. The target devices must already be locked by the same lock holder ID. Requires the `-lockid` option.

`-rdb`

Freezes the log files and specified database just before the activate is performed, and thaws as soon as the activate completes.

`-rrbcv`

Causes the action to be executed on the multi-hop Symmetrix array.

`-rdf`

Causes the action to be executed on the remote Symmetrix array.

`-sid`

Applies the command to a specified Symmetrix ID. Used with the `-file` flag to specify the Symmetrix array on which the command should be performed, or with `-cg` to restrict the operation to a single Symmetrix array.

`-skip`

Skips the source locks flag. Will not lock the source devices if all of the specified source devices are either locked or are all unlocked. Applicable only when the source device is a standard device (not a BCV).

`-split`

Verifies that the copy session(s) are in the Split state.

-star

Indicates that the action is targeted for devices in STAR mode.

-symforce

Requests that the Symmetrix array force the operation to occur that overrides instances where they are normally rejected.



CAUTION

Use care when applying this option as data can be lost or corrupted.

With a `terminate`, it causes the Symmetrix array to terminate a synchronized copy pair.

SYM

Specifies a Symmetrix target device (STD or BCV).

-tgt

Causes the operation to use TGT devices.

-v

Provides a more detailed, verbose listing.

-vxfs

Lists one or more VERITAS VxFS file system mount points. The file system(s), mounted on this host, will be frozen just before the `activate` is performed and thawed as soon as the `activate` completes.

PARAMETERS

CgName

The composite group name.

DbName

The relational database name.

DbType

The relational database type. Possible values:

Oracle
 SQLServer
 MVSDB2
 IBMUDB
 Informix
 Sybase

DgName

The device group name.

DevFilename

The device filename. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the standard first, a space, followed by the BCV name on each line).

LdevName

The logical device name of either the standard (such as DEV002) or the BCV device (such as BCV005).

LockNum

The lock ID number as a hexadecimal value.

MountPoint

File system mount point.

Name

The logical name associated with the RDF (RA) group(s).

PdevName

The physical device (host) name for the target device (such as `/dev/rdisk/c2t0d2s2`).

PowerPathPdevName

A PowerPath device name (one or more physical device names can be entered).

Script

The full pathname of a script file to be executed.

SymDevname

The Symmetrix device name, unique per Symmetrix array for the target device (such as 01C).

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To create device group `ProdDB` as a regular device group, enter:

```
symdg create ProdDB
```

To define device group `ProdDB` as the default device group, enter:

```
setenv SYMCLI_DG ProdDB
```

To add standard device `/dev/rdisk/c1t1d1s2` to device group `ProdDB` and names it `act1`, enter:

```
symld add pd c1t1d1s2 act1
```

To associate BCV device `/dev/rdisk/c2t0d2s2` to device group `ProdDB` and names it `mybcv1`, enter:

```
symbcv associate pd c2t0d2s2 mybcv1
```

To create a copy of the source device `act1` in group `ProdDB` with a specified target device (associated with the group), enter:

```
symclone create act1 sym ld mybcv1 -copy  
symclone activate act1 sym ld mybcv1
```

To wait until the BCV pair is fully copied, polling every 30 seconds, enter:

```
symclone -i 30 verify act1
```

To terminate the device `act1` in group `ProdDB`, enter:

```
symclone terminate act1 sym ld mybcv1
```

To query information about all paired devices in device group `ProdDB`, enter:

```
symclone query
```

symconfigure

Allows you to manage major configuration changes affecting devices of a specified Symmetrix array as well as manage dynamic (hot) spares and device reservations.

SYNTAX

```
symconfigure -h

symconfigure list -sid SymmID [-v | -freespace [-units cylinders | MB]]

symconfigure -sid SymmID [-noprompt] [-noecho] [-v]
                    [-i Interval] [-c Count]
                    [-f[ile] CmdFile | 'redirect stdin']
                    [-reserve_id ResvID[, ResvID[, ResvID]]]
                    [-remote_reserve_id ResvID[, ResvID[, ResvID]]]
    preview
    prepare
    commit

symconfigure verify -sid SymmID

symconfigure query -sid SymmID [-i Interval] [-c Count] [-v]

symconfigure abort -sid SymmID

symconfigure -version [-v] [-sid SymmID]

symconfigure -sid SymmID [-expire ExpirationDate] -f[ile] CmdFile
                    [-noprompt] [-v] -owner Owner -comment UserComment
                    [-enforce | -advise]
    reserve

symconfigure -sid SymmID [-noprompt] -reserve_id ResvID[, ResvID[, ResvID]]
    release

symconfigure -sid SymmID -reserved
    list

symconfigure -sid SymmID -reserve_id ResvID
    show
```

DESCRIPTION

The `symconfigure` command allows you to modify Symmetrix devices, ports, RDF characteristics, host assignments, create or delete Symmetrix devices, and manage SAVEDEV pools. A lock on the Symmetrix configuration is engaged by the configuration server during the configuration change session. A session is processed in a series of progressive stages (preview, prepare, commit), which can be monitored using the query option.

Not all stages are always executed. Use discretion when controlling which stages are to be completed to allow checking and debugging of the command files before the changes are implemented. The stages are: preview, prepare, and commit.

The `preview` argument verifies the syntax and correctness of each individual change defined, and then terminates the session without change execution.

The `prepare` argument performs the preview checks and also verifies the appropriateness of the resulting configuration definition against the current state of the Symmetrix array; the argument then terminates the session without change execution. The `prepare` argument has no function for SAVEDEV pool sessions.

The `commit` argument completes all stages and executes the changes in the specified Symmetrix array.

The `query` argument allows the monitoring of progress of a configuration request.

The `abort` argument allows for the termination of a change session left dangling due to the host connection to the configuration server becoming broken.

The `verify` argument verifies that the configuration currently running in the specified Symmetrix array complies with the requirements for the host-based configuration changes.

The `list` argument has two options, `-v` and `-freespace`. The `-v` option lists out configuration information that is not stored in the SYMAPI database and that needs to be retrieved directly from the configuration server. The `-freespace` option focuses solely on the free physical disk space within the Symmetrix array as it can be used to create new Symmetrix devices for different emulation modes. If a physical disk has been partially used to create a device, that disk is considered to be formatted, and the rest of the available space can only be used for devices of the same emulation mode. Free disk space on unformatted disks is shown as available for all emulation modes. Freespace is shown in units of cylinders by default. To have it converted to megabytes, use the option `-units MB`.

Support for reserving devices and front-end mapping addresses for future, planned configuration changes is provided through the use of the `reserve`, `release`, `list`, and `show` commands. A reserve ID is assigned to a reservation for use with configuration change and masking operations. A reservation can be defined as requiring enforcement or as an advisory. Management of advisories varies with the application. Management of enforced reservations is done by the SYMAPI and requires the user to specify the reserve ID to be able to use the devices.

Devices are reserved by using the `RESERVE` argument with either a standard configuration change file, or a file containing `reserve` commands.

For the configuration change session, a set of changes can be defined within a command file. The command file format contains various command entries terminated with a semicolon (;). Multiple changes can be made in one session, but all changes must fall into the same class. An exception to this is that increasing and decreasing mirror protection can be done in the same session.

Mapping and unmapping devices include options for modifying the device masking associated with those devices. Refer to `symmask` and `symmaskdb` for additional information.

Note: Starting with Engenuity Version 5669, changes for multiple operation classes can be executed within the same session, except for dynamic RDF changes and SAVEDEV pool changes.

SAVEDEV pool sessions are executed directly within the Symmetrix and do not communicate with the configuration server. The `query` and `abort` arguments are not available for pool sessions.

Redirect stdin

Optionally, for UNIX platforms, you can redirect a number of screen entries to `stdin` and not deal with the command file. For example, to prepare a chain of `symconfigure` commands on the screen to be redirected to `stdin`, use the following syntax:

```
symconfigure -sid SymmID prepare <<DELIM
add dev foo...;
add dev foo...;
add dev foo...;
DELIM
```

Classes Table 4 describes the classes of configuration control operations that are available when applying the `symconfigure` command:

Table 4 Configuration control classes

Class	Description
Configuring RDF	- Adds/removes RDF attributes. - Swaps RDF source/target attributes for an RA group. - Enables/disables RDFA on an RA group. - Sets RA group attributes.
Converting a device's configuration	Converts a device's configuration by adding or removing BCV or DRV attributes.
Creating devices	Creates and configures new Symmetrix devices.
Decreasing mirroring	Removes mirror(s) from an existing device, resulting in the creation of a new device; for example, convert 4-Way-Mir to two 2-Way-Mir.
Increasing mirroring	Adds mirror(s) to an existing device, for example, convert 2-Way-Mir to 3-Way-Mir or convert RDF1 to RDF1+Mir.
Managing spare disks	- Adds a new spare disk. - Removes an existing spare disk.
Mapping devices to ports	- Maps/unmaps a Symmetrix device to a front-end port. - Maps/unmaps a range of Symmetrix devices that form a mainframe CU image to a front end port. - Copies device mappings from one EA/EF port to another. - Adds/removes PAV aliases from mainframe devices.
Handling meta devices	- Forms/dissolves meta devices. - Adds/removes meta members.
Setting device attributes	Marks devices as available for use as: - Dynamic RDF devices - WORM - VCM database devices - RDB checksum devices Enables the SCSI3 persistent reservation option for clustered devices.
Managing SAVEDEV pools	- Adds/deletes pools. - Adds/removes pool members. - Enables/disables pool members.
Setting device emulation	Sets the device emulation type. Currently device emulation can only be changed among FBA emulation types.

Table 4 Configuration control classes (continued)

Class	Description
Setting front-end port attributes	• Sets/resets SCSI or fibre port flags. • Sets fibre FA loop ID. • Sets hostnames of port connections. • Sets Gig-E front-end port IP addresses and netmasks. Note: The overall processing time for the changes can vary from 5 minutes to over an hour, depending on the class of changes. RDF changes will also be applied to the remote Symmetrix array. Even more time is needed if the devices are to be synchronized.
Setting the Symmetrix metrics	Sets the metrics of Symmetrix configuration. Current available metrics include: • concurrent_rdf • dynamic_RDF • dynamic_concurrent_rdf • FBA_multi_access_cache • hot_swap_policy • max_hypers_per_disk • pav_alias_limit • pav_mode • rdfa_cache_percent • rdfa_host_throttle_time • RAID_5_support • RAID_S_members • RAID_S_support • VCMDB_restricted_access^a

a. Obsolete in Enginuity Version 5771.

ARGUMENTS

abort

Attempts to gain control of an existing session to abort it and frees the configuration session lock.

The `abort` command allows a `-sid` option for referencing a remote Symmetrix array. This permits a configuration session with RDF changes to be aborted.

commit

Fully processes the set of changes, activating the results in the specified Symmetrix array.

list

When used with the `-freespace` option, displays the free physical disk space within the Symmetrix array as it can be used to create new Symmetrix devices for different emulation modes. Free disk space on *unformatted* disks is shown as available for all emulation modes. If a physical disk has been partially used to create a device, that device is considered *formatted* and the rest of the available space can only be used for devices of the same emulation mode.

When used with the `-v` option, displays configuration information that is not stored in the SYMAPI database and that needs to be retrieved directly from the configuration server.

prepare

Performs the preview checks and also verifies the appropriateness of the resulting configuration definition against the current state of the Symmetrix array; `prepare` then terminates the session without change execution. The `prepare` action has no function for SAVEDEV pool sessions.

preview

Analyzes the changes for validity, and then terminates without any change execution.

query

Returns information about the status of a configuration change session.

release

Releases the specified device reservation.

reserve

Processes the command file to reserve the indicated devices and displays the resulting reserve ID.

show

Shows the details of the specified device reservation.

verify

Verifies that the configuration currently running in the specified Symmetrix array complies with the requirements for the host-based configuration changes.

OPTIONS**-advise**

Marks a device reservation as being an advisory to all users that the included devices have been scheduled for a pending configuration change or device masking change. Applications may allow the user to proceed with using these devices.

-c

Specifies the number (count) of times to query a session status. If this option is not specified and an interval (`-i`) is specified, the program will loop, querying for status until the change session completes. When used with the `preview/prepare/commit` actions, the process will attempt `-c` number of times waiting for the database or configuration locks to clear.

-comment

A comment providing additional details about a device reservation request.

-enforce

Marks a device reservation for enforcement, by requiring you to supply the device reservation ID to use the devices. This is the default behavior when reserving devices. Older applications may not be able to process reservation IDs.

-expire

Sets the date and time for a reservation to expire, which will cause it to be removed from the reservation database automatically.

-file

Specifies the command file to be processed by the `configure` action.

- h
Provides brief, online help information.
- i
Specifies the repeat interval in seconds to display status information for the configuration session. The default interval is 10 seconds. The minimum interval is 5 seconds.
- owner
Specifies the individual or organization that owns the devices being reserved. This is a required field.
- noecho
When using the `preview`, `prepare` and `commit` actions, this blocks the displaying of session status and progress messages, during the configuration change session. (Does not inhibit the log file activity.)
- noprompt
Removes the prompt option for the `preview`, `prepare`, and `commit` action. The default is to prompt for confirmation before executing the indicated control operation.
- remote_reserve_id
The identification number assigned to a reservation on a remote Symmetrix array.
- reserve_id
The identification number assigned to a reservation.
- sid
Applies the command to a specified Symmetrix ID (*SymmID*).
- v
Echoes the contents of the command file to the output terminal. Cannot be used with the `-noecho` option.
- version
Lists the SYMCLI, SYMAPI, and configuration server version information. Connects to the configuration server managing the Symmetrix configuration for version information. The `-sid` option is required if the host is connected to more than one Symmetrix array.

PARAMETERS*CmdFile*

The name of any ASCII text file containing the set of commands to process.

ExpirationDate

Date and time for a device reservation to be expired. Optional – default is no expiration. Format is `[mm/dd[/yy]:][hh:mm[:ss]]`. If only the `hh:mm` is provided, the current day will be assumed. If only `mm/dd` is provided, the current year is assumed. A four-digit year can also be specified.

ResvID

The device reservation ID.

SymmID

The 12-character ID to specify the Symmetrix array.

Owner

The name of the owner of the reservation.

UserComment

The user comment detailing the device reservation.

**COMMAND FILE
SYNTAX**

The following are the syntaxes of the possible command file entries:

Adding a new device

```
create dev count=n, size=Cylinders,
      emulation=EmulationType,
      config=DeviceConfig,
      [, data_member_count=nn]
      [, remote_config=DeviceConfig, remote_data_member_count=nn, ra_group=n,
      [remote_mvs_ssid=nnn],
      [dynamic_capability=[dyn_rdf | dyn_rdf1_only | dyn_rdf2_only], ]
      [, mvs_ssid=nnn]
      [, attribute=ckd_meta | savedev
      [in pool PoolName] [member_state=ENABLE | DISABLE], ]
      [, disk_group_num=nnn, remote_disk_group_num=nnn];
```

Adding a new spare device

```
create spare count=n, format = [512 | 520];
```

Adding a meta member

```
add dev SymDevName[:SymDevName] to meta SymDevName
      [, protect_data=[TRUE | FALSE],
      bcv_meta_head=SymDevName];
```

Adding a SAVEDEV to a pool

```
add dev SymDevName[:SymDevName] to pool PoolName
      type= [snap | rdfa_dse]
      [, member_state=<ENABLE | DISABLE>];
```

Assigning a PAV alias address to a device mapped to EA/EF ports

- ◆ For Enginuity Version 5671:

```
add pav alias to dev SymDevName[:SymDevName],
      starting alias=cuu_address;
```

- ◆ For Enginuity Version 5771:

```
add pav alias to dev SymDevName[:SymDevName],
      alias count=nnn;
```

Assigning a PAV alias address range to a CU image

```
add pav alias_range nnn:nnn to mvs_ssid=<nnn>;
```

Configuring a device by copying a similar device

```
configure [<n.nn> [MB | GB] | <nn> devices]
      copying dev SymDevName
      [mapping to dir DirectorNum:PortNum
      [masking hba [awwn=awwn | wwn=wwn |
      iscsi=iscsi | aiscsi=aiscsi]
      [host_lun=<lun> |
      dynamic_lun]]]
      [overriding
      [size=Cylinders] [emulation=EmulationType]
      [config=DeviceConfig]
      [data_member_count=n]
      [mvs_ssid=nn]
      [disk_group=n]];
```

Converting a device's configuration

```
convert dev SymDevName[:SymDevName] to DeviceConfig
      [emulation=CELERRA_FBA,]
      [ra_group=n, remote_dev=SymDevName,
      invalidate=InvalidateOption, [remote_mvs_ssid=nnn],
```

```
start_copy=YES | NO]
[mvs_ssid=nnn] [raidset = [TRUE | FALSE]];
```

Converting a meta device's configuration

```
convert meta SymDevName config=MetaOption>
[, stripe_size=MetaStripeSize>[cyl]],
[, protect_data=[TRUE | FALSE],
[bcv_meta_head=SymDevName];
```

Converting an RDF device from static RDF to dynamic RDF

```
convert rdf dev SymDevName[:SymDevName] to dynamic;
```

Creating a SAVEDEV pool

```
create pool PoolName, type=[snap | rdfa_dse];
```

Deleting a SAVEDEV pool

```
delete pool PoolName, type=[snap | rdfa_dse];
```

Deleting a symdev

```
delete dev SymDevName[:SymDevName]
[,raidset=[TRUE | FALSE]];
```

Deleting a spare disk

```
delete spare disk=[DirectorNum, da_interface,
scsi_id];
```

Disabling a SAVEDEV from session use

```
disable dev SymDevName[:SymDevName] in pool
PoolName, type=[snap | rdfa_dse];
```

Disabling RDF/A on an RA group

```
disable rdfa on ra_group=<nnn>,
delete_support_devices=[TRUE | FALSE];
```

Dissolving a meta device

```
dissolve meta dev SymDevName;
```

Enabling a SAVEDEV for session use

```
enable dev SymDevName[:SymDevName]
in pool PoolName, type=[snap | rdfa_dse];
```

Enabling RDF/A on an RA group

```
enable rdfa on ra_group=<nnn>,
make_group_swappable=[TRUE | FALSE];
```

Forming a meta device

```
form meta from dev SymDevName,
config=MetaOption
[, stripe_size=MetaStripeSize][cyl]]
[, count=member_count];
```

Mapping a device to an address, or a range of devices to consecutive addresses, specifying a starting address

```
map dev SymDevName [:SymDevName]
to dir DirectorNum:PortNum
[starting][target=ScsiTarget,] lun=ScsiLun
[, vbus=FibreVbus]
[, emulation=CELERRA_FBA]
[, awwn=awwn | wwn=wwn | iscsi=iscsi]
[, masking [host_lun=<lun> |dynamic_lun]];
```

Mapping a range of devices to an EA/EF port

```
map dev SymDevName[:SymDevName] to dir DirectorNum:PortNum,
starting base_address=cuu_address [mvs_ssid=nnn];
```

Mapping a range of devices to an EA/EF port using the same addressing from a different port

- ◆ For Engenuity Version 5671:

```
map dev SymDevName[:SymDevName] to dir DirectorNum:PortNum,
copying dir DirectorNum:PortNum;
```

Removing a meta member

```
remove dev SymDevName[:SymDevName] from meta SymDevName;
```

Removing PAV alias addresses from devices mapped to EA/EF ports

- ◆ For Engenuity Version 5671:

```
remove pav alias from dev SymDevName[:SymDevName],
starting alias=cuu_address;
```

- ◆ For Engenuity Version 5771:

```
remove pav alias from dev SymDevName[:SymDevName],
alias count=nnn;
```

Removing a PAV alias address range from a CU image

```
remove pav alias_range from mvs_ssid=<nnn>;
```

Removing a SAVEDEV from a named pool, placing it in the default_pool

```
remove dev SymDevName[:SymDevName] from pool PoolName,
type=[snap | rdfa_dse];
```

Reserving devices

```
reserve dev SymDevName[:SymDevName];
```

Setting the device emulation

```
set device SymDevName[:SymDevName]
emulation=EmulationType;
```

Setting the device attribute

```
set dev SymDevName[:SymDevName]
attribute=[NO] device_attr;
```

Setting Symmetrix configuration metrics

```
set symmetrix MetricName=MetricValue
[, MetricName=MetricValue]
```

Setting port characteristics

```
set port DirectorNum:PortNum
[FlagName=enable|disable
[, FlagName=enable|disable]]
gige primary_ip_address=IPAddress
primary_netmask=IPAddress,
default_gateway=IPAddress,
isns_ip_address=IPAddress
[fa_loop_id=integer] [hostname=HostName];

set port DirectorNum:PortNum,
copying port DirectorNum:PortNum
[fa_loop_id=integer] [hostname=HostName];
```

Setting an RA (RDF) group parameter

```
set [ra | rdf] group GroupNum
[session_priority=SessionPriority] | [minimum_cycle_time=CycleTime]
[rdfa_transmit_idle = <ENABLE | DISABLE>] |
[rdfa_dse_pool = <PoolName> | <NO POOL>]
emulation = [fba | ckd-3390 | ckd-3380 | as400] ] |
[rdfa_dse_threshold = <Percent of system WP>] |
[rdfa_dse_autostart = <ENABLE | DISABLE>];
```

Swapping RDF groups

```
swap ra group nnn,
    refresh=refresh_opt, start_copy=YES|NO;
```

Unmapping devices

```
unmap dev SymDevName[:SymDevName] from dir
    <ALL:ALL | ALL:PortNum |
    DirectorNum:ALL | DirectorNum:PortNum>
    [, emulation=CELERRA_FBA]
    [, devmask_access=remove | retain];
```

Unmapping a range of devices from EA or EF ports

```
unmap dev SymDevName:[SymDevName] from dir
    < ALL:ALL | ALL:PortNum | DirectorNum:ALL | DirectorNum:PortNum >
    [new_ssid=nnn];
```

**COMMAND FILE
ARGUMENTS**

alias

Specifies an alternative front-end mapping address, used by a mainframe host to access a device.

alias_range

Specifies the range of front-end mapping addresses to be used as aliases for the devices in the cu image that have aliases assigned (for Enginuity Version 5771 and later).

base_address

Specifies the base address to be assigned to the first device in the mapping request. It will be incremented by one for each device in the range of devices being mapped.

bcv_meta_head

Specifies the name of a bcv_meta that matches the original meta device in capacity, stripe count, and stripe size. This must be used when adding new members to an existing, striped meta device, or when reconfiguring a meta device, if the data on the meta device is to be protected.

config

Selects the device configuration (*DeviceConfig*) to apply to the command.

count

Specifies the number of aliases to be given to the device (for Enginuity Version 5771 and later).

data_member_count

Specifies the number of members when creating new RAID 5 or RAID 6 devices on a Symmetrix array with Enginuity 5772 and later. The user should set the value to the following:

RAID type	Value
RAID 5 (3+1)	3
RAID 5 (7+1)	7
RAID 6 (6+2)	6
RAID 6 (14+2)	14

`default_gateway`

Specifies the gateway or router address for a front-end Gig-E port.

`devmask_access`

Indicates whether a device masking database should be updated, when unmapping devices.

`dynamic_capability`

Indicates the type of RDF device to create. Possible values are:

`dyn_rdf` — Indicates that the RDF device to be created is dynamic.

`dyn_rdf1_only` — Indicates that the RDF device to be created is a dynamic R1 only.

`dyn_rdf2_only` — Indicates that the RDF device to be created is a dynamic R2 only.

`emulation`

Selects what host device management system to emulate (see parameter *Emulation Type*).

`fa_loop_id`

Specifies the FA director loop ID (arbitrated loop physical address). Possible integer values are from 0 to 125. (Not available for Gig-E boards.)

`format`

Specifies the recording format to be used on a spare disk. Values are 512 or 520. Select a format based on what type of disk it should be able to replace.

- For Symmetrix DMX™ models:
 - for CKD and FBA use 512
 - for AS/400 and Tandem use 520
- For Symmetrix 5 models with Enginuity 5568:
 - for CKD and FBA use 512
 - for AS/400 and Tandem use 520
- For Symmetrix 4 models:
 - With selective LLF enabled:
 - for CKD and FBA use 512
 - for AS/400 and Tandem use 520
 - If no AS/400 or Tandem devices:
 - for CKD and FBA use 512
 - If AS/400 or Tandem devices:
 - for CKD use 512
 - for FBA, AS/400, and Tandem use 520

`gige`

Indicates that one or more network address values are going to be specified for a front-end Gig-E director.

`invalidate`

Specifies which RDF device (R1 source or R2 target) to invalidate. At some point, this device will need a full refresh (by synchronizing all tracks from the remote mirror).

`isns_ip_address`

Specifies the IP address for the Subject Name Server (iSNS) associated with a front-end Gig-E port.

mvs_ssid

When creating a device in a Symmetrix array that also contains CKD devices, an MVS subsystem ID (*mvs_ssid*) value must be provided so the new FBA devices are not seen as part of an existing subsystem ID group.

pool

A SAVEDEV pool, used to define the set of SAVEDEVs that are available for a Snap session or an SRDF/A DSE session.

primary_ip_address

The IP address for a front-end Gig-E port.

primary_netmask

Specifies the IP netmask for a front-end Gig-E port.

protect_data

Specifies whether the data on the existing meta device needs to be protected when adding members to an existing, striped meta. Valid settings are **TRUE** and **FALSE**. If this option is not specified, a setting of **TRUE** is the default.

ra_group

Specifies an integer (positive) for the RA group.

raidset

Indicates that all members of the group should be processed, when requesting a change to a member of a RAID-S group. It is not necessary to list the other members. This option is available for converting RAID-S groups to unprotected devices, or deleting all members of the group.

refresh

Specifies which RDF device (R1 source or R2 target) to refresh. Possible values are R1 or R2.

remote_config

Specifies the device configuration of the corresponding remote device, when creating an RDF device. Must be an RDF configuration such as RDF2.

remote_data_member_count

Specifies the number of members when creating new RDF RAID 5 or RAID 6 devices on a Symmetrix array with Engenuity 5772 and later. The user should set the value to 3 or 7 for RAID 5 (3+1) and (7+1), or 6 or 14 for RAID 6 (6+2) and (14+2).

remote_dev

Defines the remote Symmetrix device name when converting a device and specifies a corresponding remote device of an RA group.

remote_mvs_ssid

When creating an RDF device in a remote Symmetrix array that also contains CKD devices, an MVS subsystem ID (*remote_mvs_ssid*) value can be provided so the new FBA devices are not seen as part of an existing subsystem ID group.

Only one *mvs_ssid* and *remote_mvs_ssid* can be used in a session. They will be applied to all devices created within that session.

When using the convert device command to reduce mirroring, the removed mirror becomes a new stand-alone Symmetrix device. An attempt will be made to use the same MVS SSID for the new device. If the MVS SSID group is full, you must supply a new MVS SSID.

When mapping a set of devices to an EA or EF port, the current `mvs_ssid` assigned to the devices may need to be changed. If the devices are becoming part of an existing CU image, they should be assigned the `mvs_ssid` of the device already mapped. If a new CU image is being formed and mapped, a new `mvs_ssid` can be assigned during the map request. It is not valid to have some devices with a particular SSID mapped and some unmapped.

`start_copy`

Indicates whether an RDF pair should be synchronized after the configuration change is committed.

COMMAND FILE PARAMETERS

`awwn`

User-given name, or ASCII World Wide Name (WWN), given in two parts separated by a slash (/).

`ckd_meta`

When creating a device with emulation type CKD-3380 or CKD-3390, indicates that the device should be a striped meta device. CKD meta devices must be created in sets of four devices.

`count`

A positive integer.

`cuu_address`

A base or alias address for a device being mapped to an EA or EF port. These mainframe ports expect devices to be mapped in groups to form CU images. The first digit in the address is the CU image number, which can range from 0 to 0xFF (for Enginuity versions prior to 5771 the range is 0 to 0xF). The remaining two digits can range from 00 to 0xFF.

`CycleTime`

The minimum time to wait before attempting an RDFA cycle switch. Values range from 5 to 59 seconds.

`Cylinders`

Number of cylinders of the specified devices; a positive integer. A cylinder for FBA emulation is 960 512-byte blocks. To convert a device size in blocks to cylinders:

$$\text{cylinders} = \text{blocks} / 960$$

To convert a size in megabytes to cylinders:

$$\text{cylinders} = \text{megabytes} * 1048576 / (512 * 960)$$

Devices that are intended to be used as BCV, RDF, or meta members will need to precisely match the corresponding devices in size. Use the `symdev/sympd show` command or the `symdev/sympd list -cyl` command to see relevant device sizes.

The following AS/400 device models must be created using the specific meta size as noted:

Table 5 AS/400 models and device meta size

AS/400 model#	Meta size	Enginuity version
AS/400_M590	17484	5x68
AS/400_M590R	17484	5x68
AS/400_M6713_30	17540	5x68
AS/400_M6713_50	17540	5x68
AS/400_M6717_50	17540	5x68
AS/400_M2105_A01	17484	5x68
AS/400_M2105_A81	17484	5x68

The following AS/400 device models exceed the device size capacity in block size for Symmetrix and must be created as separate devices to form a meta device:

Table 6 AS/400 device models that exceed device size capacity

AS/400 model#	Total blocks	Suggested meta size ^a	Enginuity version
AS/400_M6718_50	35720	8930	5x68
AS/400_M2105_A02	35720	8930	5x68
AS/400_M2105_A82	35720	8930	5x68
AS/400_M2105_A84	143584	8974	5671
AS/400_M9337_5AA	35720	8930	5x68
AS/400_M9337_5AC	35720	8930	5x68
AS/400_M2105_A04	143584	8974	5x68
AS/400_M4326_50	71568	8946	5x68
AS/400_M4327_50	143584	8974	5x68
AS/400_M4328_50 ^b	287152	35894	5771
AS/400_M2107_A06 ^b	287152	35894	5771
AS/400_M2107_A07 ^b	574304	35894	5771
AS/400_M2107_A86 ^b	287152	35894	5771
AS/400_M2107_A87 ^b	534304	35894	5771
AS/400_M4328_50 ^c	143576	17947	5771
AS/400_M2107_A06 ^c	143576	17947	5771
AS/400_M2107_A07 ^c	287152	17947	5771
AS/400_M2107_A86 ^c	143576	17947	5771
AS/400_M2107_A87 ^c	287152	17947	5771

- a. Meta size is suggested based on four Symmetrix hypervolumes to form the meta device.
- b. If SYMAPI_TRACK_SIZE_32K_COMPATIBLE set to ENABLE in the options file (default value).
- c. If SYMAPI_TRACK_SIZE_32K_COMPATIBLE set to DISABLE in the options file.

da_interface

The DA SCSI path (c, d, e, or f).

device_attr

A device attribute that restricts how a device can be accessed. These include:

- RDB_Cksum
- Worm (can be enabled only)
- VCMDB (for device masking)
- dyn_rdf (this option provides the most flexibility in performing dynamic RDF operations)
- dyn_rdf1_only
- dyn_rdf2_only
- SCSI3_persist_reserv

The `dyn_rdf2_only` and `dyn_rdf1_only` attributes limit a device to either an R1 or R2 device. Therefore, using them prevents the ability to perform RDF swaps.

The `RAD` attribute is no longer supported. EMC will only be using this attribute in the mainframe environment.

DeviceConfig

A valid Symmetrix/SYMAPI device and configuration.

Note: When this parameter is being used to apply or remove the BCV, DRV, or RDF attribute, the change will be denied if the device configuration result would change the device's mirroring. Also, cannot be used to convert RDF1 devices to RDF2 devices, which must be done using the `swap ra group` command.

The mirroring protection of a device can be increased, but this must be done in a separate session from BCV/DRV/RDF changes.

The mirroring protection of a device can also be decreased, and this, too, must be done in a separate session from BCV/DRV/RDF changes. As a result of removing mirrors from a device, a new device is created from the discarded mirrors, resulting in a new Symmetrix device. If the original or new device is unprotected, it cannot be mapped to a host.

Possible device configuration values are:

Unprotected
 2-Way-Mir
 3-Way-Mir
 4-Way-Mir
 RAID-S¹
 RDF1
 RDF2
 RDF1+R-S or RDF1-R-S ^{1 2}
 RDF2+R-S or RDF2-R-S ^{1 2}
 RDF1+Mir or RDF1-Mir
 RDF2+Mir or RDF2-Mir
 BCV

-
1. Not allowed for Enginuity 5771 or higher.
 2. Not allowed for create (add) device.

2-Way-BCV-Mir
 DRV
 RDF1-BCV ²
 RDF2-BCV ²
 RDF1-BCV+Mir or RDF1-BCV-Mir ²
 RDF2-BCV+Mir or RDF2-BCV-Mir ²
 VDEV
 RAID 5
 RAID 6
 BCV+R-5 or BCV-R-5
 BCV+R-6 or BCV-R-6
 RDF1+R-5 or RDF1-R-5
 RDF1+R-6 or RDF1-R-6
 RDF2+R-5 or RDF2-R-5
 RDF2+R-6 or RDF2-R-6
 RDF1-BCV+R-5 or RDF1-BCV-R-5 ²
 RDF2-BCV+R-5 or RDF2-BCV-R-5 ²
 RDF1-BCV+R-6 or RDF1-BCV-R-6 ²
 RDF2-BCV+R-6 or RDF2-BCV-R-6 ²

DirectorNum

The director identity number, such as 16A.

dynamic_lun

Specifies to use the dynamic LUN addressing feature but does not require the user to give a LUN address for each device. The LUN addresses will be assigned based on what may already be in use for that host HBA.

EmulationType

SYMAPI emulation type. Possible values are:

- FBA
- CELERRA_FBA
- VME_512_FBA
- CKD-3380
- CKD-3390

Note: When changing a device's emulation, changes can only be among FBA emulation types.

The following AS/400 device types:

Enginuity level 5x68+	AS/400_M590
	AS/400_M590R
	AS/400_M6713_30
	AS/400_M6713_50
	AS/400_M6717_50
	AS/400_M9337_5AA
	AS/400_M9337_5AC
	AS/400_M6718_50
	AS/400_M2105_A01
	AS/400_M2105_A02
	AS/400_M2105_A81
	(Enginuity 5568 only)
	AS/400_M2105_A82
	(Enginuity 5568 only)
Enginuity level 5670+	AS/400_2105_A03
	AS/400_2105_A83
	AS/400_2105_A04
	AS/400_2105_A84
Enginuity level 5771+	AS/400_4328_50
	AS/400_2107_A06
	AS/400_2107_A07
	AS/400_2107_A86
	AS/400_2107_A87

FibreVbus

The virtual bus (vbus) address for mapping to an FA port if the volume set addressing is a hex value (for HP-UX).

FlagName

A SCSI, fibre, or iSCSI port flag name. You can set SCSI port flags on SA, SE, and FA ports, unless otherwise noted. You can only set FA port flags on FA and SE ports.

Table 7 SCSI and fiber port flags by Enginuity versions

Enginuity levels 5x68 or greater		Enginuity levels earlier than 5x68	
SCSI port flags: - Negotiate_Reset (SA ports only) [N] - Soft_Reset [S] - Environ_Set [E] - HP3000_Mode (return busy on abort) [B] - Common_Serial_Number [C] - Disable_Q_Reset_on_UA [D] - Sunapee [SCL] - Siemens [S] - Sequent [SEQ] - Avoid_Reset_Broadcast [ARB] - Server_On_AS400 [A4S] - SCSI_3 [SC3] - SPC2_Protocol_Version (5670 and later) [SPC2] - SCSI_Support1 (5671 and later) [OS2007]	Fibre port flags: - Volume_Set_Addressing [V] - Non_Participating^a [NP] - Init_Point_to_Point^a [PP] - Unique_WWN^a [UWN] - VCM_State [VCM] - OpenVMS [OVMS] - AS/400 [AS4] - Auto_Negotiate [EAN]	SCSI port flags: - Tagged_Commands^b [T] - Linked_Commands^b [L] - Sync_Transfer^b [Y] - Wide_Transfer^b [W] - Negotiate_Reset [N] - Soft_Reset [S] - Environ_Set [E] - Cyl_Count_In_Name^b [P] - PBAY_Monitor [Q] - HP3000_Mode [B] - Command_Reordering [R] - Common_Serial_Number [C] - Set_Qerr [Z] - Disable_Q_Reset_on_UA [D] - Disable_Ultra^b [U] - Sunapee [A or SCL] - Siemens [S] - Disable_False_Disconnect^b [DFD] - Disable_Mini_Q^b [DMQ] - Avoid_Force_Negotiate [AFN] - Auto_Busy [ABJ] - Sequent [SEQ] - Avoid_Reset_Broadcast [ARB] - Server_On_AS400 [A4S] - SCSI_3 [SC3] - Disable_Interleaved_Cmds	Fibre port flags: - Disk_Array [DAR or A] - Volume_Set_Addressing [V] - Hard_Addressing [H] - Non_Participating [NP] - Global_3rdParty_Logout [TP] - Init_Point_to_Point [PP] - Unique_WWN [UWN] - Generic_VSA^b [GVSA] - VCM_State [VCM] - Class_2_Service^b - OpenVMS [OVMS]

a. Not available for Gig-E ports.

b. Not available for host-based configuration changes.

HostName

12-character host name.

host_lun

Specifies the LUN addresses to be used for each device that is to be added for the host HBA.

invalidate_opt

The RDF device to invalidate. Accepted values are R1, R2, or NONE. The value NONE is allowed only if the *start_copy* option is set to NO and the devices are not dynamic RDF devices.

IPAddress

A valid IPv4 network address, using the dotted format of *nnn.nnn.nnn.nnn* is expected.

iscsi

The iSCSI name.

member_count

The total number of devices to add to the meta device, including the head. Use when the configuration server must select device members from the pool of unmapped devices. Only devices matching the specified head in size, emulation, protection, and attributes will be selected. This option should be omitted if selecting members using the `add dev` command.

MetaOption

The meta type configuration. Possible values are CONCATENATED or STRIPED.

MetaStripeSize

Size of a striped meta device. Stripe size can be specified in 512-byte blocks, or cylinders. If specifying cylinders, the keyword `cyl` must follow the size field. Recommended stripe size is 1920 (2 cylinders).

Note: If no stripe size is specified when creating a striped meta, a default of two cylinders will be assigned.

Possible sizes in 512 byte blocks are:

1920 (2 cyl)

3840 (4 cyl)

7680 (8 cyl)

15360 (16 cyl)

30720 (32 cyl)

61440 (64 cyl)

Note: 1 cylinder = 960 512-byte blocks.

MetricName

The Symmetrix metric to be set. Possible values are:

`concurrent_rdf` — Enables access to the concurrent RDF feature - multiple R2 devices for a single R1. Possible values are `ENABLE` or `DISABLE`.

`dynamic_rdf` — Enables the creation of a pool of devices that are RDF-capable, (can be dynamically assigned as RDF1 or RDF2 devices). Possible values are `ENABLE` or `DISABLE`.

`concurrent_dynamic_rdf` — Enables access to the concurrent RDF feature (multiple R2 devices for a single R1) for dynamic RDF devices. Possible values are `ENABLE` or `DISABLE`.

`fba_multi_access_cache` — Determines whether a read request can share cache slots in some conditions. Possible values are `ENABLE` or `DISABLE`.

`hot_swap_policy` — Indicates whether data from a failed disk should be relocated temporarily, or permanently moved to a hot spare device. Possible values are `TEMPORARY` or `PERMANENT`.

`max_hypers_per_disk` — Specifies the maximum number of hypers that can be created on a physical disk. Possible values are 1 to 255 and vary with Engenuity version in use.

`pav_alias_limit` — If PAV is enabled, specifies the maximum number of aliases that can be assigned to devices. Possible values are:

For Enginuity version	Value
5670	1 - 7
5671	1 - 15
5771 and later	1 - 255

`PAV_mode` — Enables the use of PAV (Parallel Access Volumes). Possible values are:

`STANDARD` — Standard PAV volumes with static aliasing.

`DYNAMIC_STANDARD` — Standard PAV volumes with dynamic aliasing.

`rdfa_cache_percent` — The percentage of write pending cache that can be used by RDFA. This is a value from 0 to 100 percent.

`rdfa_host_throttle_time` — The number of seconds to throttle host writes to RDFA devices when cache is full, before dropping RDFA sessions. Throttling will delay a write from the host until a cache slot becomes free. Values are from 0 to 65535.

`raid_5_support` — Enables the ability to create RAID 5 devices in the Symmetrix array. Possible values are `ENABLE` or `DISABLE`. Obsolete in Enginuity 5772 and later.

`raid_s_members` — If RAID-S support is enabled, this identifies the number of members in the Parity RAID set. Possible values are 3 or 7. This also controls the RAID 5 member count. Obsolete in Enginuity 5772 and later.

`raid_s_support` — Enables the ability to create RAID-S devices in the Symmetrix array. Possible values are `ENABLE` or `DISABLE`. Obsolete in Enginuity 5771 and later.

Not available with Enginuity Version 5771 and higher.

`VCMDB_restricted_access` — Restricts host access to the VCM database as indicated by the user. Possible values are `ENABLE` or `DISABLE`.

MetricValue

A numeric or string value for the selected *MetricName*.

PoolName

From 1 to 12 alphanumeric character pool name. Hyphens (-) and underscore (_) characters are also permitted.

PortNum

An integer (non-negative) specifying the port.

ra_group

An integer (non-negative) specifying the group.

refresh_opt

The RDF device to refresh. Legal values are R1 or R2.

remote_dev

A hexadecimal value specifying the Symmetrix device name.

remove

Removes any device masking access entries for this device and path. Use with the `devmask_access` argument in an `unmap` command.

retain

Retains any device masking access entries for this device and path. Use with the `devmask_access` argument in an `unmap` command.

savedev

When creating a device, indicates that the device should be a SAVE device. The device becomes part of a pool of devices for use with TimeFinder/Snap or SRDF/A Delta Set Extension (DSE) operations.

scsi_id

The disk's SCSI ID, a hex value.

ScsiLun

The SCSI logical array number (hex value).

scsi_target

The SCSI target ID (hex value).

SessionPriority

The priority used to determine which RDFA sessions to drop if cache becomes full. Values range from 1 to 64, with 1 the highest priority (last to be dropped).

SymDevName

The Symmetrix device name (such as 001C).

wwn

World Wide Name.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To add four new Symmetrix devices to Symmetrix array 000000012345 as two-way mirrored devices with a size of 1100 cylinders, using FBA emulation, and to create the hypervisors to support the new devices in disk group 3, enter:

```
symconfigure -sid 12345 commit -file add_new_symdevs.cmd
```

where `add_new_symdevs.cmd` contains:

```
create dev count=4, size=1100,
      emulation=FBA, config=2-Way-Mir disk_group=3;
```

To create a BCV CKD metadvice with a total of 1200 cylinders from four Symmetrix devices of 300 cylinders each on Symmetrix array 000000012345 by converting the meta to a BCV, enter:

```
symconfigure -sid 12345 commit -file add_new_ckdmeta.cmd
```

where `add_new_ckdmeta.cmd` contains:

```
create dev count=4, size=1200,
      emulation=ckd-3390, config=2-Way-Mir, attribute=ckd_meta;
```

To create a striped meta device in Symmetrix 12345, using device 0030 as the meta head, and 0031 - 0033 as members, enter:

```
symconfigure -sid 12345 commit -file add_meta.cmd
```

where add_meta.cmd contains:

```
form meta from dev 0030 config=striped,
    stripe_size=2 cyl;
add dev 0031:0033 to meta 0030;
```

To verify the mapping command file is correct that will map the meta head to director 16A, port 0, SCSI target/LUN 0, 7, and echo the contents at the terminal, enter:

```
symconfigure -sid 12345 preview -file meta_map.cmd -v
```

where meta_map.cmd contains:

```
map dev 0030 to dir 16A:0 target=0, lun=7
```

To map a device to a fibre port that uses volume set addressing, enter:

```
symconfigure commit -sid 12345 -file map_vsa.cmd
```

where map_vsa.cmd contains:

```
map dev 0122 to dir 03A:0, vbus=0A, target=0F, lun=3
```

To map a device to a fibre port that uses peripheral device addressing and updates the VCM database with a record for device 0123 and the HBA indicated by the AWWN alias value, enter:

```
symconfigure commit -sid 12345 -file map_pda.cmd
```

where map_pda.cmd contains:

```
map dev 0123 to dir 03B:0, lun=3F, awwn=api60/ch1;
```

To map 40 devices to a mainframe port and assign a set of aliases, on Enginuity 5671, enter the following. The SSID of the devices will be changed during the mapping, and the devices will form a new CU image, 0x7.

```
symconfigure commit -sid 12345 -file cu_7.cmd
```

where cu_7.cmd contains:

```
map dev 040:068 to dir 03B:0,
    starting base_address=700,
    mvs_ssid=701;
add pav alias to dev 040:068,
    starting alias=780
```

To map a set of devices in CU image 0x07 to a second director port, copying the addresses and the aliases on Enginuity Version 5671, enter:

```
symconfigure commit -ssid 12345 -file copy_map.cmd
```

where copy_map.cmd contains:

```
map dev 040:068 to dir 15B:0 copying dir 03B:0;
```


To remove the alias addresses from the devices in CU image 0x07, enter:

```
symconfigure commit -sid 12345 -file alias_rem.cmd
```

where alias_rem.cmd contains:

```
remove pav alias from dev 040:068,  
    starting alias=780;
```

To unmap half the devices in CU image 0x07 and assign them a new SSID, enter:

```
symconfigure commit -sid 12345 -file unmap_range.cmd
```

where unmap_range.cmd contains:

```
unmap dev 040:54 from dir ALL:ALL, new_ssid=620;
```

To enable the use of VCM for masking device visibility to host systems for director 03A, port 0, enter:

```
symconfigure commit -sid 3160 commit -file setup_fa_port.cmd
```

where setup_fa_port.cmd contains:

```
set port 03A:0 VCM_State=enable;
```

To swap RA group 1 on Symmetrix 12345 from an R1 source to an R2 target group, enter:

```
symconfigure -sid 12345 commit -file swap_ra_group.cmd
```

where swap_ra_group.cmd contains:

```
swap ra group 1, refresh=r2, start_copy=no;
```

To set the RDFA session priorities for two different RA groups, enter:

```
symconfigure commit -sid 12345 -file setup_rdfa.cmd
```

where setup_rdfa.cmd contains:

```
set ra group 24, session_priority=1;  
set ra group 42, session_priority=8;
```

To increase the number of hypers that can be configured on a physical disk in the Symmetrix array and allow the use of RAID 5 devices with 7+1 membership, enter:

```
symconfigure commit -sid 3160 -file set_sym_metrics.cmd
```

where set_sym_metrics.cmd contains:

```
set symmetrix max_hypers_per_disk=64,  
    raid_5_support=ENABLE;  
raid_s_members=7;
```

To change the emulation type of three devices (001A, 001B, 001C) from FBA to Celerra® FBA, enter:

```
symconfigure commit -sid 3160 -file device_set.cmd
```

where:

```
set device 001A:001C emulation=CELERRA_FBA;
```

If a device is no longer needed as a Volume Logix database device, the following command will remove that attribute:

```
symconfigure commit -sid 3160 -file device_reset.cmd
```

where `device_reset.cmd` contains:

```
set device 001A, attribute=NO VCMdb;
```

To reserve an unused disk as a dynamic spare, enter:

```
symconfigure commit -sid 3160 -file add_spare.cmd
```

where `add_spare.cmd` contains:

```
create spare, count=1, format=512;
```

To remove a disk from being reserved as a dynamic spare, enter:

```
symconfigure commit -sid 3160 -file rem_spare.cmd
```

where `rem_spare.cmd` contains:

```
delete spare_disk=[ 02A, D, 1];
```

To configure 6 GB of available free space into BCVs matching an existing standard device, and mapping them to port 14B:0, enter:

```
symconfigure commit -sid 3420 -file cfg_bcv.cmd
```

where `cfg_bcv.cmd` contains:

```
configure 6 gb copying dev 07A,  
  mapping to dir 14B:0, overriding  
  config=bcv;
```

To create a new pool and move some SAVE devices from an existing pool into it, enter:

Session 1:

```
disable dev 01D:01F to pool HR, type=snap;
```

Session 2:

```
create pool HR, type=snap;  
add dev 01D:01F to pool HR, type=snap,  
  member_state=ENABLE;
```

To reserve a set of devices for later conversion to BCV devices, enter:

```
symconfigure reserve -sid 3241 -file bcv.cmd  
-owner "LabMgr" -comment "Adding BCV devs for dept xxx"
```

where `bcv.cmd` (the actual change definition) contains:

```
convert dev 030:03A to 2-way-bcv-mir;
```

or

```
symconfigure reserve -sid 3241 -file reserve.cmd  
-owner "LabMgr" -comment "Adding BCV devs for dept xxx"
```

where `reserve.cmd` (strictly a reservation file) contains:

```
reserve dev 030:03A;
```

symconnect

Allows the administrator to setup or modify the Symmetrix security functionality, including CHAP authentication and Radius server.

SYNTAX

```
symconnect -h

symconnect -sid <SymmID> [-dir <#|all> -p <#|all>] [-v]
    list [chap | radius] [-iscsi <iscsi> | -initiator] [-dir_port]

symconnect -file <fileName> [-dir <#|all> -p <#|all>] [-v]
    [-iscsi <iscsi> | -initiator] [-dir_port]
    list

symconnect -sid <SymmID> -iscsi <iscsi> -dir # -p #

    set chap -cred <Credential> -secret <Secret>

    set radius

symconnect -sid <SymmID> -iscsi <iscsi> [-dir <#|all> -p <#|all>]

    enable <chap | radius>

    disable <chap | radius>

    delete <chap | radius>

symconnect -sid -dir # -p #

    set chap -cred <Credential> -secret <Secret>

    set radius -server <ServerName> -ip <Ip> -key <Key> [-port <Port>]
        -rank <primary | backup1 | backup2> [-c <Count> -i <Interval>]

symconnect -sid <SymmID> [-dir <#|all> -p <#|all>]

    enable chap

    disable chap

    delete chap

    enable radius [-rank <primary | backup1 | backup2>]

    disable radius [-rank <primary | backup1 | backup2>]

    delete radius [-rank <primary | backup1 | backup2>]

symconnect -sid <SymmID> -file <fileName> [-noprompt]

    backup <chap | radius>

    restore <chap | radius>

    init <chap | radius>
```

DESCRIPTION

The `symconnect` command lists the security information from the Symmetrix array or a backup file. In addition, this command allows for the following:

- ◆ CHAP credentials to be set, enabled, disabled, or deleted from the database for either the director/port or a specified iSCSI initiator.

- ◆ The use of a Radius server to be set, enabled, disabled, or deleted from the database for a specified iSCSI initiator.
- ◆ The Radius server information to be set, enabled, disabled, or deleted from the database for a director/port.
- ◆ The CHAP credential or Radius server information to be initialized, as well as backed up or restored, from a backup file.

ARGUMENTS

backup

Makes a copy of all the security data present in a backup file that can be used later for restore.

delete

Deletes security information that was previously set for either a director/port or an iSCSI initiator.

disable

Disables security information that was previously set for either a director/port or an iSCSI initiator.

enable

Enables security information that was previously set for either a director/port or an iSCSI initiator.

init

Initializes the security information.

list

Lists the security information.

restore

Restores the security information from a backup file.

set

Allows security information to be established for either a director/port or an iSCSI initiator.

INTERACTIVE KEYWORDS

chap

Specifies the iSCSI CHAP credential.

radius

Specifies the iSCSI Radius server.

OPTIONS

-c

Indicates the number of times to retry.

-cred

Specifies the credential name associated with the CHAP protocol's authentication data.

`-dir`

Confines the action to a director number.

`-dir_port`

Lists all the information for the director/port.

`-file`

Specifies a backup file name.

`-h`

Provides brief, online help.

`-i`

Repeats the interval in seconds.

`-initiator`

Lists all the information for initiators.

`-ip`

Indicates an IP address.

`-iscsi`

Specifies an iSCSI name.

`-key`

Specifies the key associated with the Radius server data.

`-noprompt`

Requests that no prompts are returned after the command is entered.

`-p`

Identifies a specific port.

`-port`

Identifies a Radius server port.

`-rank`

Specifies the Radius server rank.

`-secret`

Designates the secret associated with the CHAP protocol's authentication data.

`-server`

Specifies the Radius server name.

`-sid`

Supplies the Symmetrix serial number or ID.

-v

Provides a more detailed, verbose listing.

PARAMETERS

#

A specific director or port number.

All

All directors or ports.

Backup1

The first backup for the Radius server.

Backup2

The second backup for the Radius server.

Count

The number of times to retry the Radius server.

Credential

The CHAP protocol's credential name. For Microsoft users, the string should be between 8 and 256 characters.

FileName

The name of a backup file.

interval

The time (in seconds) between retries of the Radius server.

Ip

The IP address of the Radius server.

Iscsi

An iSCSI name.

Key

The Radius server key.

Port

A Radius server port, the default value is 1812.

Primary

The primary Radius server to be used.

Secret

The CHAP protocol's secret value, a user-defined string of up to 32 ASCII characters, or 64 binary characters. Binary values should be prefixed with the string 0X. Microsoft users must specify between 12 and 16 characters.

ServerName

The Radius server name.

SymmID

The Symmetrix serial number or ID.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

symdev

Performs operations on a device given the device's Symmetrix device name.

SYNTAX

```
symdev -h

symdev [-sid SymmID] [-offline] [-v] [-resv] [-wwn] [-all]
  list [-SA <#|ALL>] [-P #] [-scsi] [-fibre]
    [-RANGE <SymDevStart>:<SymDevEnd>] [-R1] [-R2] [-cyl]
    [-CAP #] [-N #] [-vcm] [-held] [-gige] [-ficon] [-escon]
    [-noport|-firstport|-multiport] [-bcv|-nobcv|-drv]
    [-meta] [-hotspare] [-dynamic] [-worm] [-vdev]
    [-savedev] [-raids] [-rdfa] [-disk_group nn]
    [-raid5 [-protection 3+1 | 7+1]]
    [-raid6 [-protection 6+2 | 14+2]]
    [-emulation fba | ckd | as400 | celerra] [-star_mode]
    [-star_sync_target] [-star_async_target]
    [-half_pair] [-dup_pair] [-bcv_emulation]
    [-service_state [not]degraded | [not]failed | [not]normal]

  list pd [-SA <#|ALL>] [-P #] [-scsi] [-fibre]
    [-RANGE <SymDevStart>:<SymDevEnd>] [-R1] [-R2] [-cyl]
    [-CAP #] [-N #] [-vcm] [-held] [-gige] [-ficon] [-escon]
    [-noport|-firstport|-multiport] [-bcv|-nobcv|-drv]
    [-meta] [-hotspare] [-dynamic] [-worm] [-vdev]
    [-savedev] [-raids] [-rdfa] [-disk_group nn]
    [-raid5 [-protection 3+1 | 7+1]]
    [-raid6 [-protection 6+2 | 14+2]]
    [-emulation fba | ckd | as400 | celerra] [-star_mode]
    [-star_sync_target] [-star_async_target]
    [-half_pair] [-dup_pair] [-bcv_emulation]
    [-service_state [not]degraded | [not]failed | [not]normal]

symdev [-sid SymmID] [-offline]
  list [-DA <#|ALL>] [-interface <#|ALL>]
    [-disk <#|ALL>] [-hyper <#|ALL>] [-firstport]

symdev [-sid SymmID] [-offline]
  list -space [-cyl] -DA <#|ALL>

symdev [-sid SymmID] [-v]
  list -lock [-RANGE <SymDevStart:SymDevEnd>]

symdev [-sid SymmID] [-offline]
  list -inventory

symdev [-cid ClarID] [-offline]
  list -clariion [-CAP #] [-N #] [-RANGE SymDevStart:SymDevEnd]

symdev [-sid SymmID] [-offline] [-cyl]
  show SymDevName

symdev [-sid SymmID] [-force]
  release [-lock #] [-RANGE <SymDevStart:SymDevEnd>] [-noprompt]

symdev -sid SymmID [-noprompt] [-celerra] [-star]
  rw_enable SymDevName [-SA <#|ALL>] [-P #]]
  write_disable SymDevName [-SA <#|ALL>] [-P #]]
  ready SymDevName
  not_ready SymDevName
  relabel SymDevName
  hold SymDevName
  unhold SymDevName [-symforce]
```



```

symdev -sid SymmID -file <filename> [-noprompt] [-celerra] [-star]
  rw_enable      [-SA <#|ALL> [-P #]]
  write_disable  [-SA <#|ALL> [-P #]]
  ready
  not_ready
  relabel
  hold
  unhold [-symforce]

```

DESCRIPTION The `symdev` command displays information about all or selected Symmetrix devices regardless of whether they are visible to the local host. You can release a Device External Lock (DEL) on one or more specified Symmetrix devices.

ARGUMENTS

`hold`

Sets the *hold* bit on a device. The hold bit is automatically placed on a target device during an TimeFinder/Snap operation.

`list`

Lists all or selected Symmetrix devices that are configured in one or more Symmetrix arrays connected to this host.

`list pd`

Lists all host visible Symmetrix devices that are configured in one or more Symmetrix arrays connected to this host.

`not_ready`

Sets the device(s) to be Not Ready. The device must be in a User Ready status for this operation to succeed.

`ready`

Sets the device(s) to be Ready. The device must be in a User Not Ready status for this operation to succeed.

`relabel`

Applies the defined label to the device. The device must be in a User Not Ready status for this operation to be accepted. Refer to the `symlabel` command to find out how to define a device label.

`release`

Releases a Device External Lock associated with one or more devices within a Symmetrix array.



CAUTION

Use the `release` lock action only if you believe that a device lock is currently hung and there are NO other operations in progress to the specified device.

`rw_enable`

Sets the device(s) to be Read and Write Enabled to the local hosts, on the specified front director port(s). If no ports are specified, then the device(s) will be Read and Write Enabled on all ports for which the device is visible.

show

Shows detailed information about a Symmetrix device, given the Symmetrix device name, such as 000C.

unhold

Resets the *hold* bit on a device. The hold bit is automatically removed from a target of a Snap device when the TimeFinder/Snap pair is stopped. However, the unhold argument can be used if there was a problem removing the hold bit.

write_disable

Sets the device(s) to be Write Disabled to the local hosts, on the specified front-end director port(s).

OPTIONS

-all

Lists all private devices (Vault devices, SAVE devices, DRV devices, SFS devices, and COVD devices) along with other Symmetrix devices.

-bcv

Lists just the BCV devices.

-bcv_emulation

Lists BCV devices that are clone emulated.

-CAP

Sets the device capacity to a specific value (in megabytes) for the selection criteria to be listed.

-celerra

Allow controls on Celerra FBA devices.

-cid

Restricts the selection to the specified CLARiiON array uniquely identified by the specified CLARiiON ID.

-clariion

Lists CLARiiON devices.

-cyl

Lists the device capacity in cylinders in the output. The default is megabytes (MB).

-DA

Lists the Symmetrix devices that are mapped to a certain DA director number. The interface, disk, and hyper IDs can also be used to confine the list further, but defaults to **ALL** unless specified.

-disk

Lists the Symmetrix devices that are mapped to a certain disk SCSI ID. The DA, interface, and hyper IDs can also be used to confine the list further, but defaults to **ALL** unless specified.

`-disk_group`

Lists the Symmetrix devices whose hypers are contained on disks within the specified disk group.

`-drv`

Lists just the DRV devices.

`-dup_pair`

List RDF devices in duplicate pair configuration.

`-dynamic`

Lists dynamic RDF devices capable of being formed into RDF pairs. When used with `-R1` list devices that are `RDF1_capable`. When used with `-R2` list devices that are `RDF2_capable`. When used with both `-R1` and `-R2` list devices that are `RDF1_OR_RDF2_capable`. When used without `-R1` and `-R2` list devices that are `RDF1_CAPABLE`, `RDF2_CAPABLE` and `RDF1_OR_RDF2_capable`.

`-emulation`

List devices that match the corresponding emulation type.

`-escon`

List devices mapped to front-end Escon directors.

`-file`

Filename containing the list of devices to be acted upon. The file should have one *SymDevName* per line.

`-fibre`

Lists devices mapped to front-end fibre directors.

`-ficon`

Lists devices mapped to front-end Ficon directors.

`-firstport`

Confines the display to just the first port of information for devices that are mapped to more than one port.

`-force`

Causes a device lock to be released independent of other options currently controlling whether to use device locks.

`-gige`

List devices mapped to front-end GIGE directors.

`-h`

Provides brief, online help information.

`-half_pair`

List RDF devices in half pair configuration.

-held

Lists Symmetrix devices in the device group that have device holds for an TimeFinder/Snap session.

-hotspare

Lists the Symmetrix devices that currently have a dynamic hot spare invoked against them.

-hyper

Lists the Symmetrix devices that are mapped to a certain hyper ID. The DA, interface, and disk IDs can also be used to confine the list further, but defaults to ALL unless specified.

-interface

Lists just the Symmetrix devices that are mapped to a certain DA director interface path. The DA, disk, and hyper IDs can also be used to confine the list further, but defaults to ALL unless specified.

-inventory

Returns a table listing the number of configured Symmetrix devices for each supported emulation type.

-lock

Lists devices that have a device external lock.

-meta

Lists meta-head devices.

-multiport

Lists the Symmetrix devices that are mapped to multiple front-end director ports.

-N

Sets the number of devices to list. The specified number indicates the maximum number of devices to return. The actual number returned may be less than the specified number if fewer devices exist. The default is to list all devices.

-nobcv

Lists just the standard devices; excluding BCV devices.

-noport

Lists the Symmetrix devices that are not mapped to any front-end director ports.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-noreserved

Lists all Symmetrix devices that are not reserved as part of a device reservation. See ["symconfigure."](#)

`-offline`

Displays the Symmetrix devices from the Symmetrix configuration database without refreshing the data from the Symmetrix array.

`-P`

Lists devices mapped to a specific SCSI or front-end fibre director port. By default, all ports are selected.

`-protection`

Applies to `-raid5` or `-raid6` only. Filters RAID devices based on protection types, such as 3+1, 7+1, 6+2, or 14+2.

`-R1`

Lists RDF1 (R1) devices. When used with `-dynamic`, list devices that are RDF1 capable.

`-R2`

Lists RDF2 (R2) devices. When used with `-dynamic`, list devices that are RDF2 capable.

`-raid5`

Lists RAID 5 devices.

`-raid6`

Lists RAID 6 devices.

`-raids`

Lists RAID-S devices by RAID group number. The `-raid` option is synonymous with `-raids`.

`-RANGE`

Applies a range of Symmetrix devices for a number of devices to list. Specify the start and end Symmetrix device names.

`-rdfa`

Lists devices that are RDFA-backed.

`-resv`

Lists all Symmetrix devices that have SCSI reservations.

`-reserved`

Lists all devices that have reservations. See ["symconfigure."](#)

`-SA`

Lists devices mapped to a specific SCSI or fibre front-end director number.

`-savedev`

Lists devices that are Symmetrix SAVE devices.

`-scsi`

Lists devices mapped to SCSI front-end directors (SAs).

`-service_state`

Lists devices that match the corresponding service state.

`-sid`

Restricts the selection criterion to the specified Symmetrix array uniquely identified by the specified Symmetrix ID.

`-space`

Shows the available or unconfigured storage space for the specified listing of disks.

`-star`

Indicates that the action is targeted for devices in STAR mode.

`-star_async_target`

List devices in STAR ASYNC target mode.

`-star_mode`

Lists devices in STAR mode.

`-star_sync_target`

List devices in STAR SYNC target mode.

`-symforce`

Requests that the Symmetrix force the operation to be executed when normally it is rejected.



CAUTION

Extreme caution should be exercised when using this option.

`-v`

Provides a more detailed, verbose listing.

`-vcm`

Lists all of the device masking (or VCM) devices in the Symmetrix array.

`-vdev`

Lists devices that are Symmetrix virtual devices.

`-worm`

Lists all WORM-enabled devices.

`-wwn`

Lists the full WWN of all devices.

PARAMETERS

ClarID

The ID of the CLARiiON array.

FileName

The name of the file that contains a list, one *SymDevName* per line, of devices to be acted upon.

SymDevName

The Symmetrix device name, unique per Symmetrix array, such as 001C.

SymDevStart

The first Symmetrix device name in a sequence, such as 001C.

SymDevEnd

The last Symmetrix device name in a sequence, such as 00B6.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To list all Symmetrix devices that are configured in Symmetrix arrays connected to this host, enter:

```
symdev list
```

To show detailed information about Symmetrix device 000C in a Symmetrix array with the specified unique ID, enter:

```
symdev -sid 870 show 000C
```

To list the first 20 BCV devices starting at Symmetrix device 001F, that are configured in each Symmetrix array, enter:

```
symdev list -BCV -RANGE 001F: -N 20
```

To list details about devices in a range of Symmetrix devices (0000 to 000A) that have a device external lock of 9, enter:

```
symdev list -sid 870 -lock 9 -RANGE 0000:000A -v
```

To release all Symmetrix devices in Symmetrix 870 that have a device external lock of 9, enter:

```
symdev release -sid 870 -lock 9
```

symdg

Performs operations on a Symmetrix device group.

SYNTAX

```
symdg -h

symdg
  create DgName [-type REGULAR | RDF1 | RDF2]

  delete DgName [-force]

  export DgName [-f FileName][-delete]
    [[-rdf [-rdfg GrpNum]] | [-sid SymmID]]

  exportall [-delete] [-f FileName]
    [[-rdf [-rdfg GrpNum]] | [-sid SymmID]]

  import DgName [-f FileName]

  importall [-f FileName]

  dg2file DgName [-f FileName]
    [-ftype STD | R1BCV | STD_BCV | STD_R1BCV | STD_VDEV | BCV_VDEV]

  file2dg DgName [-f FileName] [-type REGULAR | RDF1 | RDF2]

  dg2cg DgName CgName [-rename] [-force]
    [-bcv | -nobcv | -rbcv | -rrbcv | -brbcv | -vdev | -rvdev | -tgt | -rtgt]
    [-apidb | -ppath | -rdf_consistency]

  list [-sid SymmID] [-offline] [-v]

  list [-inactive]

  show DgName [-offline | -lock | -inactive]

  activate DgName [-noprompt]

  activateall [-noprompt]

  rename DgName NewDgName

  release DgName [-force] [-lock #] [-noprompt]
```

DESCRIPTION

The `symdg` command performs operations specific to device groups: creating new device groups, importing ASCII group files, exporting groups to files, translating groups to/from Symmetrix Manager files, deleting groups, renaming groups, and listing and showing information about a device group.

ARGUMENTS

`activate`

Activates a specified device group (imports to GNS). If GNS is enabled on the host, this command allows device groups to be imported from the host database into the GNS repository. If GNS is not enabled on the host, this command has little or no use (for example, if GNS was previously enabled, and the GNS groups were copied to the host's configuration database, then the command would import those GNS device groups to the host's device group list).

activateall

Activates all the inactive device groups. If GNS is enabled on the host, this command allows device groups to be imported from the host database into the GNS repository. If GNS is not enabled on the host, this command has little or no use (for example, if GNS was previously enabled, and the GNS groups were copied to the host's configuration database, then the command would import those GNS device groups to the host's device group list).

create

Creates an empty device group of type REGULAR, RDF1, or RDF2. Only RDF devices can belong to an RDF device group. Only non-RDF devices can belong to the REGULAR group. All devices added to a group must belong to the same Symmetrix array. If you do not specify a type, the device group will be created using type REGULAR.

delete

Deletes an existing device group. If the device group has member or gatekeeper devices that are associated with it, the command will fail unless the `-force` option is used.

If the `-force` option is specified, the devices that are members of the group are removed from the group and become ungrouped devices.

dg2cg

Adds selected members of a device group to a target composite group.

dg2file

Creates a device group from a file in the same format used by the EMC Symmetrix Manager (SM-CLI). This action should not be used to make a backup copy of a device group; use `export` for that purpose.

export

Creates a text file that details the members of an existing device group. The device group can later be recreated from this file using the `import` command.

exportall

Creates a text file that details the members of the existing device groups. The device groups can later be recreated from this file using the `importall` operation.

file2dg

Creates a device group from a Symmetrix Manager device file.

import

Creates device groups from data contained in a text file previously created using the `exportall` command.

importall

Creates a device group from data contained in a text file previously created using the `export` command.

list

Lists all the device groups that have been created for this host. If `-inactive` is specified, all the device groups from the inactive group list will be listed.

release

Releases a device external lock associated with all devices within a device group.

rename

Renames an existing device group. Use a device group name that is unique to this host.

show

Shows information about a device group. Information includes: group type, Symmetrix ID, creation time, number of devices that are members, a list of associated gatekeeper devices, and a list of associated Business Continuance Volume (BCV) devices.

OPTIONS**-apidb**

Create the composite group in the SYMAPI configuration database only.

-bcv

Adds only BCV devices to the target composite group.

-brbcv

Adds only the BRBCV devices to the target composite group.

-delete

Deletes the device group after the group is exported to a file, when used with the `export` argument. The default is to export the device group to the file without deleting the device group.

-f

Specifies a file to write to or read from.

-force

Forces a deletion of a device group, with or without members, or forces a partial device group conversion (`dg2cg`) of the devices to a consistency group (even though some devices cannot be converted).

-ftype

Specifies the device type to create a Symmetrix Manager file containing a list of the specified type of devices. Only one device type can be specified. If no type is specified, a list of standard devices will be used to create the file. Possible values are:

STD

Creates a file containing a list of all standard devices in the group.

R1BCV

Creates a file containing a list of all R1 BCV devices in a group.

STD_BCV

Creates a file containing a list of all standard/BCV pairs that are in the group. This includes both established and split pairs (from the point of view of the standard device).

STD_R1BCV

Creates a file containing a list of all standard/R1 BCV pairs that are in the group. This is a subset of the list provided by the STD_BCV option, but does not include devices that have never been paired.

STD_VDEV

Creates a file containing a list of all standard/virtual device pairs that are in the group.

BCV_VDEV

Creates a file containing a list of all BCV/virtual device pairs that are in the group.

-h

Provides brief, online help information.

-inactive

Lists or shows inactive device groups. When GNS is enabled on the host, the inactive groups are those that were previously defined in the host's configuration database file. When GNS is disabled on the host, this may show group definitions present the last time GNS was enabled on the host if they were captured in the host database file.

-lock

Displays existing device external locks on devices within the group. Use with the `show` argument.

-nobcv

Adds only STD devices to the target composite group.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-offline

Makes the Symmetrix data connection offline from the host in-memory database for this action. Used with the `list` and `show` arguments.

-ppath

Creates the RDF CG in PowerPath.

-rbcv

Adds only RBCV devices to the target composite group.

-rdf

Allows the group to be imported on the remote Symmetrix array from the file which is created. When exporting an RDF group, this will use the remote Symmetrix ID and device names, and toggle the RDF group type from R1 to R2 or vice versa.

-rdf_consistency

Creates a CG and allows it to be enabled for RDF consistency after adding devices to the CG.

`-rdfg`

Indicates the Symmetrix RA (RDF) group number to reach the remotely-associated BCV device.

`-rename`

Assigns new logical device names to all added devices.

`-rrbcv`

Adds only the RRBCV devices to the target composite group.

`-rtgt`

Adds only the RTGT devices to the target composite group.

`-rvdev`

Adds only devices that are Symmetrix remote virtual devices.

`-sid`

Lists the device group information for a specified Symmetrix ID.

`-tgt`

Adds only the TGT devices to the target composite group.

`-type`

Identifies the type of device group, either REGULAR, RDF1, or RDF2. The default type is REGULAR.

`-v`

Provides a more detailed, verbose listing.

`-vdev`

Adds only devices that are Symmetrix virtual devices.

PARAMETERS

CgName

The target composite group.

DgName

The device group name assigned by the user. The name must be unique to this host.

FileName

The data file used to export or import a device list, or used in the translation of a Symmetrix Manager device list.

GrpNum

The RDF (RA) group number.

NewDgName

The renamed device group name.

SymmID

The 12-digit ID of the Symmetrix array.

FILES The `export` command creates a group file (ASCII text) and the `import` command reads the file to import a device group. The file will contain as many device description lines as devices and gatekeepers that are being defined in the group list. Any lines that are blank or have a pound sign (#) in the first column are ignored.

Group files contain device parameters in the following format:

```
<GroupType> <SymmID>
<DeviceType> <DeviceParameters>
<DeviceType> <DeviceParameters>
. . .
...

```

The following describes the various parameters within the file format:

GroupType

Specifies an integer value that defines the type of group for this group list. Possible values are defined as follows:

SYMAPI_C_DGTYPE_REGULAR — 0

SYMAPI_C_DGTYPE_RDF1 — 1

SYMAPI_C_DGTYPE_RDF2 — 2

SymmID

The 12-digit ID of the Symmetrix array associated with the group.

DeviceType

Defines the kind of device for this group member as follows:

S — Standard

B — BCV

V — VDEV

W — Remote VDEV

R — Remote BCV

Z — Hop 2 remote BRBCV

G — Gatekeeper

T — Target Device

X — Remote Target Device

DeviceParameters

Each device also has device parameters:

```
S <SymDevName> <LdevName>
B <SymDevName> <LdevName>
V <SymDevName> <LdevName>
R <SymDevName> <LdevName> <RAGroupNum>
W <SymDevName> <LdevName> <RAGroupNum>
Z <SymDevName> <LdevName> <RAGroupNum>
G <PdevName>
T <SymDevName> <LdevName>
X <SymDevName> <LdevName> <RAGroupNum>

```

SymDevName

A Symmetrix device name, such as 000C.

LdevName

A logical device name, such as DEV002.

PdevName

The gatekeeper's physical device name (such as `/dev/rdisk/c2t0d2s2`). Appears for a gatekeeper (G) type only.

RDFGroup

The RDF group number of the standard device with which the BCV is paired.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To create a Symmetrix device group, `mydg_r1`, of type RDF R1, enter:

```
symdg -type RDF1 create mydg_r1
```

To list all Symmetrix device groups in a detailed format, enter:

```
symdg -v list
```

To rename Symmetrix device group `mydg_r1` to `oradg_rdf1`, enter:

```
symdg rename mydg_r1 oradg_rdf1
```

To show information about device group `oradg_rdf1`, enter:

```
symdg show oradg_rdf1
```

To export device group `oradg_rdf1` to file `oradg_rdf1.txt` and subsequently delete the device group from the database, enter:

```
symdg export oradg_rdf1 -f oradg_rdf1.txt -delete
```

To import or re-create device group `oradg_rdf1` from the file `oradg_rdf1.txt`, enter:

```
symdg import oradg_rdf1 -f oradg_rdf1.txt
```

To translate device group `oradg_rdf1` to file `devices1.txt` (which is in a Symmetrix Manager format), enter:

```
symdg dg2file oradg_rdf1 -f devices1.txt
```

To delete Symmetrix device group `oradg_rdf1`, regardless of whether the group has members, an associated gatekeeper, or BCV devices, enter:

```
symdg -force delete oradg_rdf1
```

To translate device group `oradg_rdf1` to file `devices1.txt`, enter:

```
symdg file2dg oradg_rdf1 -f devices1.txt
```

To translate and add the BCV devices of device group `oradg_rdf1` to a composite group named `oracg`, enter:

```
symdg dg2cg oradg_rdf1 oracg -bcv
```

symdisk

Reports on the configuration and status of disks and their hypers within Symmetrix arrays.

SYNTAX

```
symdisk [-h]

symdisk [-sid SymmID] [-v [-hypers] [-spare_info] [-gaps]]
        [-hotspares] [-cyl] [-by_diskgroup] [-disk_group #]
        list [-da <#|ALL>] [-interface <#|ALL>] [-tid <#|ALL>]

symdisk [-sid SymmID] [-cyl]
        show DiskAddress [-gaps_only]
```

DESCRIPTION

The `symdisk` command allows access to the configuration information of the physical disks (spindles) that make up a Symmetrix array. It can be used to list all of the disks in a Symmetrix array, or only those that match certain criteria.

The selection criteria allows the user to return only data about the disks on a certain disk director (DA), disk interface (INT), or disk SCSI target ID (TID). Additionally, the `-hotspares` flag may be used to select only those disks that are configured as dynamic hot spares.

Using the `-v` option will provide more detailed information. The `-hypers` flag can be used with `-v` to display additional information about each of the logical hypers on a given disk, including which Symmetrix devices they make up.

The `-by_diskgroup` option will organize the disks by disk group number. The `-disk_group` option will print only disks within that disk group.

ARGUMENTS

`list`

Lists all disks. With the use of options, the list can be restricted. The `-v` and `-hypers` options will return additional information about each disk.

`show`

Displays detailed information about the disk(s) that match the given DA, INT, and TID.

OPTIONS

`-by_diskgroup`

Lists the disks organized by disk group number.

`-cyl`

Displays the disk capacities in terms of cylinders, instead of MBs.

`-da`

Indicates disk director number. A value of `ALL` returns disk information for all disk directors.

`-disk_group`

Lists the disks that are members of the specified disk group number.

`-gaps`

Lists the size and location of freespace gaps as they occur in the list of hyper information.

`-gaps_only`

Shows only the gap information.

-h

Provides brief, online help information.

-hotspares

Indicates that only hotspare disks should be displayed.

-hypers

Shows hyper information, when used with **-v**.

-interface

Indicates disk interface number. A value of **ALL** returns disk information for all interfaces.

-sid

Indicates a unique Symmetrix ID.

-spare_info

If the disk is a hot spare and it has been invoked against a failed disk, this flag will return information about the failed disk. The **-v** option must also be specified.

-tid

Indicates a target ID. A value of **ALL** returns all targets.

-v

Provides a more detailed, verbose listing.

PARAMETERS

DiskAddress

Disk adapter, interface, and TID <XXX:YZ> where XXX is the disk director, Y is interface, and Z is the TID. The format <XXX,Y,Z> is also accepted.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To list all disks in Symmetrix 012345678901, enter:

```
syndisk list -sid 012345678901
```

To verbosely display information about the specified disk (01A:C3) and its hypers, enter:

```
syndisk list -sid 012345678901 -da 01A -interface C -tid 3 -v -hypers
```

To display detailed information about the disk whose DA is 16B, interface (INT) is D, and TID is 5, enter:

```
syndisk show 16B:D5
```

To provide the same information as the previous example, but show an alternate input format for disk DA, INT, and TID, enter:

```
syndisk show 16B,D,5
```


symdrv

Displays information for selected DRV devices.

SYNTAX

```
symdrv -h

symdrv [-sid SymmID] [-offline] [-v]
      list [-CAP #] [-i Interval] [-c Count]
```

DESCRIPTION

The `symdrv` command lists all the DRV (dynamic reallocation volume) devices that are configured on Symmetrix arrays attached to this host.

ARGUMENTS

`list`

Lists all the DRV devices (*SymDevNames*) that are configured on Symmetrix arrays attached to this host.

OPTIONS

`-c`

Specifies the number (*Count*) of times to display DRV devices. If this option is not specified and an interval (`-i`) is specified, the list of statistics will be displayed continuously.

`-CAP`

Sets the device capacity to a specific value (in megabytes) for the selection criteria to be listed.

`-h`

Provides brief, online help information.

`-i`

Specifies the repeat interval in seconds. The default interval is 10 seconds. The minimum interval is 5 seconds.

`-offline`

Displays Symmetrix devices from the Symmetrix configuration database without refreshing the data from the Symmetrix array.

`-sid`

Restricts the selection criterion to the specified Symmetrix array uniquely identified by the specified Symmetrix ID.

`-v`

Provides a more detailed, verbose listing.

PARAMETERS

Count

Number of iterations to execute before exiting.

Interval

Interval between polls, in seconds.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To list all DRV devices that are configured on Symmetrix arrays attached to this host, enter:
`syndrv list`

symevent

Enables the monitoring and tracking of events on Symmetrix arrays.

Note: Refer to [Appendix D, “SYMCLI Events,”](#) for a list of events reported by the SYMCLI environment.

SYNTAX

```
symevent [-h]
symevent [-sid SymmID] [-v] [-warn | -error | -fatal]

    monitor [-i Interval] [-c Count]

    list [-start <Date:Time>] [-end <Date:Time>] [-dir]
```

DESCRIPTION

The `symevent` command allows an administrator to monitor events within a Symmetrix array that may affect its operation. In most cases, a reported event represents a condition that has already been repaired. This tool allows an administrator to track those events in order to understand the events that have occurred, or are occurring, on your Symmetrix array.

The `monitor` action sets the command to run in the foreground where it polls the Symmetrix array for new events every *Interval*, defined in seconds, until the iteration *Count* is satisfied or the program is stopped.

The `list` action reports on the history of events, which is stored on the Symmetrix array. Specifying a start/end time allows you to retrieve events that occurred between the specified time bounds.

In addition, you can restrict the query to a specific Symmetrix array and restrict the events reported to a minimum severity level (warnings, errors, or fatal events).

Note: Beginning with Engenuity 5671, the Error Number is now reported using a new numbering scheme. This allows the error numbers to remain constant across all future Engenuity releases.

ARGUMENTS

`list`

Lists events that have occurred on the Symmetrix array.

`monitor`

Monitors the Symmetrix array in real time for new events.

OPTIONS

`-c`

Specifies the number (*Count*) of times to poll for events. If this option is not specified, `symevent` will continuously poll for events.

`-dir`

Display events sorted by reporting director.

`-end`

Specifies a date and time before which to report on events. Used with `list` action.

`-error`

Displays only events with a severity of Error or greater.

`-fatal`

Displays only events with a severity of Fatal.

-h

Provides brief, online help information.

-i

Defines the time interval, in seconds, between polls. The default interval is 10 seconds. The minimum interval is 5 seconds.

-sid

Specifies a unique Symmetrix ID.

-start

Specifies a date and time after which to report on events. Used with the `list` action.

-v

Provides a more detailed, verbose listing.

-warn

Displays only events with a severity of Warning or greater.

PARAMETERS

Count

Number of iterations to execute before exiting.

Date:Time

Date and time specification of the form `[mm/dd/yyyy] : [hh:mm[:ss]]`. The current date and time will be substituted for omitted fields.

Interval

Interval between polls, in seconds.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To list the events for a specific Symmetrix array, enter:

```
symevent -sid 54 list
```

To report on all events, on all locally-connected Symmetrix arrays, every 10 seconds, forever, enter:

```
symevent monitor
```

To poll for and display events of severity `Warning` or greater on Symmetrix 012345678901 every 10 minutes for a 24-hour period, enter:

```
symevent monitor -sid 012345678901 -i 600 -c 144 -warn
```

To retrieve a verbose list of the events that have occurred on the given Symmetrix array between 9 a.m. and 5 p.m. today, enter:

```
symevent list -sid 012345678901 -v -start 9:00 -end 17:00
```

symgate

Performs support operations on a gatekeeper device.

SYNTAX

```
symgate [-offline] [-h]

    associate pd PdevName -g DgName

    disassociate pd PdevName -g DgName

    define pd PdevName

    undefine pd PdevName

symgate [-offline][-sid SymmID] [-h]

    associate dev SymDevName -g DgName

    disassociate dev SymDevName -g DgName

    define dev SymDevName

    undefine dev SymDevName

symgate list [-h] [-offline][-sid SymmID] [-v]
```

DESCRIPTION

The `symgate` command performs operations on a gatekeeper device that can associate a gatekeeper with a device group, define a host device as a gatekeeper device (adding it to the gatekeeper device list), list the gatekeeper devices, disassociate a gatekeeper device from a device group, and remove a host device from the gatekeeper device list.

Note: The gatekeeper device **MUST** be visible to the local host.

ARGUMENTS

`associate`

Associates a Symmetrix host device with an existing device group.

Note: You can substitute `add` for the argument `associate`.

`define`

Defines a host device as a gatekeeper device.

`disassociate`

Disassociates a gatekeeper device from a device group. The group must exist, and the gatekeeper device must have been previously associated with the group.

Note: You can substitute `remove` for the argument `disassociate`.

`list`

Lists the host physical device names that are currently in the gatekeeper device list.

`undefine`

Removes a host device from the gatekeeper device list.

OPTIONS**-g**

Applies the command to device group name.

-h

Provides brief, online help information.

-offline

Makes the Symmetrix data connection offline from the host in-memory database for this action.

-sid

Supplies the Symmetrix ID to list only gatekeeper devices belonging to the specified Symmetrix array.

-v

Provides a more detailed, verbose listing.

PARAMETERS*PdevName*The physical device (host) name for the device, such as `/dev/rdisk/c2t0d2s2`.*SymDevname*

The Symmetrix device (numbered) name, such as 000C.

RETURN CODESRefer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.**EXAMPLE**

To define a Symmetrix host device to be a gatekeeper device, enter:

```
symgate define pd /dev/rdisk/c2t0d2s2
```

To associate a gatekeeper device with Symmetrix array 56, in device group `prod`, enter:

```
symgate -g prod associate dev 000C -sid 56
```

To list all defined gatekeeper devices, enter:

```
symgate list
```

To disassociate a gatekeeper device from device group `ProdDB`, enter:

```
symgate -g ProdDB disassociate pd /dev/rdisk/c2t0d2s2
```

To undefine a gatekeeper device, enter:

```
symgate undefine dev 000C
```

symhost

Displays host configuration information and performance statistics.

SYNTAX

```
symhost show -config [-h]
```

```
symhost stats [-h] [-i Interval] [-c Count] [-type CPU | MEMORY | DISK | ALL]
```

DESCRIPTION

The `symhost` command displays host configuration information and performance statistics. The performance statistics are displayed for CPU, memory, and host storage devices. Not all statistics are available for all hosts.

Currently, the supported platforms are: SunOS, HP-UX, AIX, Tru64 UNIX, Windows, and Linux.

ARGUMENTS

`show`

Shows detailed configuration information.

`stats`

Displays performance statistics.

OPTIONS

`-c`

Indicates the number (count) of times to display statistics. If this option is not specified, and an interval (`-i`) is specified, statistics will be displayed continuously.

`-config`

Show detailed configuration information.

`-h`

Provides brief, online help information.

`-i`

Repeat interval in seconds. The default interval is 10 seconds. The minimum interval is 5 seconds.

`-type`

Identifies the type of performance information to display. The default is to display ALL statistics. Individual CPU, memory, and disk statistics can be selected.

- CPU – Report user, system, wait I/O, idle CPU time, interrupts, system calls and context switches statistics for each processor and overall.
- MEMORY – Report system-wide page in, page out, swap in and swap out statistics.
- DISK – Report read, write, busy and idle time statistics for each host disk.

PARAMETERS

None.

RETURN CODES

Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES

To display configuration information for the local host, enter:

```
symhost show -config
```

To display statistics about all processors, memory and disk every 60 seconds, enter:

```
symhost stats -i 60
```

To display statistics about all host processors every 30 seconds for one hour, enter:

```
symhost stats -i 30 -c 120 -type CPU
```

The following is an example of the output:

	CPU	%User	%Sys	%WIO	%Idle	Int/s	Calls/s	CtxSw/s
13:32:33	0	0.0	0.0	100.0	0.0	401.7	1.6	9.3
13:32:33	2	0.0	0.1	0.0	99.8	101.4	9.2	84.7
13:33:03	0	0.0	0.0	100.0	0.0	401.0	8.0	35.9
13:33:03	2	0.0	0.2	0.0	99.7	101.7	17.1	70.3

Where the first column provides the time of day, and the other columns (from left to right) are as follows:

- ◆ CPU — CPU number/ID
- ◆ %User — 100 * (CPU busy time in user mode / elapsed time)
- ◆ %Sys — 100 * (CPU busy time in system mode / elapsed time)
- ◆ %WIO — 100 * (CPU idle time for wait I/O / elapsed time)
- ◆ %Idle — 100 * (CPU idle time / elapsed time)
- ◆ Int/s — Interrupts per second
- ◆ Calls/s — System calls per second
- ◆ CtxSw/s — Process context switches per second

To display statistics about host memory every 30 seconds for one hour, enter:

```
symhost stats -i 30 -c 120 -type MEMORY
```

The following is an example of the output:

	Pi/s	Ppi/s	Po/s	Ppo/s	Si/s	Psi/s	So/s	Psos
13:22:18	716.6	1340.0	3.4	5.3	0.0	0.0	0.0	0.0
13:22:48	716.6	1340.0	3.4	5.3	0.0	0.0	0.0	0.0

Where the first column provides the time of day, and the other columns (from left to right) are as follows:

- ◆ CPU — CPU number/ID
- ◆ Pi/s — Page in requests per second
- ◆ Ppi/s — Number of pages paged in per second
- ◆ Po/s — Page out requests per second
- ◆ Ppo/s — Number of pages paged out per second
- ◆ Si/s — Swap in requests per second
- ◆ Psi/s — Number of pages swapped in per second
- ◆ So/s — Swap out requests per second
- ◆ psos — Number of pages swapped out per second

To display statistics about all host disks every 30 seconds for one hour, enter:

```
symhost stats -i 30 -c 120 -type DISK
```

The following is an example of the output:

14:09:01	DISK	RW/s	R/s	W/s	KbRW/s	KbR/s	KbW/s	%Busy	%Wait
14:09:01	c0t6d0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14:09:01	c0t0d0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Where the first column provides the time of day, and the other columns (from left to right) are as follows:

- ◆ DISK — Disk name
- ◆ RW/s — Read and write requests per second
- ◆ R/s — Read requests per second
- ◆ W/s — Write requests per second
- ◆ KbRW/s — KB read and written per second
- ◆ KbR/s — KB read per second
- ◆ KbW/s — KB written per second
- ◆ %Busy — 100 * (disk active time/elapsed time)
- ◆ %Wait — 100 * (nonempty wait queue time/elapsed time)

symhostfs

Displays mapping information about file systems, directories, and regular files that are defined on the host system.

SYNTAX

```
symhostfs -h

symhostfs [-meta|-data] [-kb|-mb|-blocks]

list [ObjName] [-file|-dir] [-R] [-v]

show ObjName [-collapse|-expand|-no_extents|-phys_collapse]
```

DESCRIPTION The `symhostfs` command displays mapping information specific to the file systems that are defined on your host system. The default is to list the mounted file systems. The list of files or subdirectories of a given parent directory can be obtained by specifying the `-dir` or `-file` option.

The command lists information about the following objects:

- ◆ Currently mounted or known file systems
- ◆ Files
- ◆ Directories and subdirectories

The attributes are shown for each object type. You can obtain logical-to-physical information about where the file extents are mapped for file systems that are mounted on Symmetrix devices.

ARGUMENTS `list`

Lists various file systems, directories, or regular files on the host system.

`show`

Shows detailed mapping information about a file system, directory, or file on the host system.

OPTIONS

`-blocks`

Displays size information in 512-byte blocks.

`-collapse`

Collapses (if possible) the list of extents within the object (default).

`-data`

Displays only the data extents of a file, as opposed to the default (both metadata and data extents display).

`-dir`

Applies the `list` command to display directory information.

`-expand`

Expands (if possible) the list of extents within the object.

`-file`

Applies the `list` command to display file system information (default).

-h

Provides brief, online help information.

-kb

Displays size information in kilobytes.

-mb

Displays size information in megabytes (default).

-meta

Displays only the metadata extents of a file, as opposed to the default (both metadata and data extents display).

-no_extents

Shows information about the object without the extent information.

-phys_collapse

Provides a physical collapse of the extents of a file or file system.

-R

Displays directory or file information in a recursive manner.

-v

Provides a more detailed, verbose listing.

PARAMETERS

ObjName

A directory or filename.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To list all the mounted file systems on your host, enter:

```
symhostfs list
```

To recursively list all the subdirectories of directory `"/usr"` on your host, enter:

```
symhostfs list "/usr" -dir -R
```

To display detailed information about directory `"/usr/guest"`, enter:

```
symhostfs show "/usr/guest/"
```

To show detailed information about file system `"/mountp1"`, and to collapse the extent information with the size reported in megabytes, enter:

```
symhostfs -collapse -mb show "/mountp1"
```

syminq

Issues a SCSI INQUIRY command, and optionally a SCSI READ CAPACITY, on one or all devices. In addition, it can be used to obtain a list of the local host's HBAs.

SYNTAX

```
syminq [-h]

syminq [-sym] [-bcv] [-powerpath] [PdevName] [-symmids] [-la | -nocapacity]
      [-pdevfile] [-cache | -nocache] -v [-nocapacity]]
      [-copa] [-wwn [-colons]] [-winvol]

syminq [-clariion] [-powerpath] [PdevName] [-cids] [-la | -nocapacity]
      [-v [-nocapacity]] [-wwn [-colons]]

syminq [-hds] [PdevName] [-hids] [-la | -nocapacity] [-v [-nocapacity]]

syminq [-storworks] [PdevName] [-swids] [-la | -nocapacity] [-v [-nocapacity]]

syminq hba [-fibre | -scsi | -iscsi | -snia]
```

DESCRIPTION The `syminq` command can be used to issue SCSI INQUIRY, and optionally SCSI READ CAPACITY, on one or all devices. By default, the scope of the command is for all disk devices. You can limit the scope to Symmetrix, CLARiiON, StorageWorks, or HDS devices.

In addition, it can be used to list the fibre and SCSI HBAs in the local host. This scope of this request can be limited to just fibre or just SCSI by specifying either the `-fibre` or `-scsi` options.

ARGUMENTS None.

OPTIONS

- `-bcv`
Displays Symmetrix BCV devices only.
- `-cache`
Attempts to recover the results of a previous SCSI interrogation from a running base daemon for increased speed.
- `-cids`
Displays CLARiiON IDs.
- `-clariion`
Displays CLARiiON devices only.
- `-colons`
Indicates to use a colon separator between bytes of WWN data.
- `-copa`
Lists physical device names only in a format to input into EMC's COPA tool (for EMC use only).
- `-fibre`
Limits the HBA list request to fibre HBAs only.
- `-h`
Provides brief, online help information.

-hds

Displays HDS devices only.

-hids

Displays HDS IDs.

-iscsi

Modifies the HBA list request to include iSCSI HBAs only.

-la

Lists physical device names only in a left-aligned format.

-nocache

Bypasses the cache and rescans the device(s).

-nocapacity

Skips issuing a SCSI READ CAPACITY to the device(s).

-pdevfile

Lists physical device names in a format for use as pdevfile entries. The display output can be redirected to a pdev file name.

-powerpath

Displays EMC PowerPath-connected devices only.

-scsi

Limits the HBA list request to SCSI HBAs only.

-snia

Indicates to use only the SNIA API to gather HBA data. This implies `-fibre`.

-storworks

Displays StorageWorks devices only.

-swids

Displays StorageWorks IDs.

-sym

Displays Symmetrix devices only. The default is to display all devices.

-symids

Displays Symmetrix IDs.

-v

Provides a more detailed, verbose listing.

-wwn

Displays the device WWN.

`-winvol`

Displays Windows volumes only.

PARAMETERS

hba

Host bus adapter. This parameter allows you to obtain a list of all of the local host's HBAs. This request can be limited to just SCSI or fibre HBAs as well.

PdevName

The host name for the device, such as `/dev/rdisk/c2t0d2s3`.

EXAMPLES

To issue just a SCSI INQUIRY to all Symmetrix devices that are visible to this host, enter:

```
syminq -sym -nocap
```

To issue a SCSI INQUIRY and READ CAPACITY to a device, enter:

```
syminq /dev/rdisk/c2t0d2s3
```

To issue a SCSI INQUIRY and READ CAPACITY command to a device and display more detailed, verbose information, enter:

```
syminq -v /dev/rdisk/c2t0d2s3
```

To request that the SCSI HBAs in the local host be listed, enter:

```
syminq hba -scsi
```

symioctl

Sends I/O control commands to a specified database server application.

SYNTAX

```
symioctl -h

symioctl -type DbType [-noprompt]

    begin backup [<Object> <Object> ...] [-checkpoint]
    end backup  [<Object> <Object> ...]

    freeze      [<Object> <Object> ...] [-checkpoint]
    thaw        [<Object> <Object> ...]

    checkpoint  [<Object> <Object> ...]
    archive log

    begin snapshot Object SAVEFILE SaveFile [-checkpoint] [-overwrite]
    restore snapshot Object SAVEFILE SaveFile [-norecovery] [-standby]

    end snapshot Object
    abort snapshot Object
```

DESCRIPTION

The `symioctl` command performs control operations on a specified database application. This utility is intended to be used in conjunction with a TimeFinder or SRDF split operation. The `freeze` action will suspend database updates from getting written to disk. Once the `freeze` action completes, a TimeFinder or SRDF operation can begin. After the split operation completes, a `symioctl thaw` action must be sent to resume full I/O access to the database.

For SQL Server 2000 or higher, the `snapshot` commands support the BACKUP and RESTORE database WITH SNAPSHOT operations using the Virtual Device Interface (VDI). The database can be restored in recovery, norecovery, or standby mode.

Note: The user account of the `symioctl` command must have System Administrator privileges. Application software must be installed and the environmental variables set.

In some instances, an object or object list is not required. [Table 8](#) shows the details.

Table 8 Specifying objects with `symioctl`

Argument	RDBMS	Objects	List object
freeze thaw	Oracle SQL Server Informix IBM DB2/UDB Sybase	database server database name database server database name database name	No Yes No Yes No
checkpoint	Oracle SQL Server Informix	database server database name database server	No Yes No
begin hot backup end hot backup	Oracle	tablespace	Yes
archive log	Oracle	database server	No
Begin/End/Abort/Restore snapshot	SQL Server	database name	No

The `symioctl freeze/thaw` command supports the IBM UDB RDBMS using the IBM UDB/DB2 Suspend and Resume I/O features. This makes it possible for a secondary server to use the split image as a simple database clone for offline backup, as a standard database, or as a backup image to restore over the primary image.

For Oracle, hot backup control of a list of table objects must be performed before and after a `freeze/thaw` command. The steps required to split a group of BCV devices follows:

1. Issue the `symioctl begin backup` command.
2. Issue the `symioctl freeze` command.
3. Split standard and BCV pairs. This may involve several steps depending on your environment.
4. Issue the `symioctl thaw` command.
5. Issue the `symioctl end backup` command.

Environment variables

You need to define the UNIX environment variables for Oracle and Informix databases for any database mapping commands to succeed, as shown in [Table 9](#).

Table 9 System database environment variables

For database	Set variables
Oracle	ORACLE_HOME ORACLE_SID PATH
Informix	INFORMIXDIR ONCONFIG INFORMIXSERVER PATH

See your System Administrator for more specific information about setting these variables for your system platform and database.

[Table 10](#) lists the various environment variables that you should set to simplify certain repetition of argument entries or options in your command-line sequences. These are particularly useful when you are about to apply multiple database calls.

Table 10 symioctl database environment variables

Variable name	Description	Default
<code>SYMCLI_RDB_CONNECT</code>	Specifies a username, password, and remote service name for a user's relational database account (<i>user/password@service</i>).	None. Must be specified by user.
<code>SYMCLI_RDB_TYPE</code>	Specifies a specific type (<i>DbType</i>) of database. Possible values: Informix Oracle SQLServer IBMUDB Sybase	NULL

Note: `SYMCLI_RDB_CONNECT` must be set with your username and password for you to access the specified database with this command.

For any individual command, you can override the variable value of SYMCLI_RDB_TYPE to explicitly specify the option in the command argument.

Note: Arguments specified on the command line containing special shell characters (i.e. \$, ', \, etc.) must be escaped with a backslash (\).

If `symioctl` is being run in client/server mode, any required RDBMS environmental variables that are set in the client's environment will be sent to the server for use.

ARGUMENTS

`abort snapshot`

For SQL Server 2000 and higher. The `BACKUP DATABASE` SQL command for the specified database will terminate and database writes will resume.

`archive log`

Archives the current log; for Oracle only.

`begin backup`

Places the specified tablespace objects into hot backup mode; for Oracle only.

`begin snapshot`

For SQL Server 2000 and higher. A `BACKUP DATABASE TO VIRTUAL_DEVICE WITH SNAPSHOT` SQL command is sent to SQL Server, which begins the snapshot backup and suspend writes for the specified database. After the BCV mirrors are split, the `end snapshot` command should be issued to save the snapshot metadata to a file.

`checkpoint`

Issues a checkpoint to the RDBMS.

`end backup`

Terminates the hot backup mode of the specified tablespace objects; for Oracle only.

`end snapshot`

For SQL Server 2000 and higher. The "BACKUP DATABASE" SQL command for the specified database will complete, database writes will resume, and the snapshot metadata will be saved to the save file (which is needed for a subsequent snapshot restore).

`freeze`

Suspends I/O at the application layer while a split operation occurs. All applications provide a halt mechanism, although behavior may differ.

`restore snapshot`

For SQL Server 2000 and higher. A `RESTORE DATABASE FROM VIRTUAL_DEVICE WITH SNAPSHOT` SQL command for the specified database is sent to SQL Server. The previously saved snapshot metadata is used by SQL Server to logically restore the database. The `-norecovery` and `-standby` options allow the RESTORE to operate in NORECOVERY or STANDBY mode. The undo file for the `-standby` option is automatically generated and stored with the save file under file name `undo_(databasename).ldf`.

`thaw`

Resumes full I/O to the specified database.

OPTIONS

-checkpoint

Requests a checkpoint prior to the specified action.

-h

Provides brief, online help information.

-noprompt

Specifies the no prompt option. The default is to prompt the user for confirmation before executing the indicated control operation.

-norecovery

Specifies a no recovery mode for the restore snapshot action on SQL Server.

-overwrite

Allows a backup process to overwrite an existing save file. By default, existing save files are protected.

-standby

Specifies a standby mode for the restore snapshot action on SQL Server.

-type

Applies the command to a database type of the database.

PARAMETERS

DbType

The database type. Possible values are:

Informix
Oracle
SQLServer
IBMUDB
Sybase

Object

Database name or tablespace name. If no objects are specified, the action defaults to all objects of the specified type database.

SaveFile

SQL Server snapshot only. Name of the save file used by begin snapshot and restore snapshot. For client/server mode, the meta-data file is saved by the server. An absolute path (e.g., C:\TEMP\PUBS.SAV) should be specified to ensure that the file can be located for protection or subsequent restores.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

This example backs up and then restores the SQL Server `pubs` database on a group of BCV devices. The snapshot metadata is saved in `C:\TEMP\PUBS.SAV`. The database login parameters are set via the environment as `user=sa`, `passwd=pass`, and `service=sqlserv`.

```
setenv SYMCLI_RDB_CONNECT "sa/pass@sqlserv"
setenv SYMCLI_RDB_TYPE SQLServer
symioctl begin snapshot pubs SAVEFILE C:\TEMP\PUBS.SAV
```

Split standard and BCV pairs.

```
symioctl end snapshot pubs
```

Protect the `PUBS.SAV` file.

Restore the `PUBS.SAV` save file.

Shut down SQL Server.

Restore the standard devices from BCVs.

Restart SQL Server.

```
symioctl restore snapshot pubs SAVEFILE C:\TEMP\PUBS.SAV
```

To specify a `NORECOVERY` action for the saved file, enter:

```
symioctl restore snapshot -norecovery pubs SAVEFILE C:\TEMP\PUBS.SAV
```

The database access environment variable (`SYMCLI_RDB_CONNECT`) must be set before any commands as follows:

```
setenv SYMCLI_RDB_CONNECT "scott/tiger@acme"
```

To freeze all I/O to an SQL Server database named `pubs`, enter:

```
symioctl freeze -type SQLServer pubs
```

To freeze all I/O to an IBM DB2/UDB database named `pubs`, enter:

```
symioctl freeze -type IBMUDB pubs
```

To thaw all I/O to an Oracle database, enter:

```
symioctl thaw -type Oracle
```

To place all tables in an Oracle database into hot backup mode, enter:

```
symioctl begin backup -type Oracle
```

To freeze all I/O to an Informix database without prompting for confirmation, enter:

```
symioctl freeze -type Informix -noprompt
```

To perform a checkpoint for an Informix database, enter:

```
symioctl checkpoint -type Informix
```

To archive the current log in an Oracle database, enter:

```
symioctl archive log -type Oracle
```

symlabel

Performs device label (signature) support operations on device(s) in a device group.

SYNTAX

```
symlabel -h

symlabel -g DgName [-noprompt]

    define LdevName [label Label] -type <WNT|AS40>
    undefine LdevName

symlabel -g DgName -type <WNT|AS40> [-offline]

    list [-bcv | -vdev]
    show LdevName
```

DESCRIPTION

The `symlabel` command performs device label (signature) operations on the device(s) of a device group. A device label (or signature) is initially assigned to each Symmetrix device by the host operating system. These labels must be relabeled during TimeFinder operations using a `symld relabel` command. For SYMCLI usage, you can define or undefine labels of devices in a device group in the SYMAPI configuration database. Subsequently, you can list or show defined or actual labels for these devices.

ARGUMENTS

`define`

Defines the device labels in the Symmetrix configuration database for the specified device in a device group.

`list`

For Windows only, lists the defined or actual labels of the devices of a device group. If the `offline` option is used, it lists only the defined labels in the Symmetrix configuration database.

`show`

Shows the device label and information about a specified device in the device group.

`undefine`

Removes the device labels that were previously defined in the Symmetrix configuration database.

MODIFIERS

`label`

Applies an 8-digit hexadecimal label for Windows.

OPTIONS

`-bcv`

Confines the action to specified local BCV device(s) that are associated with the device group.

`-g`

Applies a device group name to the command. Required for all `symld` operations.

`-h`

Provides brief, online help information.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-offline

Switches the Symmetrix data connection offline from the host in-memory database for this action, which makes information confined to the SYMAPI configuration database on the host. Only defined labels for SYMCLI usage will be displayed. (If this option is not used, the disk drive labels are retrieved from the Symmetrix devices and then displayed.)

-type

Specifies the device label type for the following supported device type platforms:

WNT — Windows

AS40 — AS/400

-vdev

Performs the action on virtual devices that are locally-associated with a device group.

PARAMETERS

DgName

The device group name.

Label

An 8-digit hexadecimal label for Windows.

LdevName

The logical device name, either supplied by the user or automatically assigned when a device is added to a device group.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To define device label `abcd21` to one of the BCV devices (`BCV001`) in device group `ProdDB`, enter:

```
symlabel -g ProdDB define BCV001 label abcd21 -bcv -type WNT
```

To undefine the device label for BCV device `BCV001` in device group `ProdDB`, enter:

```
symlabel -g ProdDB undefine BCV001 -bcv
```

To list just the defined disk labels of all BCV devices in device group `ProdDB`, enter:

```
symlabel -g ProdDB list -bcv -offline
```

To list both the defined and the actual device labels of all BCV devices in device group `ProdDB`, enter:

```
symlabel -g ProdDB list -bcv
```

Using a Windows host, the following operational example relabels two established BCV pairs, `DEV001/BCV001` and `DEV002/BCV002` in group `ProdDB`:

```
symlabel -g ProdDB define -bcv -type WNT BCV001 label abcd01  
symlabel -g ProdDB define -bcv -type WNT BCV002 label abcd02  
symmir -g ProdDB split -not_ready -v ! Split not ready  
symld -g ProdDB relabel -bcv -v ! Relabel the BCVs  
symlabel -g ProdDB list -bcv ! Make sure label looks OK  
symld -g ProdDB ready -bcv -v ! Make the BCVs now Ready
```

symld

Performs operations on one or more STD, BCV, TGT or VDEV devices in a device group (dg).

SYNTAX

```
symld -h

symld -g DgName [-offline]

    add pd PdevName [LdevName]

    add dev SymDevName [LdevName] [-sid SymmID] [<-vdev | -tgt> -rdf
        [-rdfg GrpNum]]

    addall [-sid SymmID] [-SA <#|ALL>] [-P #]
        [<-vdev | -tgt> -rdf [-rdfg GrpNum]] [-CAP #] [-N #]
        [-RANGE SymDevStart:SymDevEnd] [pd | dev | -host HostName]

    break [LdevName] [-noprompt] [-vdev]

    list [-v] [-resv] [-cyl] [-held]

    show LdevName

    remove LdevName [-force]

    rmall [-force] [-SA <#|ALL>] [-P #] [-CAP #] [-N #]
        [-RANGE SymDevStart:SymDevEnd]
        [<-vdev | -tgt> -rdf [-rdfg GrpNum]]

    move LdevName DestDgName [-force] [-rename]

    moveall DestDgName [-force] [-rename]
        [-SA <#|ALL>] [-P #] [-CAP #] [-N #]
        [-RANGE SymDevStart:SymDevEnd] [-vdev | -rvdev | -tgt | -rtgt]

    copy LdevName DestDgName [-force] [-rename]

    copyall DestDgName [-force] [-rename]
        [-SA <#|ALL>] [-P #] [-CAP #] [-N #]
        [-RANGE SymDevStart:SymDevEnd] [-vdev | -rvdev | -tgt | -rtgt]

    rename LdevName NewLdevName

symld -g DgName [-noprompt] [-SA <#|ALL>] [-P #] [-bcv | -vdev | -tgt]

    rw_enable [LdevName [LdevName...]]

    write_disable [LdevName [LdevName...]]

symld -g DgName [-h] [-noprompt] [-bcv | -vdev | -tgt]

    relabel [LdevName [LdevName...]] [-force]

symld -g DgName [-noprompt] [-bcv | -rbcv | -brbcv | -rrbcv | -vdev | -rvdev
    | -tgt | -rtgt]

    ready [LdevName [LdevName...]]

    not_ready [LdevName [LdevName...]]

    hold [LdevName [LdevName...]]

    unhold [LdevName [LdevName...]] [-symforce]
```

DESCRIPTION The `symld` command performs operations specific to a device in a device group: adds a device to a device group, adds all available devices to a device group, lists all devices in a device group, removes/moves a device or all devices from a device group, renames a device in a device group, and shows detailed information about a device in a device group.

The `symld` command is also used to write enable or write disable one or all devices, or front-end directors, in a device group.

ARGUMENTS

`add dev`

Adds to an existing device group an ungrouped device, specifying its Symmetrix device name.

`add pd`

Adds to an existing device group an ungrouped device, specifying its physical (host) device name.

`addall dev`

Adds to an existing device group all ungrouped Symmetrix devices from a specified Symmetrix array regardless of whether the devices are visible to this host.

`addall pd`

Adds to an existing device group all ungrouped Symmetrix devices (that are visible to this host) from a specified Symmetrix array.

`break`

Breaks SCSI device reservations on one or all devices in the device group that are currently reserved.

`hold`

Creates a hold on all, or specified, devices from an existing device group. When a hold is placed on a device, TimeFinder and Snap operations are blocked.

`list`

Lists all available devices from an existing device group.

`move`

Moves a standard device from a source device group to a specified destination device group. The source and destination groups must be compatible types.

`moveall`

Moves all standard devices from a source device group to a specified destination device group. The source and destination groups must be of the same type. The device logical name is retained unless the `-rename` option is specified.

`not_ready`

Sets the device(s) to be Not Ready. The device(s) must be in a User Ready status for this action to succeed.

`ready`

Sets the device(s) to be Ready. The device(s) must be in a User Not Ready status for this action to succeed.

relabel

Applies the SYMCLI defined disk label to the device. (Refer to the `symlabel` command to predefine these labels.) The device(s) must be in a User Not Ready status for this action to be accepted.

remove

Removes a standard device from a specified device group.

rmall

Removes all devices from a specified device group.

rename

Renames a device within a device group.

rw_enable

Sets the device(s) to be Read and Write Enabled to its (their) locally attached host(s) on the specified front director port(s). If no ports are specified, then the device(s) will be Read and Write Enabled on all ports that the device(s) is (are) visible on.

show

Shows status information about a device in the device group.

unhold

Releases devices previously set to the hold state.

write_disable

Sets the device(s) to be Write Disabled to its (their) locally attached hosts on the specified front director port(s). If no ports are specified, then the device(s) will be Write Disabled on all ports on which that the devices is (are) visible.

OPTIONS**-bcv**

Confines the action to specified local BCV device(s) that are associated with the device group.

-brbcv

Targets the action at the specified remotely-associated RDF BCV device(s) in the device group.

-CAP

Sets a minimum device size (in megabytes) to the selection criteria of a number of devices to add, move, remove to/from a device group.

-cyl

Lists the device capacity in cylinders in the output. The default is megabytes (MB).

-force

Applies force with the specified action on a device group that would otherwise be rejected. Forces standard device(s) to be removed or moved from a device group, without querying the Symmetrix array for the device's BCV pair state(s), if any.

-g

Applies a device group name to the command. Required for all `symld` operations.

-h

Provides brief, online help information.

-held

Lists the devices in the device group that have device holds for a Snap session.

-host

Limits the devices added to those mapped to the host's front-end directors.

-N

Sets a maximum number of devices to the selection criteria to add, move, or remove all devices to/from a specified device group.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-offline

Makes the Symmetrix data connection offline from the host in-memory database for this action.

-P

Applies the front-end (SCSI or fibre) director port number to the command that selects only devices which are primarily visible through this director port. By default, all ports are selected.

-RANGE

Sets a range of Symmetrix device names to the selection criteria to add, move, or remove to/from a specified device group.

-rbcv

Targets the action at the device group's locally-associated RDF BCV device(s), that can be BCV paired with the remote mirror(s) of the standard RDF device(s).

-rdf

Indicates that remote VDEVs or TGTs are being added to the group.

-rdfg

Specifies the RDF (RA) group number to only add devices that belong to the specified RDF group number.

-rename

Renames the standard device(s) to the default names as they are moved from their current device group to the destination device group.

-resv

Lists devices in the device group that have SCSI reservations.

`-rrbcv`

Targets the action at the specified SRDF-connected BCVs that are paired with the R2 mirror of the remote RDF BCV devices (RRBCV) in the device group.

`-rtgt`

Targets the indicated action at the device(s) in the RTGT list of the device group.

`-rvdev`

Targets the indicated action at the specified remote VDEV device(s) that are associated with the device group.

`-SA`

Specifies the front-end (SCSI or fiber) director (adapter) number to only select devices that are primarily visible through this director. Alternatively, if `ALL` (the default) is specified, all devices satisfying the director port selection criterion will be selected.

`-sid`

Specifies the Symmetrix ID to add only devices belonging to the specified Symmetrix array.

`-symforce`

Requests that the Symmetrix force the operation to be executed when normally it is rejected.



CAUTION

Extreme caution should be exercised when using this option.

`-tgt`

Targets the indicated action at the device(s) in the TGT list of the device group.

`-v`

Provides a more detailed, verbose listing.

`-vdev`

Targets the indicated action to TimeFinder/Snap virtual devices (VDEV) that are associated with this specified device group.

PARAMETERS

DestDgName

Destination device group to which the standard device(s) is (are) moved.

DgName

The device group name.

HostName

The name of your host system.

GrpNum

The RDF (RA) group number.

LdevName

The logical device name, either supplied by the user or automatically assigned when a device is added to a device group.

NewLdevName

The renamed logical device name.

PdevName

The host name for the device, such as `/dev/rdisk/c2t0d2s2`.

SymDevEnd

The Symmetrix device name, ending the range of selected devices, unique per Symmetrix array, such as 001C.

SymDevName

The Symmetrix device name, unique per Symmetrix array, such as 001C.

SymDevStart

The Symmetrix device name, starting the range of selected devices, such as 0000.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To add a Symmetrix host device to group `prod` and assign a logical device name `temp1`, enter:

```
symld -g prod add pd c2t0d2s2 temp1
```

To add a Symmetrix device to group `ProdDB` and assign a logical device name `temp2`, enter:

```
symld -g ProdDB add dev 001C temp2
```

To add to group `ProdDB` all devices that are primarily visible from this host on Port 0 (top port) of Symmetrix front-end director 1B, enter:

```
symld -g ProdDB addall pd -SA 1B -P 0
```

To add to group `ProdDB` all devices (not to exceed 17 devices) that are primarily visible from this host and fall within the Symmetrix device name range 0000 to 002F, enter:

```
symld -g ProdDB addall pd -RANGE 0000:002F -N 17
```

To list all devices in device group `ProdDB`, enter:

```
symld -g ProdDB list
```

To rename device `DEV001` to `log1` in group `ProdDB`, enter:

```
symld -g ProdDB rename DEV001 log1
```

To remove device `log1` from device group `ProdDB`, enter:

```
symld -g ProdDB remove log1
```

To remove all devices from group `ProdDB` that connect through fibre director `SA-16B`, enter:

```
symld -g ProdDB rmall -SA 16B
```

To move all devices (not to exceed 300) from device group `ProdDB` to `ProdDB6` with Symmetrix device names ranging from `000C` to `01FF` that have at least 4 megabytes of storage, enter:

```
symld -g ProdDB ProdDB6 moveall -CAP 4 -RANGE 000C:01FF -N 300
```

To show detailed information about device `log1`, enter:

```
symld -g ProdDB show log1
```

To write-disable devices `DEV001`, `DEV005`, and `DEV016` in group `ProdDB`, enter:

```
symld -g ProdDB write_disable DEV001 DEV005 DEV016
```

To relabel all BCV devices that are locally associated with device group `ProdDB`, enter:

```
symld -g ProdDB relabel -bcv -v
```

To add to group `ProdDB` all virtual devices that are primarily visible from this host that fall in the following device range, enter:

```
symld -g ProdDB -RANGE 000:00F addall pd -vdev
```

symlmf

Registers Solutions Enabler license keys.

SYNTAX `symlmf license_key`

DESCRIPTION The `symlmf` command is used to register a Solutions Enabler license key. If successful, the key is stored within an internal license database.

If `symlmf` is invoked with no arguments, it prompts you to supply a key.

Registering a key with a remote server is allowed (by setting the `SYMCLI_CONNECT` environment variable)—but only if the server is running on a Symmetrix service processor.

ARGUMENTS `license_key`

A valid key, with syntax as in the following example: 1234-5678-9ABC-DEF0.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLE To input a Solutions Enabler license key 1234-5678-9ABC-DEF0, enter:

```
symlmf 1234-5678-9ABC-DEF0
```

symlv

Displays performance statistics and detailed mapping information about one or more logical volumes that are defined in a logical volume group and performs control operations on logical volumes.

SYNTAX

```
symlv -h

symlv -g VgName [-type VgType] [-kb|-blocks|-mb]

list [-v]

show LVolName [-expand|-collapse|-no_extents|-pdev_extents]
               [-stripe_column]

create LVolName -size Size [-nmirror Mirrors]
               [-mir MirName][-striped|-RAID5] [-ncols Columns]
               [-strsize StripeSize] [-pd Pdevname...]

delete LVolName

add LVolName -nmirror Mirrors [-mir MirName]
   [-striped|-RAID5] [-ncols Columns]
   [-strsize StripeSize] [-pd Pdevname....]

remove LVolName [-nmirror Mirrors] [-mir MirName]

extend LVolName -size Size [-pd Pdevname...]

reduce LVolName -size Size [-pd Pdevname...]

symlv [-type VgType [-g VgName [-lv LVolName]]]

stats [-i Interval] [-c Count] [-h]
```

DESCRIPTION

The `symlv` command displays detailed logical-to-physical mapping information specific to a volume in a logical volume group. It also supports control operations like `create` and `remove` on logical volumes.

For detailed interoperability information, please refer to E-Lab™ Interoperability Navigator which can be reached at <http://elabnavigator.EMC.com>.

In the lists of mirror physical extents and mirror physical devices for the logical volume, CLARiiON devices are distinguished from other device types with a (C) indicator.

ARGUMENTS

`add`

Adds mirror images to a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

`create`

Creates a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

`delete`

Deletes a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

extend

Extends (grows) a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

list

Lists all the defined logical volumes in a specified logical volume group.

show

Shows detailed logical-to-physical mapping information about a volume in a specified logical volume group.

stats

Shows performance statistics about logical volumes. The default *VgType* is assumed if no *VgType* is specified.

reduce

Reduces (shrinks) a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

remove

Removes mirrors of a logical volume of the specified type. The default *VgType* is assumed if no *VgType* is specified. Not all *VgTypes* are supported.

OPTIONS**-blocks**

Displays size information in 512-byte blocks.

-c

Specifies the number of times to poll for data.

-collapse

Collapses (if possible) the list of extents within the logical volume (default).

-expand

Expands (if possible) the list of extents within the logical volume.

-g

Applies the command to a logical volume manager's group name.

-h

Provides brief, online help information.

-kb

Displays size information in kilobytes.

-lv

Specifies a logical volume name.

-mb

Displays size information in megabytes (default).

`-mir`

Provides the name of the mirror to remove.

`-ncols`

Provides the number of stripe columns.

`-no_extents`

Shows information about the object without the extent information.

`-nmirror`

Provides the number of mirrors in the logical volume. For the `create` action, if this option specifies a number less than or equal to 0, then 1 is assumed by default.

`-pd`

Lists the device names used for the operation.

`-pdev_extents`

Shows information about pdev-level extents without showing the underlying meta device information.

`-RAID5`

Specifies a RAID 5 logical volume type.

`-size`

Displays the size of the logical volume in 512-byte blocks. An optional suffix can be specified to indicate the unit of size measurement. The optional suffixes supported are `b` (size in blocks), `k` (size in kilobytes), and `m` (size in megabytes).

For Windows platforms, if the size specified is less than 1 MB, a volume of 1 MB size will be created.

`-stripe_column`

Displays the extent's stripe column number on striped volumes.

`-striped`

Specifies a striped logical volume type.

`-strsize`

Provides the size of each stripe column in 512-byte blocks. An optional suffix can be specified to indicate the unit of size measurement. The optional suffixes supported are `b` (size in blocks), `k` (size in kilobytes), and `m` (size in megabytes).

`-type`

Targets a specific volume group type.

`-v`

Provides a more detailed, verbose listing.

PARAMETERS

Columns

The number of stripe columns.

Count

A positive integer.

Interval

The interval between polls, in seconds.

LvolName

A specific logical volume manager's logical volume name.

MirName

The name of the mirror.

Mirrors

The number of mirrors in logical volume.

PdevName

A fully-qualified host or physical device name.

Size

The logical volume size in 512-byte blocks or size with the appropriate suffix specified.

StripeSize

A logical volume stripe size in 512-byte blocks, or the size with the appropriate suffix.

VgName

A specific logical volume manager's volume group name.

VgType

A specific logical volume group type. Possible values are:

AS400	HP_LVM	ORACLE_ASM
AIX_LVM	HP_VXVM	OSF1_LSM
AIX_VXVM	LINUX_LVM	SUN_SOLSTICE
AS400_LVM	LINUX_POOL	SUN_VXVM
DEFAULT	LINUX_VXVM	
DYNIX_SVM	NT_DISKADM	
EMC_PVM	NT_LDM	

Note: Statistics are not available for AIX_LVM, DYNIX_SVM, LINUX_LVM, ORACLE_ASM, and AS400_LVM.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To list all the volumes in a volume group called `ProdVG`, enter:

```
symmlv -g ProdVG list
```

To display detailed logical-to-physical mapping information about a volume (`vol1`) in a volume group called `ProdVG`, enter:

```
symlv -g ProdVG show vol1
```

To create a simple volume called `testlv` of size 500m in the volume group named `testvg`, enter:

```
symlv -g testvg create testlv -size 500m
```

To list all volumes in the HP-UX VxVM volume group `vg00`, enter:

```
symlv -g vg00 -type HP_VXVM list
```

To display statistics about all logical volumes of VxVM on SunOS every 30 seconds for one hour, enter:

```
symlv stats -i 30 -c 120 -type SUN_VXVM
```

The following describes the output headings:

Volume Group Type : SunOS VxVM

```
H:M:S VgName LvName RW/s R/s W/s KbRW/s KbR/s KbW/s %Busy %Wait
```

Where the first column provides the time of day, and the other columns (from left to right) are as follows:

- ◆ VgName – Volume group name
- ◆ LvName – Logical volume name
- ◆ RW/s – Read and write requests per second
- ◆ R/s – Read requests per second
- ◆ W/s – Write requests per second
- ◆ KbRW/s – KB read and written per second
- ◆ KbR/s – KB read per second
- ◆ KbW/s – KB written per second
- ◆ %Busy – 100 * (logical volume active time / elapsed time)
- ◆ %Wait – 100 * (non-empty wait queue time / elapsed time)

To list all volumes in the HP-UX VxVM volume group `vg00`, enter:

```
symlv -g vg00 -type HP_VXVM list
```

symmask

Sets up or modifies Symmetrix device masking functionality.

SYNTAX

```
symmask -h

symmask discover hba [-rename] [-v]

symmask list hba [-v]

symmask -sid SymmID <-wwn wwn | -awwn awwn | -iscsi iscsi | -aiscsi aiscsi>
    -dir # -p # [-celerra] [-reserve_id ResvID[,ResvID[,ResvID]]]

    add devs startSymDevName:endSymDevName | SymDevname | SymDevname,...
        [-dynamic_lun | -lun Addr | <Addr,Addr,Addr...>] |
        [-noprompt] [-remove_unmapped]

    add -g DgName [-std] [-bcv] [-vdev] [-tgt] [-noprompt]
        [-dynamic_lun | -lun Addr] [-remove_unmapped]

    add -file DeviceFileName [src] [tgt] [-noprompt]
        [-dynamic_lun | -lun Addr] [-remove_unmapped]

    remove devs startSymDevname:endSymDevname | SymDevname|SymDevname,...
        [-force]

    remove -g DgName [-std] [-bcv] [-vdev] [-tgt] [-force]

    remove -file DeviceFileName [src] [tgt] [-force]

symmask -sid SymmID <-wwn wwn | -awwn awwn | -iscsi iscsi | -aiscsi aiscsi>

    list logins [-dir all [-p all] | -dir # [-p # | all]]
        [-pdev PdevName] [-v]

    set heterogeneous <on <hostConfigFlag> | off> -dir # -p #

    set hba_flags <on <flag,flag,flag...> <-enable | -disable> | off>
        -dir <#> -p <#>

    set lunoffset <on <offset> <base> | off> -dir # -p #

    set visibility <on | off> -dir # -p #

    replace <wwn | iscsi> [-noprompt]

    delete [-dir # -p # | -dir all -p all] [-login]

symmask -sid SymmID <-wwn wwn | -awwn awwn>
    set lockdown <on <fcid>|off> -dir # -p #

symmask -sid SymmID <-wwn wwn | -iscsi iscsi>
    rename <awwn | aiscsi>

symmask -sid SymmID [-noprompt]
    refresh

symmask -sid SymmID -iscsi iscsi | -aiscsi aiscsi

    set authentication -type authentication_type
        -credential credential_name -secret secret_value

    authentication [ enable | disable | show ]
```

DESCRIPTION

The `symmask` command performs control and monitoring operations on a device masking environment. Specific operations are:

- ◆ Finds (discovers) the HBAs on the host and assigns ASCII or alias names to the login history table entries for those initiators that are not set.
- ◆ Lists the host HBA information.
- ◆ Adds Symmetrix devices (*SymDevNames*) to and removes Symmetrix devices from the device masking database (VCMDB).
- ◆ Lists the login history table contents.
- ◆ Sets the LUN base/offset skip.
- ◆ Set a heterogeneous host. This feature was added to allow the user to change some attributes for a different host type on the FA, on a per initiator basis.
- ◆ Sets HBA port flags on a per initiator basis. This feature is similar to the heterogeneous host feature but the user is able to specify which settings are enabled and disabled.
- ◆ Sets volume visibility. This feature allows HP hosts to find all assigned devices, even if they are assigned non-continuously.
- ◆ Replaces the host HBA without losing established permissions.
- ◆ Allows an initiator to be removed from the device masking VCMDB along with all of the devices associated with that initiator.
- ◆ Associates the Fibre Channel ID (FCID) of a switch in a fabric, to the path from a host HBA to a Symmetrix array. This further restricts the path by which a host can connect to a Symmetrix array.
- ◆ Uses an ASCII name to be associated with the initiator as a convenience. To NULL the alias, use a slash (/) as input.
- ◆ Allows the Fibre Channel directors to be refreshed with the latest copy of the data in the device masking VCMDB.
- ◆ Allows for the management of authentication data for connections using iSCSI paths.

ARGUMENTS

`add`

Adds devices to the device masking record in the database with the matching WWN or iSCSI name.

`delete`

Deletes all the device masking record(s) matching the specified WWN or iSCSI name from the database.

`disable`

Disables the use of authentication by the Symmetrix array for the indicated host HBA.

`discover`

Finds the WWN or iSCSI name of the HBAs on the host and writes ASCII names to the login history table, if empty.

`enable`

Enables the use of authentication by the Symmetrix array for the indicated host HBA. The authentication data must have previously been established using the `set` command.

list

Lists the requested data concerning the device masking environment.

refresh

Refreshes the WWN-related profile tables in director cache with the latest copy of the data in the device masking database (VCMDB). Since this refreshes the data in the Symmetrix array only, any connected hosts should be rebooted.

remove

Removes masked devices from the record in the database with the matching WWN or iSCSI name.

rename

Changes the ASCII name or alias in the database and login history table.

replace

Changes the WWN or iSCSI name in the database without losing the pre-established permissions.

set

Allows certain device masking features to be enabled or disabled. Allows authentication data to be established for iSCSI connections.

show

Shows the current authentication data for the specified iSCSI host HBA. The CHAP secret does not display.

KEYWORDS**authentication**

Indicates iSCSI authentication data is being managed.

devs

Indicates the devices to be added or removed.

hba

Specifies the WWN or iSCSI name of the HBAs on the host.

hba_flags

Sets the record in the database to hold information on the HBA port setting that may differ than the current setting on the FA.

heterogeneous

Sets the record in the database to hold connection protocol information on the host type that may differ from the current setting on the FA.

lockdown

Sets the FCID value in the database to correlate that entry with a specific path.

logins

Specifies to list the entries in the login history table.

`lunoffset`

Sets the record in the database to hold base and offset information about a skip hole in the host-visible sequence of LUN addresses.

`visibility`

Sets information in the database to note that the host should find all devices even if they are not contiguous.

OPTIONS

`-aiscsi`

Specifies a user-given name or an alias iSCSI name.

`-awwn`

Specifies a user-given name in an ASCII WWN format.

`-bcv`

Acts upon only BCV devices, when used with a device group.

`-celerra`

Allows controls on Celerra devices.

`-credential`

Specifies the credential name associated with CHAP's authentication data.

`-dir`

Applies a director number designation.

`-disable`

Disables the overridden HBA port flags on a per initiator basis.

`-dynamic_lun`

Specifies to use the dynamic lun addressing features but does not require the user to give a LUN address for each device. The LUN addresses will be assigned based on what may already be in use for that host hba.

`-enable`

Enables the overided HBA port flags on a per initiator basis.

`-file`

Applies a device file to the command. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the source device first, a space, and the target device last within each line entry). Device files can include comment lines that begin with the pound sign (#). A Symmetrix ID is required for this option. `-f` is synonymous with `-file`.

`-force`

Forces SYMAPI to allow actions that ordinarily would fail. Use this option to allow devices that should not be masked, such as meta members, to be removed, or to mask devices in a range of devices that may normally not be masked.

`-g`

Applies a device group name to the command.

`-h`

Provides brief, online help information.

`-iscsi`

Specifies the iSCSI name.

`-login`

Deletes the entries from the login history table and the device masking database.

`-lun`

Specifies the starting LUN addresses to be used for the devices being added to the host HBA. Supply a single starting LUN address for all devices being added, or a list of starting LUN addresses equal to the number of device ranges in the list.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-p`

Applies a port number designation.

`-pdev`

Applies a physical device name (host path) to the `list login` action, which allows you to determine if an HBA is logged on to this device.

`-remove_unmapped`

Assists the user to convert an existing device masking record to use the new dynamic feature in a single step. Records that currently contain unmapped devices are not able to be converted until those devices are removed. This option will allow the user to remove those unmapped devices at the same as adding devices with dynamic addressing.

`-rename`

Forces the hostname/adaptor or hostname/IP to be written out to both the login history table and device masking VCMDB, even if one is present. Overwrites any existing alias in the record.

`-reserve_id`

Specifies the device reservation IDs for the devices in the operation.

`-secret`

Specifies the secret associated with CHAP's authentication data.

`-sid`

Applies a Symmetrix array's serial number or ID.

`src`

Acts upon only the source devices, when used with a device file.

`-std`

Acts upon only the standard devices, when used with a device group.

`tgt`

Acts upon only the target devices, when used with a device group.

`-type`

Specifies the type of authentication protocol being established, currently only CHAP is supported.

`-v`

Provides a more detailed, verbose listing.

`-vdev`

Acts upon only the virtual VDEV devices, when used with a device group.

`-wwn`

Applies a World Wide Name (WWN).

PARAMETERS

`#`

Specific director or port number.

Addr

Specifies the LUN address to be used for the corresponding device.

aiscsi

User-given name, in two parts, separated by a slash (/).

all

All directors or ports.

authentication_type

The only authentication type currently supported is CHAP.

awwn

User-given name, in two parts, separated by a slash (/).

base

Base value for the skip hole in a LUN address sequence.

credential_name

The CHAP credential name, a user-defined string of between 8 and 256 characters.

dev

A Symmetrix device to be added or removed.

DeviceFileName

Name of the file where device pairings are listed.

DgName

The device group name.

endSymDevName

The end of a range of logical devices.

fcid

Six-digit Fibre Channel ID associated with the switch.

flag

Specifies the overridden HBA port flags from the following values in brackets []:

Common_Serial_Number	[C]
Disable_Q_Reset_on_UA	[D]
Environ_Set	[E]
Siemens	[S]
Volume_Set_Addresssing	[V]
Avoid_Reset_Broadcast	[ARB]
AS400	[AS4]
OpenVMS	[OVMS]
SCSI_3	[SC3]
Sunapee	[SCL]
Sequent	[SEQ]
SPC2_Protocol_Version	[SPC2]
SCSI_SUPPORT1	[OS2007]

hostConfigFlag

The heterogeneous host configuration flag specifying a certain interface protocol or attribute required by the specific host platform.

AS400	AS400_LSE	BULL_AIX
BULL_AIX_PP15	CELERRA	DEC_OVMS
DEC_UNIX	DG_AViiON	HP-UX
IBM_AIX	IBM_AIX_PP15	IBM_AIX_DMP
IBM_AIX_DMP_PP15	IBM EMC	IBM EMC_PP15
ICL_OPEN	FSC_BS2000	LINUX
LINUX_DMP	LINUX_DMP_VCS	NCR_MP
NCR	NCR_NT	NCR_NT_MP
NOVELL	NOVELL_CLUSTER	PRIMEPOWER
PRIMEPOWER_DMP	PRIMEPOWER_PP15	RELIANT
SEQUENT	SEQUENT_FCSW	SOLARIS
SOLARIS_DMP	SOLARIS_PP15	SUN_CLUSTER
SUN_CLUSTER30	VERITAS	VERITAS20
VERITAS_DMP	WINDOWS_DMP	VMWARE
WINDOWS	WINDOWS_HP_DMP	WINDOWS_DMP_PP15
WINDOWS_HP	WINDOWS_PP15	WINDOWS_HP_DMP_PP15
WINDOWS_HP_PP15		

iscsi

The iSCSI name.

on

Turn the specified feature on.

off

Turn the specified feature off.

offset

The number of LUN addresses in the skip hole (for a skip offset from the skip base LUN).

PdevName

A physical device name (path) for the specified action.

ResvID

Device reservation ID.

secret_value

The CHAP protocol's secret value, a user-defined string of up to 32 ASCII characters, or 64 binary characters. Binary values should be prefixed with the string '0X'. Microsoft users must specify between 12 and 16 characters.

startSymDevName

The start of a range of Symmetrix devices.

SymDevName

A Symmetrix device name (device) to be removed or added.

SymmID

The 12-digit ID of the Symmetrix array.

wwn

The system-generated World Wide Name.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

symmaskdb

Allows the administrator to back up, restore, initialize and show the contents of the device masking VCMDb. Also provides limited conversion and attribute options.

SYNOPSIS

```
symmaskdb -h

symmaskdb -sid SymmID | -file FileName

    list database [-v][-dir all [-p all] | -dir # [-p # |all]]
        [-wwn wwn | -awwn awwn | -iscsi iscsi | -aiscsi aiscsi]

    list devs -wwn wwn | -awwn awwn | -iscsi iscsi | -aiscsi aiscsi

symmaskdb -sid SymmID [-v]

    list assignment [-v] -dev StartSymDevName:EndSymDevName
        | SymDevName | SymDevName,SymDevName...

    list no_assignment [-dir all [-p all] | -dir # [-p # |all]]

    list capacity -host Hostname

symmaskdb -sid SymmID -file FileName [-noprompt]

    restore [-skip_authentication][-vcmdb_type 4|5]

    backup

symmaskdb -sid SymmID -file FileName

    init [-vcmdb_type 3 | 4 | 5 ]

symmaskdb -sid SymmID [-noprompt]

    convert [-vcmdb_type 4 | 5 -file FileName]

    set no_direct_io | direct_io

    remove -meta_member
```

DESCRIPTION

The `symmaskdb` command performs control and monitor operations concerning the device masking database (VCMDb). The operations include:

- ◆ Lists the contents of the device masking database.
- ◆ Lists the devices assigned to an HBA in the device masking database.
- ◆ Lists the HBAs assigned to the specified devices.
- ◆ Displays the capacity of the devices assigned to a particular host.
- ◆ Restores the device masking database from a backup file stored on the host.
- ◆ Backs up the device masking database to a file on the host previously created by the `init` argument.
- ◆ Initializes the device masking database and also requires you to name a file to be created on the host so that a backup can be performed for the first time.
- ◆ Provides the ability to convert a Type 3 databases to a Type 4 or Type 5. Type 4 databases require a database device of at least 48 cylinders. Type 5 databases require a database device of at least 96 cylinders and a backup file.

- ◆ Provides the ability to block direct I/O writes to the database area. Enginuity level 5670 allows updates to the VCM database using a gatekeeper device instead of direct I/O. If your environment will be using only SYMCLI Version 5.3 (or later) and Enginuity 5670, enabling this attribute will provide additional security to your database.
- ◆ Removes meta members from the device masking database, but keep the meta heads in place.

ARGUMENTS

`backup`

Specifies a backup of the database to be copied to a given file.

`convert`

Converts the database from a Type 3 to a Type 4 or Type 5 database, or converts the database from a Type 4 to a Type 5 database.

`init`

Requests the database to be initialized.

`list`

Lists various records in the database.

`remove`

Removes the meta member devices.

`restore`

Restores the database from a given file.

`set`

Allows setting of the `[no_]direct_io` attribute.

KEYWORDS

`assignment`

Names of HBAs that are assigned in device masking VC MDB.

`capacity`

Specifies the size of the device.

`database`

Lists records within the device masking database (VC MDB). For `list` action.

`devs`

Lists devices assigned by records in the device masking database. For `list` action.

`direct_io`

Reads and writes directly from the host to the VC MDB device.

`no_assignment`

Lists devices that are mapped, but not yet assigned in the masking VC MDB.

`no_direct_io`

Blocks direct reads and writes from the host to the VC MDB device.

OPTIONS**-aiscsi**

Specifies a user-given name or an alias iSCSI name.

-awwn

Specifies a user-given name in an ASCII WWN format.

-dir

Applies a director number designation.

-file

Applies a backup file to the specified action.

-h

Provides brief, online help information.

-host

Specifies the host name.

-iscsi

Specifies the iSCSI name.

-meta_members

Specifies the meta members, other than the meta heads.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-p

Applies a port number designation.

-sid

Applies a Symmetrix array's serial number or ID.

-skip_authentication

Skips over the authentication information in a backup file and does not restore it.

-v

Provides a more detailed, verbose listing.

-vcmdb_type

Specifies the type of database. Possible values are 3, 4, and 5, as follows:

3 — supports up to 8 K devices per record and 32 fibre/32 iSCSI initiator records per port (the VCMDB device must be 24 cylinders or larger)

4 — supports up to 8 K devices per record and 64 fibre/128 iSCSI initiator records per port (the VCMDB device must be 48 cylinders or larger)

5 — supports up to 16 K devices per record and 64 fibre/128 iSCSI initiator records per port (the VCMDB device must be 96 cylinders or larger)

-wwn

Applies a World Wide Name (WWN).

PARAMETERS

#

Specific director or port number.

aiscsi

User-given name, in two parts, separated by a slash (/).

all

All directors or ports.

awwn

User-given name, in two parts, separated by a slash (/).

dev

Symmetrix device to be added or removed.

end

The end of a range of logical devices.

FileName

Name of the device masking backup file.

Hostname

The host name.

iscsi

The iSCSI name.

start

The start of a range of logical devices.

SymmID

The 12-digit ID of the Symmetrix array.

wwn

The system-generated World Wide Name.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

symmir

Performs Symmetrix BCV control operations on a device group or composite group, on a device within the group, or on pairs listed in a device file. The group must have one or more associated BCV devices.

SYNTAX

```
symmir -h

symmir -g DgName [-v] [-force] [-symforce] [-reverse] [-star]
                [-noprompt] [[-rdf] [-bcv] | [-rrbcv]] [-i Interval]
                [-c Count] [-preserveTGTLocks -lockid LockNum]
                [-preaction Script] [-postaction ScriptFile]

    establish [-full [-opt | -opt_rag | -exact] [-protbcvest] [-skip]
                [-concurrent]
                <<[LdevName [BCV pd PdevName]]>...> |
                <<[LdevName [BCV dev SymDevName]]>...> |
                <<[LdevName [BCV ld LdevName]]>...>

    restore    [-full [-exact] [-remote] [-bypass] [-not_ready]
                [-protect]
                <<[LdevName [BCV pd PdevName]]>...> |
                <<[LdevName [BCV dev SymDevName]]>...> |
                <<[LdevName [BCV ld LdevName]]>...>

    split      [-remote] [-bypass] [-not_ready] [-diff] [-protect] [-std_protect]
                [-skip] [-instant | -consistent] [-both_sides]
                [-vxfs <MountPoint...> |
                -ppath <STDDEVS | PowerPathPdevName...> |
                -rdb -dbtype DbType [-db DbName] ] | -consistent ]
                <<[LdevName [BCV pd PdevName]]>...> |
                <<[LdevName [BCV dev SymDevName]]>...> |
                <<[LdevName [BCV ld LdevName]]>...>

symmir -g DgName [[-rdf] [-bcv] | [-rrbcv]]
                [-offline] [-i Interval] [-c Count]

    query      [[-attach] [-multi] [-protect] [-protbcvest]
                [-bg [-percent]]] | [-summary]
                [LdevName [LdevName...]]

    verify      [-synched|-restored [-protect] | -split
                [-bg] | -syncinprog | -restinprog [-protect] ]
                [-concurrent] [-force]
                <<[LdevName [BCV pd PdevName]]>...>
                <<[LdevName [BCV dev SymDevName]]>...>
                <<[LdevName [BCV ld LdevName]]>...>

                -bcv_mirrors [-ready | -syncinprog | -restinprog] [-concurrent]
                <<[LdevName [BCV pd PdevName]]>...> |
                <<[LdevName [BCV dev SymDevName]]>...> |
                <<[LdevName [BCV ld LdevName]]>...>

symmir -g DgName [-v] [[-rdf] [-bcv] | [-rrbcv]]
                [-i Interval] [-c Count] [-noprompt]

    attach      <<[LdevName BCV pd PdevName]>...> |
                <<[LdevName BCV dev SymDevName]>...> |
                <<[LdevName BCV ld LdevName]>...>

    detach      <<[LdevName [BCV pd PdevName]]>...> |
                <<[LdevName [BCV dev SymDevName]]>...> |
                <<[LdevName [BCV ld LdevName]]>...>
```

```

cancel      [-force] [-skip] [-star]
            <<[LdevName BCV pd PdevName]>...> |
            <<[LdevName BCV dev SymDevName]>...> |
            <<[LdevName BCV ld LdevName]>...>

symmir -cg CgName [-v] [-force] [-symforce] [-reverse] [-noprompt]
            [[-rdf] [-bcv] | [-rrbcv]] [-i Interval] [-c Count] [-star]
            [-preaction ScriptFile] [-postaction ScriptFile]
            [-sid SymmID | -rdfig <SymmID:<GrpNum[,GrpNum,...] | all>[,...] |
            name:Name[,Name,...]>]]

establish [-full [-opt | -opt_rag | -exact] [-protbcvest] [-skip][-concurrent]
            <<[LdevName [BCV pd PdevName]]>...> |
            <<[LdevName [BCV dev SymDevName]]>...> |
            <<[LdevName [BCV ld LdevName]]>...>

restore     [-full [-exact] [-remote] [-bypass] [-not_ready]
            [-protect]
            <<[LdevName [BCV pd PdevName]]>...> |
            <<[LdevName [BCV dev SymDevName]]>...> |
            <<[LdevName [BCV ld LdevName]]>...>

split       [-remote] [-bypass] [-not_ready] [-diff] [-protect]
            [-std_protect] [-skip] [-instant [-both_sides] [-vxfs <MountPoint...> |
            -ppath <STDDEVS | PowerPathPdevName...> |
            -rdb -dbtype DbType [-db DbName] ] | -consistent]
            <<[LdevName [BCV pd PdevName]]>...> |
            <<[LdevName [BCV dev SymDevName]]>...> |
            <<[LdevName [BCV ld LdevName]]>...>

symmir -cg CgName [[-rdf] [-bcv] | [-rrbcv]] [-offline] [-i Interval] [-c Count]
            [-sid SymmID | -rdfig <SymmID:<GrpNum[,GrpNum,...] | all>[,...] |
            name:Name[,Name,...]>]]

query       [[-attach] [-multi] [-protect] [-protbcvest]
            [-bg [-percent]]] | [-summary] [LdevName [LdevName...]]

verify      [-synched|-restored [-protect] | -split [-bg]|-syncinprog|
            -restinprog [-protect] ] [-concurrent] [-force]
            <<[LdevName [BCV pd PdevName]]>...> |
            <<[LdevName [BCV dev SymDevName]]>...> |
            <<[LdevName [BCV ld LdevName]]>...>
            -bcv_mirrors [-ready | -syncinprog | -restinprog]
            <<[LdevName [BCV pd PdevName]]>...> |
            <<[LdevName [BCV dev SymDevName]]>...> |
            <<[LdevName [BCV ld LdevName]]>...>

symmir -cg CgName [-v] [[-rdf] [-bcv] | [-rrbcv]] [-i Interval] [-c Count] [-noprompt]
            [-sid SymmID | -rdfig <SymmID:<GrpNum[,GrpNum,...] | all>[,...] |
            name:Name[,Name,...]>]]

attach      <<[LdevName BCV pd PdevName]>...> |
            <<[LdevName BCV dev SymDevName]>...> |
            <<[LdevName BCV ld LdevName]>...>

cancel      [-force] [-skip] [-star]
            <<[LdevName BCV pd PdevName]>...> |
            <<[LdevName BCV dev SymDevName]>...> |
            <<[LdevName BCV ld LdevName]>...>

detach      [-sid SymmID]
            <<[LdevName [BCV pd PdevName]]>...>
            <<[LdevName [BCV dev SymDevName]]>...>
            <<[LdevName [BCV ld LdevName]]>...>

```



```

symmir -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
    [-v] [-force] [-symforce] [-reverse] [-noprompt]
    [-i Interval] [-c Count] [-star] [-preaction ScriptFile] [-postaction
ScriptFile]
    [-preserveTGTLocks -lockid LockNum]

    establish [-full] [-protbcvest] [-skip]

    restore    [-full] [-bypass] [-not_ready] [-protect]

    split      [-diff] [-bypass] [-not_ready] [-skip] [-protect] [-std_protect]
    [-instant [-vxfs <MountPoint...> | -ppath <STDDEVS |
    PowerPathPdevName...>] -rdb -dbtype DbType [-db DbName]] | -consistent]

symmir -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
    [-force] [-i Interval] [-c Count]

    query      [[-attach] [-multi] [-protect] [-protbcvest]
    [-bg [-percent]]] | [-summary]

    verify      [ -synched | -restored [-protect] | -split [-bg]
    | -syncinprog | -restinprog [-protect] ] [-concurrent]

    verify      -bcv_mirrors [-ready | -syncinprog | -restinprog]

symmir -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
    [-v] [-noprompt] [-i Interval] [-c Count]

    attach

    detach

    cancel [-skip] [-star]

```

DESCRIPTION The `symmir` command performs mirroring operations on a device group, a composite group, a list of devices, or on a device within a device group or composite group. These operations include establishing (mirroring) the device with a BCV device, splitting the device pair, restoring the device from the BCV device, and querying the state of the device pair.

Both the establish and restore operations can be done fully (entire copy) or incrementally (only changed tracks are synchronized). By default, if the `-full` option is not specified, an incremental establish or restore is attempted.

Note: You cannot perform an incremental establish or restore if the BCV pair state is Never Established.

Before a BCV device can be established with a standard device, the BCV device must have been previously associated with the device group and the BCV device must be of the same size as the standard device.

All these operations can be done on a group basis, individual device basis, or list basis (for more than one device with one command). For device lists, you can either concatenate the list of standard device names (*LdevNames*) and/or BCV device names within the command, or:

On UNIX only, specify a specific import file that contains the device names. For example, to perform an establish operation on multiple device pairs listed in a file, use the form:

```
symmir -g DgName establish -nop 'cat LdevListFile'
```

The file, read by this UNIX command, must have logical device names with one device or pair of names per line.

For example, the following is the file format for listing BCV device pairs:

```
DEV001 bcv ld BCV001
DEV002 bcv ld BCV002
```

ARGUMENTS**attach**

Attaches a BCV to a standard device to become the preferred BCV device to be paired with the standard device when a full establish or full restore action is issued.

cancel

Cancels the existing internal DeltaMark session between the specified standard and BCV device(s). Once the DeltaMark session is cancelled, the corresponding BCV device goes into the SplitNoInc state, and the BCV pair can no longer be incrementally established or restored. Cancel can also be used to remove any one of the multi-BCV devices from a multi-BCV set.

detach

Detaches a BCV device from the standard device and disassociates (unmarks) this pair as the preferred pair when full establish and restore operations occur.

establish

Establishes (mirrors) one or all standard devices in a device group with one or more BCV devices that are associated with the group. Depending upon whether the establish operation is full or incremental, all or only the changed tracks are internally copied to the BCV device.

While the operation is in progress, the state of the device pair is SyncInProgress. When the operation completes, the state of the device pair changes to Synchronized.

The establish action may return the following unique return code:

Code #	Code Symbol
47	CLI_C_WONT_REVERSE_SPLIT
51	CLI_C_PAIED_WITH_A_DRV

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for more information.

restore

Restores one or all standard devices in a device group from one or more BCV devices that are associated with the group. Depending upon whether the restore operation is full or incremental, all or only the changed tracks are internally copied to the standard device.

While the operation is in progress, the state of the device pair is RestInProgress. When the operation completes, the state changes to Restored, except for Symmetrix arrays using Enginuity 5x63, the state changes to Synchronized.

The restore action may return the following unique return code:

Code #	Code Symbol
20	CLI_C_WP_TRACKS_IN_CACHE
47	CLI_C_WONT_REVERSE_SPLIT
51	CLI_C_PAIED_WITH_A_DRV

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for more information.

split

Splits one or all BCV devices from the mirror pair(s) in a device group.

While the operation is in progress, the state of the device pair is SplitInProgress. When the operation completes, the state changes to Split.

query

Returns information about the state of mirroring of one or all device pairs in a device group.

verify

Verifies whether one or all device pairs in a device group are in the Synchronized, Restored, Split, SyncInProgress, or RestInProgress states.

The verify action returns the following unique return codes if the verify criteria was not met:

Code #	Code Symbol
4	CLI_C_NOT_ALL_SYNCHRONIZED
5	CLI_C_NONE_SYNCHRONIZED
10	CLI_C_NOT_ALL_SYNCED
11	CLI_C_NONE_SYNCED
12	CLI_C_NOT_ALL_RESTORED
13	CLI_C_NONE_RESTORED
25	CLI_C_NOT_ALL_SPLIT
26	CLI_C_NONE_SPLIT
27	CLI_C_NOT_ALL_SYNCINPROG
28	CLI_C_NONE_SYNCINPROG
29	CLI_C_NOT_ALL_RESTINPROG
30	CLI_C_NONE_RESTINPROG

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for more information.

OPTIONS**-attach**

Alters the query to display BCV attachment information for the standard device(s) in the device group.

-bcv

Indicates that the BCV control operation is targeted at the remote standard mirror of a host-connected BCV SRDF device and the SRDF-connected BCV device that is associated with the device group. This option is used in conjunction with the `-rdf` option.

BCV

Specifies a BCV target device.

-bcv_mirrors

Verifies that the mirrors of the BCV device(s) are in the indicated state. The default verification is to verify that the mirrors are in the synchronized and ready states. Alternatively, when the `-syncinprog` or `-restinprog` flag is also specified, then the mirrors of the BCV device(s) are verified against the state that corresponds to the specified flag. If `-ready` is specified, then the state of the mirrors is verified to be synchronized as well as ready to the host.

-bg

Applies to a `query` or `verify` operation. For `query` operations, shows the BCV pairs that are still in the background split mode. For `verify` operations with the `-split` option, verifies that the BCV pair(s) are in the Split state after completing a background split.

`-both_sides`

For SRDF environments, performs an instant consistent split to both locally and remotely connected BCV devices within a specified RDF group.

`-bypass`

Bypasses device reservations by other hosts.

`-c`

Specifies the number (count) of times to display or to acquire an exclusive lock on the Symmetrix host database. Can also be used to wait for Symmetrix device and gatekeeper locks. If this option is not specified and an interval (`-i`) is specified, the program will loop continuously to display or to start the mirroring operation.

`-cg`

Applies a composite group name to the command.

`-concurrent`

With `verify` action, verifies the STD device and the two most recent BCVs. With `establish`, establishes a second available BCV.

`-consistent`

Causes the STD devices being managed to be consistently split. Requires a TimeFinder/CG license and cannot be combined with the `-instant` option.

`-db`

Specifies the relational database name (not required for Oracle) used with consistent instant splits.

`-dbtype`

Specifies a relational database type used with a consistent instant split (refer to parameter *DbType*).

`dev`

Indicates a Symmetrix device name.

`-diff`

Indicates that the split operation should initiate a differential data copy from the first mirror set member to the rest of the BCV mirror set members when the BCV pair split is done. For Enginuity 5x65 only, as the differential split is now the default mode.

`-exact`

Applies to the full establish or restore operation that causes the standard and BCV device pairing algorithm to select the pairs according to the exact order in which they were added to the specified device group. This option overrides all other pairing algorithms.

`-file`

Applies a device file to the command. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the standard first, a space, and the BCV last within each line entry). Device files can include comment lines that begin with the pound sign (#). Using `-f` is synonymous with `-file`.

`-force`

Attempts to force the operation even though one or more paired devices in the device group may not be in the normal, expected state(s) or the specified operation.

`-full`

Requests a full establish or restore operation. The default, if the `-full` option is not specified, is an incremental establish.

`-g`

Applies a device group name to the command.

`-h`

Provides brief, online help information.

`-i`

Specifies the repeat interval, in seconds, to display or to acquire an exclusive lock on the Symmetrix host database. The default interval is 10 seconds. The minimum interval is 5 seconds. Can also be used to wait for Symmetrix device and gatekeeper locks.

When used with the `verify` action, the number of seconds specified, indicates the interval of time (in seconds) to repeat the verify command(s) before the verify action finds and reports the pairs fully synchronized.

`-instant`

Improves the performance of a typical split operation by performing a quick foreground split. Cannot be combined with the `-consistent` option.

`ld`

Indicates a logical device name.

`-lockid`

As a companion option with `-preservetgtlocks`, specifies the lock holder ID for preserving the target locks on the control operation. Lock number ID must be provided as a hexadecimal number.

`-multi`

Applies to a `query` operation in a multi-BCV or concurrent BCV environment to show all BCVs that can be incrementally established/restored to the standard device. It lists the devices in chronological order.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-not_ready`

For `restore` and `split` operations, this option sets the target device(s) as Not Ready. Upon completion of a `split`, each BCV device is set Not Ready. Upon initiation of a `restore`, each standard device is set Not Ready.

`-offline`

Specifies that the Symmetrix data connection is offline from the host in-memory database.

`-opt`

Applies to the full establish operation that optimizes the standard/BCV pair selection to achieve the highest copy speed between them. (Basically, the device pair selection is such that they are not connected to the same disk adapters to distribute the I/O.) This option overrides all other pairing algorithms, which allows devices to be assigned as BCV pairs

regardless of previous pair assignment since previously paired standard devices are normally paired with the same BCV devices. For remote BCV operations, use the `-opt_rag` option.

`-opt_rag`

The RA group optimize (`-opt_rag`) option applies to the full establish operation for remote device optimization to distribute the I/O load in that the remote adapters are not connected to the same devices of the selected pair. Requires that the `-rdf` option also be specified.

`pd`

Indicates a physical device name.

`-percent`

For a `query` action in companion with the `-bg` option, shows the percentage of progress in background split operation.

`-postaction`

Applies a script as a post action to the specified operation.

`-ppath`

Applies a list of one or more PowerPath devices used with a consistent instant split. As an alternative to specific PowerPath device names, you can specify `STDDEVS` that targets all standard devices in the split action.

`-preaction`

Applies a script as a pre-action to the specified operation.

`-preserveTGTLocks`

Causes the action not to take out device locks on the target devices. The target devices must already be locked by the same lock holder ID. Requires the `-lockid` option.

`-protbcvest`

Applicable only with an `establish` or `query` command. Applies to two-way mirrored BCV devices. Moves all mirrors of the BCV device to join the mirrors of the standard device. For `query` actions, displays whether or not BCVs were established with the `-protbcvest` flag.

`-protect`

Indicates that the BCV should be write-protected before initiating a restore operation. Must be used with the `split` command when splitting devices that were restored protected. When used with the `query` argument, displays whether the restored BCVs were protected. When used with the `verify` argument and the `-restored` or `-restinprog` options, verifies that the restore operation has completed. You can use the `-i` and `-c` options to repeat the command until the restore can be protected.

`-rdb`

For consistent split actions, freezes all the devices of the specified database just before the instant split is performed, and thaws them as the foreground split completes.

The host physical devices where the database files reside must be PowerPath devices. For information about required database environment variables, refer to [“Environment variables” on page 152](#).

-rdf

Indicates that the BCV control operation is targeted at the remote mirror of the local standard SRDF device(s) and the remotely attached BCV device(s).

-rdfg

Causes the control to target a specific RA group number when a device is a concurrent RDF device. For composite groups, the format is SID:GRP,SID:GRP. There can be multiple comma separated combinations.

-ready

Verifies that all of the BCV mirrors are ready to the host. This option can only be specified with `-bcv_mirrors`. This option is useful after a reverse split to indicate the data on the BCV is available.

-remote

Functions as a remote flag. Applies only for a split of a BCV RDF1 device, or for a restore from a BCV to a STD RDF1 device. If this flag is specified, then the data is also propagated to the remote mirror of the RDF device and the RDF link is resumed if necessary (unless specified while in asynchronous mode; in which case, the RDF link will not be resumed). If this flag is not specified, then the default is not to propagate the data to the remote mirror of the RDF device.

Note: This flag does not allow you to restore to an R2 device.

-restored

Used with the `verify` argument to verify whether one or all BCV device pair(s) in a device group are in the Restored state.

-restinprog

Used with the `verify` argument to verify whether one or all BCV device pair(s) in a device group are in the RestInProg state.

-reverse

When applied to a split operation, initiates a reverse data copy from the fixed BCV mirror(s) to the first (moving) mirror of the BCV upon the completion of the split operation.

When applied to an establish or restore operation, requests a verification check that the BCV's fixed mirror has valid data. If at establish or restore time you anticipate a need to perform future BCV reverse split operations, you must apply a reverse establish or restore so that no invalid tracks on the fixed BCV mirror become used.

-rrbcv

Indicates that the BCV control operation is targeted at the remote mirror of the remotely attached BCV (RBCV) and the remotely attached remote BCV (RRBCV) device associated with the device group.

-sid

Applies the command to a specified Symmetrix ID. (If you set environment variable `SYMCL_SID`, this option is not required.) This option with the device filename option allows you to operate on remote BCV pairs in Symmetrix arrays beyond the first SRDF multi-hop.

`-skip`

Skips the locks on standard devices. Does not lock the standard devices if the specified standard devices are either all locked or unlocked. However, all BCV devices will remain locked.

`-split`

Used with the `verify` argument to verify whether one or all BCV device pair(s) in a device group are in the Split state.

`-star`

Indicates that the action is targeted for devices in STAR mode.

`-std_protect`

Verifies that the standard device has either mirror protection, or RAID-5 protection prior to the split.

`-summary`

For a query action, provides a collapsed listing, summarizing just the current device states.

`-synched`

Used with the `verify` argument to verify whether one or all BCV device pair(s) in a device group are in the Synchronized state.

`-syncinprog`

Used with the `verify` argument to verify whether one or all BCV device pair(s) in a device group are in the SyncInProgress state.

`-symforce`

Requests that the Symmetrix array force the operation to occur, which overrides instances where they are normally rejected.



CAUTION

Use care when applying this option as data can be lost or corrupted.

With `-symforce`, a split command will execute on a BCV pair, even when they are in a SyncInProgress or RestInProgress state. During the execution of an `establish` or `restore` command, `-symforce` will inhibit the verification of valid tracks on the device at the source.

`-v`

Provides a more detailed, verbose output.

`-vxfs`

Specifies a list (for Solaris and HP-UX hosts only) of one or more VERITAS VxFS file system mount points for a consistent split. The file systems mounted on this host will be frozen just before the instant split is performed, and thawed as soon as the foreground split completes.

PARAMETERS

CgName

The composite group name.

DbName

The relational database name.

DbType

The relational database type. Possible values:

Oracle
 SQLServer
 IBMUDB
 Informix
 Sybase
 MVSDB2
 Exchange
 Exchange2007
 SharePoint

DgName

The device group name.

DeviceFilename

The device filename. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the standard first, a space, followed by the BCV name on each line).

GrpNum

The RDF (RA) group number.

LdevName

The logical device name of either the standard (such as DEV002) or the BCV device (such as BCV005).

LockNum

The lock ID number as a hexadecimal value.

MountPoint

File system mount point.

Name

The logical name associated with the RDF (RA) group(s).

PdevName

The physical device (host) name for the BCV device (such as /dev/rdisk/c2t0d2s2).

PowerPathPdevName

A PowerPath device name (one or more physical device names can be entered).

ScriptFile

The full pathname of the script file to be executed.

SymDevname

The Symmetrix device name, unique per Symmetrix array, for the BCV device (such as 001C).

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To create device group `ProdDB` as a Regular device group, enter:

```
symdg create ProdDB
```

To define device group `ProdDB` as the default device group, enter:

```
setenv SYMCLI_DG ProdDB
```

To add standard device `/dev/rdisk/c1t1d1s2` to device group `ProdDB` and name it `act1`, enter:

```
symld add pd c1t1d1s2 act1
```

To associate BCV device `/dev/rdisk/c2t0d2s2` to device group `ProdDB` and name it `mybcv1`, enter:

```
symbcv associate pd c2t0d2s2 mybcv1
```

To establish standard device `act1` in group `ProdDB` with a specified BCV device (associated with the group), enter:

```
symmir -full establish act1 bcv pd c2t0d2s2
```

To wait until the BCV pair is fully synchronized, polling every 30 seconds, enter:

```
symmir -i 30 verify act1
```

To split all established devices in group `ProdDB`, enter:

```
symmir split
```

To perform an incremental restore onto standard device `act1` in group `ProdDB` from its paired BCV device, enter:

```
symmir restore act1
```

To issue a full establish with one command on multiple BCV pairs in group `ProdDB`, enter:

```
symmir -g ProdDB establish -full DEV001 bcv ld BCV002  
                                DEV005 bcv ld BCV027  
                                DEV020 bcv ld BCV005
```

For UNIX only; to issue a full establish on multiple BCV pairs in group `ProdDB` that are listed in a separate file (`yourpairlist`), enter:

```
symmir -g ProdDB est -full `cat yourpairlist`
```

In this example, the imported file has the exact same device and pair listing format as shown in the previous example.

To split three device pairs in group `ProdDB`, enter:

```
symmir split DEV001 DEV005 DEV020
```

To query information about all paired devices in device group `ProdDB`, enter:

```
symmir -g ProdDB query
```

To query information about the background split progress of all paired devices within a multi-BCV or concurrent BCV environment, enter:

```
symmir -g TestGrp query -multi -bg -percent
```

You or an application script can instantly generate two synchronized copies of the standard data. To concurrently establish BCV001 and BCV002 with standard DEV001 in device group `CncGrp`, enter:

```
symmir -g CncGrp establish -full DEV001 bcv ld BCV001  
                                DEV001 bcv ld BCV002
```

symoptmz

Sets parameters that control the behavior of the Symmetrix Optimizer and displays its current status.

SYNTAX

```
symoptmz -h

symoptmz -sid SymmID
    enable
    disable
    rollback
    clear_stats
    query [-v]
    sync -version

symoptmz -sid SymmID
    list [-range <[Startdevname]:[Enddevname]>] [-n NumDevs]
    show [-parms | -swap_hist | -swap_list | -composite | -rollback_list |
    -activity_list ]
    read -log_type <RUNTIME | ERROR>[-start DateTime] [-stop DateTime]

symoptmz [-sid SymmID]
    release

symoptmz [-sid SymmID] -file CommandFile | 'redirect stdin' [-v | -noecho]
    preview
    prepare
    commit

symoptmz [-sid SymmID] [-v]
    set <sample_freq SFVal | min_samples MSVal |
        samples_per_cycle SPCVal | cycle_max_time CMTVal ...>

symoptmz [-sid SymmID] [-v]
    set [-tw_index TWIndex]
        <data_xtw | swap_xtw [-start DateTime | -stop DateTime | clear]>

symoptmz [-sid SymmID] [-v]
    set [-range <[Startdevname]:[Enddevname]>] [-n NumDevs]
        <swap_priority NONE | NORMAL | HIGH>
```

Syntax of commands allowed in <command_file>

The command file allows you to set control parameters, advanced parameters, time windows, swap lists, and swap priority.

Note: For more information on the parameters in this section, refer to the white paper, *Symmetrix Optimizer*.

◆ For setting control parameters:

```
set control_parms [start_mode=<AUTO | MANUAL>,,]
                  [swap_mode=<AUTO | USER_OK>,,]
                  [min_perf_period=PerfTime,]
                  [workload_period=WorkTime,]
                  [max_simult_swaps=MaxSwapSimult,]
                  [swap_rate=MaxSwapsDay];
```

where:

MaxSwapsDay is the maximum number of swaps allowed in a calendar day. The range is 2 to 200 swaps.

MaxSwapSimult is the maximum number of simultaneous swaps allowed. The range is 2 to 8 swaps.

PerfTime is the amount of initial samples required before Optimizer makes a recommendation.

WorkTime is the amount of workload sampling that Optimizer should maintain for analysis. The range is 1 to 672 hours.

- ◆ For setting advanced parameters:

```
set advanced_parms [max_rollback = MaxDays,]
                  [hot_spot = <TRUE | FALSE>,]
                  [phys_mirrors = <TRUE | FALSE>,]
                  [adv_parms_flag = Adv_Flag,];
```

where:

MaxDays is the max number of days for which rollback information should be kept. The range is 1 to 180 days.

Adv_Flag is reserved for future use.

- ◆ For initiating a migration:

```
migrate
dev[s] StartSymDev1[:EndSymDev1]
      [, StartSymDev2[:EndSymDev2],...]
TO disk[s] {diskN} [, {diskN},...]
[begin_at=<time_val>];
```

where:

diskN is of the form DDD,I,T:

DDD — is the director Identifier

I — is the Director Interface

T — is the Target ID

- ◆ For setting time windows:

```
set time_window id=<tw_id>,
                type=<SWAP | PERF>,
                flag=<INCLUDE | EXCLUDE>,
                period=<ONCE | WEEKLY | WEEKLY_BY_DAY>,
                starting=DateTime, ending=DateTime,
                [days=DayList, start_time=<hh:mm>,
                end_time=<hh:mm>];
```

where:

DateTime (your 24-hr local time) is in the form of MMDDYYYY:HHMMSS.

DayList is any comma-separated combination of MON, TUE, WED, THU, FRI, SAT, or SUN. For the case of WEEKLY, *DayList* should also include one of the following: MON_START, TUE_START, WED_START, THU_START, FRI_START, SAT_START, or SUN_START. Each instance of *_START represents the corresponding day of the week when the time window starts.

When setting time windows, note that the time windows defined in a single command file are treated as a set, and replace the current time window definitions in the Optimizer. They are not treated as additions to the current definitions. Swap time windows are treated as one set and Performance time windows are treated as another set.

- ◆ For clearing time windows:

```
clear time_window type=<SWAP | PERF>;
```

- ◆ For setting manual swap lists:

```
set swap_list Hyper1 with Hyper2
    [, Hyper3 with Hyper4,... ]
    [begin_at=DateTime];
```

where:

DateTime is in the form MMDDYYYY:HHMMSS.

HyperN is in the form DDD,I,T,HH:

DDD — is the director identifier

I — is the director interface

T — is the target

HH — is the hyper number

- ◆ For managing swap lists:

```
set swap <APPROVE | DECLINE>
    [begin_at=DateTime,]
    TIMESTAMP=DateTime
    [, ROLLBACK];
```

where:

DateTime is in the form MMDDYYYY:HHMMSS.

- ◆ For setting swap priority:

```
set swap_priority TO <NO_SWAP | NORMAL | HIGH> for
    dev SymDevStart[:SymDevEnd];
```

- ◆ For setting advanced parameters:

```
set advanced_parms [max_rollback = <max_days>,]
    [hot_spot = <TRUE | FALSE>,]
    [phys_mirrors = <TRUE | FALSE>,]
    [adv_parms_flag = <adv_flag>];
```

DESCRIPTION

The `symoptmz` command displays and sets the values of the parameters that control the behavior of the Symmetrix Optimizer.

Note: Swapping a Snap target device is not allowed.

The `query` option displays the current status of the Optimizer. If you specify `-v` additional information is displayed about the Optimizer version and any open Optimizer API sessions.

The `show` option displays detailed information about the values of control parameters and optionally displays time windows, swap lists, swap history, and composite time windows of the Optimizer.

The `enable` and `disable` options enable and disable Optimizer algorithm processing, and the `clear_stats` option clears all the statistics.

The `rollback` option allows you to rollback a Symmetrix configuration to that of a previous point-in-time.

The `read` option displays the contents of log files that are read from the Optimizer.

Each time `symoptmz` is run it starts an Optimizer API session, and closes this session just before exiting. Whenever an action updates Optimizer, `symoptmz` automatically locks the Optimizer API and releases it just before exiting.

The `release` option forcefully releases any Optimizer session locks that were inadvertently left in place.

The `list` option displays the Optimizer-specific device attributes of Symmetrix devices.

You use a command file (`command_file`) to set any parameters or time windows. This file is then processed by `symoptmz`. Alternatively, you can use `stdin` redirection with *here documents* in UNIX shell scripts. You must terminate each command in the file with a semi-colon (;). There is no limit to the number or type of commands that can be placed in a command file. All the commands in the file are executed in a single Optimizer session. The parsing of the commands in the file is case insensitive, and the data itself is case-sensitive.

There are two arguments that analyze the command file for accuracy without actually executing the commands. Although it is not mandatory to use these arguments, if you run them one at a time you will limit the range of errors that might occur when you actually want to make changes to the Symmetrix.

The `preview` argument checks that the command file has the correct syntax. The `prepare` argument checks syntax and performs some range checks.

Finally, the `commit` argument carries out the same syntax and range checks and then updates the Optimizer with the modified parameters.

EMC recommends that you run `preview` on your command files, and then correct any syntax errors. Then run `prepare` and correct any out-of-range figures. Finally, run `commit`.

ARGUMENTS

`clear_stats`

Clears disk statistics maintained by the Optimizer.

`commit`

Updates the Optimizer with the changes defined in the command file.

`disable`

Disables the Optimizer algorithm processing.

`enable`

Enables the Optimizer algorithm processing.

`list`

Displays the Optimizer-specific device attributes of Symmetrix devices.

`prepare`

Carries out extra range checks on changes specified in the command file.

`preview`

Verifies the syntax of the changes specified in the command file.

`query`

Queries Optimizer and displays the current state and version information of the Optimizer. If you specify `-v`, displays further version information and open Optimizer API sessions.

`read`

Reads from Optimizer's log file.

release

Attempts to gain control of an existing Optimizer API session to abort it and release the Optimizer API lock.

rollback

Rolls back a Symmetrix configuration to that of a previous point-in-time.

set

Sets the values of the parameters that control the Optimizer algorithm behavior (Rev 1 only).

show

Shows information about the current Symmetrix Optimizer parameters.

sync

Queries the Symmetrix Optimizer itself for version information rather than relying on information in the SYMAPI database on the host.

OPTIONS

-activity_list

Displays all the swap lists and migrations currently known to Optimizer (an alias for -swap_list).

clear

Clears the specified time window entry of all data (Optimizer will now ignore the entry in its calculations).

-composite

Displays composite time windows. Composite time windows are generated by Optimizer by combining all known user-defined windows.

-cycle_max_time

Specifies the minimum time, in minutes, the Optimizer algorithm cycle should run.

-data_xtw

Specifies the time windows whose data is excluded from Optimizer calculations. (Data eXclude TimeWindow.)

-file

Specifies the name of the command file containing changes to Optimizer.

-h

Provides brief, online help information.

-log_type

Defines the type of log file to be read. The types of log files supported are: RUNTIME and ERROR.

-min_samples

Specifies the minimum number of samples to collect per algorithm cycle.

`-n`

Specifies the number of devices to list or set.

`-noecho`

Used with `preview`, `prepare`, and `commit` actions. Blocks the printing of session status and progress messages during the Optimizer change session. Cannot be used with the `-v` option.

`-parms`

Displays information about the control parameters of Symmetrix Optimizer.

`-range`

Specifies the start and end Symmetrix device names.

`-rollback_list`

Displays a list of possible rollback points.

`-sample_freq`

Specifies how often data is to be sampled during a cycle.

`-samples_per_cycle`

Specifies the number of samples to collect per algorithm cycle.

`-sid`

Specifies the Symmetrix ID to only affect the Optimizer parameters on the specified Symmetrix array.

`-start`

Indicates to read the log file entries whose time stamp is after this date/time.

`-stop`

Indicates to read the log file entries whose time stamp is before this date/time.

`-swap_hist`

Displays a history of the swaps known to Optimizer.

`-swap_list`

Displays all the swap lists and migrations currently known to Optimizer.

`-swap_priority`

Specifies the device swap priority.

`-swap_xtw`

Specifies the time windows during which Optimizer must not perform device swapping. (Swap eXclude TimeWindow)

`-tw_index`

Identifies the position of a time window entry in a time window array.

`-v`

Provides a more detailed, verbose listing.

`-version`

Shows the Symmetrix Optimizer version. The `symoptmz` command queries Optimizer for version information and caches it in the SYMAPI database. Subsequent `symoptmz` calls with `-version` would read the version information from the SYMAPI database for efficiency. If `sync` is specified with `-version`, any cached information from SYMAPI database is cleared and `symoptmz` queries Optimizer again.

PARAMETERS

CMTVal

The `cycle_max_time` value. The range is 1-65535 minutes. Use `DEF` to set the default value of 60.

DateTime

A specific date and time in this format: `mm_dd_yyyy_hh_mm`.

Enddevname

The last Symmetrix device name in a range, such as 01F.

MSVal

The minimum samples value. Range: 3-1000. Use `DEF` to set the default value of 700.

NumDevs

The number of devices to display or set.

SFVal

The sample frequency value. Use `DEF` to set the default value of 15. Range: 5-65535 minutes.

SPCValue

The samples per cycle value. Range: 2-1000. Use `DEF` to set the default value of 96.

Startdevname

The first Symmetrix device name in a range, such as 00C.

SymmID

The 12-digit ID of the Symmetrix array.

TWIndex

A time window index value. Range: 1-5.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To display the current Optimizer control parameters for a specific Symmetrix array, enter:

```
symoptmz -sid 123456789012 show -parms
```

To list the swap priorities of all Symmetrix devices that are configured in Symmetrix arrays connected to this host, enter:

```
symoptmz list
```

To set the value of a specific time window field, enter:

```
symoptmz -tw_index 2 set data_xtw start 01_01_1999_23_30 end 01_02_1999_01_00
```

To clear a specific time window field, enter:

```
symoptmz -tw_index 3 set swap_xtw clear
```

To set the values of various parameters, enter:

```
symoptmz set sample_freq 10 cycle_max_time 15 samples_per_cycle def
```

To set the swap priority of a range of Symmetrix devices, enter:

```
symoptmz -range 010:02f set swap_priority high
```

sympart

Displays partition information about a host device.

SYNTAX `sympart [-h] [-v] [-kb|-blocks|-mb]`
 `show HostDevName`

DESCRIPTION The `sympart` command displays detailed information about the geometry and layout of a host device. This includes information specific to the partitions of the device such as the partition name, type, attributes, offset into the full device, and the size of the partition.

ARGUMENTS `show`
 Shows the detailed partition for the specified host device.

OPTIONS `-blocks`
 Displays the partition offset and size information in 512-byte blocks.
 `-h`
 Provides brief, online help information.
 `-kb`
 Displays offset and size information in Kilobytes.
 `-mb`
 Displays offset and size information in Megabytes. This is the default.
 `-v`
 Provides a more detailed, verbose listing.

PARAMETERS *HostDevName*
 The physical (host) device name, such as `c2t0d2s2`.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To display partition information in kilobytes about physical device `c2t0d2s2` on a SunOS system, enter:

```
sympart -kb show c2t0d2s2
```

To display partition information in blocks about a physical device 9 on a Windows system, enter:

```
sympart -blocks show PHYSICALDRIVE9
```

sympd

Displays information about one or all Symmetrix devices that are visible to your host.

SYNTAX

```
sympd -h

sympd [-sid SymmID] [-offline] [-v]

    list [-resv]

    list [-DA <#|ALL>] [-interface <#|ALL>] [-disk <#|ALL>] [-hyper <#|ALL>]

    list [-SA <#|ALL>] [-P #] [-scsi] [-fibre] [-escon] [-ficon] [-gige]
        [-powerpath] [-vcm] [-pdevfile] [-cyl]

sympd show PdevName

sympd

    export -file FileName

    verify -file FileName [-v]
```

DESCRIPTION

The `sympd` command performs operations on a device given the device's physical name, such as `/dev/rdisk/c3t0d3s2`, listing devices by Symmetrix ID and showing device-specific information.

The `export` command stores the current list of physical device names that the host can see, as well as other information about the physical device, such as the Symmetrix ID, device number, and director/port to a file.

The `verify` command compares the current list of physical device names to the ones stored in the file previously for any differences.

ARGUMENTS

`export`

Stores the physical device information to a given file.

`list`

Lists all Symmetrix devices visible to this host.

`show`

Shows status information about a Symmetrix device that is visible to this host.

`verify`

Compares the current physical device information to that stored in a given file.

OPTIONS

`-cyl`

Lists the device capacity in cylinders in the output. The default is megabytes (MB).

`-DA`

Lists Symmetrix devices that are visible to this host and are mapped to a certain DA director number. The interface, disk, and hyper numbers can also be used to confine the list further, but default to ALL unless specified.

`-disk`

Lists Symmetrix devices that are mapped to a certain disk SCSI ID. The DA, interface, and hyper IDs can also be used to confine the list further, but default to ALL unless specified.

`-escon`

Lists devices mapped to ESCON front-end directors.

`-fibre`

Lists devices mapped to fiber front-end directors.

`-ficon`

Lists devices mapped to FICON front-end directors.

`-file`

Indicates the filename of the file to store or compare physical device information.

`-gige`

Lists devices mapped to Gig-E front-end directors.

`-h`

Provides brief, online help information.

`-hyper`

Lists Symmetrix devices that are mapped to a certain hyper ID. The DA, interface, and disk IDs can also be used to confine the list further, but default to ALL unless specified.

`-interface`

Lists Symmetrix devices that are mapped to a certain interface ID. The DA, disk, and hyper IDs can also be used to confine the list further, but default to ALL unless specified.

`-offline`

Makes the Symmetrix data connection offline from the host in-memory database for this action.

`-P`

Lists devices mapped to a specific SCSI or fibre front-end director number port. By default, all ports are selected.

`-pdevfile`

Lists device names in a format for use as `pdevfile` entries. The display output can be redirected to a `pdev` file name.

`-powerpath`

Lists host-visible EMC PowerPath connected devices and their alternate paths.

`-resv`

Lists all Symmetrix devices that are visible to this host and have SCSI device reservations.

`-SA`

Lists devices mapped to a specific SCSI or fibre front-end director number.

`-scsi`

Lists devices mapped to SCSI front-end directors (SAs).

`-sid`

Limits listing of Symmetrix devices visible to this host to devices that belong to the specified Symmetrix array.

`-v`

Provides a more detailed, verbose listing.

`-vcm`

Lists all of the device masking (or VCM) devices in the Symmetrix array.

PARAMETERS

FileName

Name of the file containing the list of devices.

PdevName

Host name for the device, such as `/dev/rdisk/c2t0d2s3`.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To list all Symmetrix devices visible to this host, enter:

```
sympd list
```

To show detailed information about a Symmetrix device, enter:

```
sympd show /dev/rdisk/c2t0d2s3
```

To list only Symmetrix devices visible to this host that are mapped to all Fibre Channel directors, port 0, enter:

```
sympd -sa all -p 0 -fibre list
```

symqos

Provides Quality of Service controls on specified devices.

SYNTAX

```
symqos -h

symqos -g DgName [-bcv|-nobcv]

    set <BCV|RDF|MIR|CLONE pace|priority Value> [LdevName]
    set LRU <#,#,#|ALL> [LdevName]
    set LRUname LruName [LdevName]
    reset LRU [LdevName]
    query [-lru]

symqos [-sid SymmID]

    list [-range <SymdevStart:SymdevEnd>] [-lru <#|ALL>]
        [-pace_range <min:max>]
    list [-range <SymdevStart:SymdevEnd>] [-lruname <LruName|ALL>]

symqos -pst -sid SymmID

    enable
    disable

symqos -pst -sid SymmID -range <SymdevStart:SymdevEnd>
    set hostio priority <Value>

symqos -pst -g DgName [-std] [-bcv]
    set hostio priority <Value>

symqos -pst
    list -sid SymmID [-range <SymdevStart:SymdevEnd>]
        [-all | -hostio_priority <Value |ALL> ]
    list -g DgName [-std] [-bcv] [-hostio_priority <Value |ALL> ]

symqos -cp -sid SymmID

    enable
    disable

symqos -cp -name <Name> -sid SymmID

    create -target <target_percent>
        -min <minimum_percent>
        -max <maximum_percent>
        -wp <write_pending_limit>
        -time <donation_time>

    modify [-target <target_percent>]
        [-min <minimum_percent>]
        [-max <maximum_percent>]
        [-wp <write_pending_limit>]
        [-time <donation_time>]

    rename -new_name <NewName>
    delete

symqos -cp -name <Name> -sid SymmID

    add dev SymDevName
    remove dev SymDevName
```

```

symqos -cp -name <Name> -sid SymmID {-range <SymdevStart:SymdevEnd> |
      -rdfg GrpNum}
      addall
      rmall

symqos -cp -name <Name> -g DgName

      add ld LdevName
      remove ld LdevName
      addall [-std] [-bcv] [-vdev]
      rmall [-std] [-bcv] [-vdev]

symqos -cp [-name <Name>]

      list -sid SymmID [-range <SymdevStart:SymdevEnd> | -rdfg GrpNum]
      list -g DgName [-std] [-bcv] [-vdev]
      list -sid SymmID -settings [-usage] [-v]

symqos -cp -sid SymmID
      list [-range <SymdevStart:SymdevEnd>] [-all]

```

DESCRIPTION This command allows you to view or change the storage copy pace (priority) levels and LRU cache assignments for a range of devices, or selected members of a device group.

The `symqos` is also used to view or change the priority service time of devices with 5772 ucode. The default device priority is 1, the highest priority.

Cache partitions can be created or modified for different device grouping in addition to the default cache partition that all devices belongs to initially with 5772 ucode.

ARGUMENTS

`add dev`

Adds a device , by Symmetrix device name, to a particular cache partition.

`add ld`

Adds a device , by logical device name, to a particular cache partition.

`addall`

Adds a range of devices to a particular cache partition.

`create`

Creates a new cache partition if there is one available.

`delete`

Deletes a cache partition that is no longer being used.

`disable`

Disables the cache partition settings or disables the device priority QoS feature for a Symmetrix array.

`enable`

Enables the cache partition settings or enables the device priority QoS feature for a Symmetrix array.

`list`

Lists the QoS copy priorities for a range of devices. Views device priority for a range of devices or a device group. Views cache partition settings for one or all partitions. Views cache partitions devices for a range of devices, an RDF group or a device group.

modify

Modifies one or more of the attributes for a given cache partition.

query

Returns the QoS copy pace (priority) levels for the specified members of a device group. Defaults to both the BCV and standard (all) devices in the group.

remove dev

Removes a device, by Symmetrix device name, from a particular cache partition.

remove ld

Removes a device, by logical device name, from a particular cache partition.

rename

Changes the name of a cache partition.

reset

Resets the QoS LRU assignment back to the default LRU.

rmall

Removes a range of devices from a particular cache partition.

set

Sets the QoS copy priorities or LRU assignment. Unless an *LdevName* is specified, it defaults to setting parameters on STD and BCV devices.

set hostio priority

Assigns host I/O priority to a range of devices or devices in a device group. For device group, if no device type flag is specified, the priority will be set for the STD devices only.

OPTIONS**-all**

Lists all Symmetrix devices, including internal devices (VAULT, etc.).

-bcv

Applies the action only to device group members that are BCV devices.

-cp

Specifies a cache partition operation.

-g

Confines the action to target devices of a specific device group.

-h

Provides brief, online help information.

-hostio_priority

Specifies a host I/O priority value range from 1 to 16. 1 is the highest, 16 is the lowest.

`-lru`

When used with the `list` action, lists the LRU cache management groups and the devices assigned to them (specify all or an LRU number). When used with `query` action, shows all the devices in the specified group and their assigned LRU numbers.

`-lruname`

When used with the `list` action, lists the device assignments to LRU cache management group by LRU name.

`-max`

Specifies the maximum cache percentage for a cache partition.

`-min`

Specifies the minimum cache percentage for a cache partition.

`-name`

Indicates a cache partition name.

`-new_name`

Indicates a new cache partition name for a rename action.

`-nobcv`

Applies the action only to device group members that are standard devices.

`-pace_range`

Sets the minimum and maximum pace values for display.

`-pst`

Specifies a priority service time operation.

`-range`

Applies the action to a range of device names.

`-rdfg`

Specifies devices that belong to the specified RDF (RA) group.

`-settings`

Lists the general cache partition configuration for the Symmetrix array.

`-sid`

Confines the action to target devices of a specific Symmetrix ID.

`-std`

Limits the devices from the device group to standard devices.

`-target`

Specifies the target cache percentage for a cache partition.

`-time`

Specifies the donation time in seconds; the time for when idle cache is made available to other cache partitions.

`-usage`

Specifies the cache partition usage.

`-v`

Provides a more detailed, verbose listing of cache partition configuration.

`-vdev`

Limits the devices from the device group to VDEV devices.

`-wp`

Specifies the write pending limit percentage for a cache partition [40-80].

PARAMETERS

DgName

The device group name.

GrpNum

The RDF (RA) group number.

LdevName

The logical device name (such as BCV001).

LRU

The least-recently-used cache management group ID list. A comma-separated list of LRU IDs.

LruName

The least-recently-used cache management group name.

Name

A name that can be ascribed to a cache partition. The name must be unique and up to 31 characters.

NewName

A new name that can be assigned to an existing cache partition.

SymDevName

The Symmetrix device name, unique per Symmetrix array, such as 01C.

SymdevEnd

The Symmetrix ending device number to define a range of devices (largest device number within the Symmetrix is the default).

SymdevStart

The Symmetrix starting device number to define a range of devices (000 is the default).

SymmID

The 12-digit ID of the Symmetrix array.

Value

An integer value. For pace setting, values are range from 0 (fastest pace) to 10 (slowest pace). For host I/O priority setting, values are range from 1 (highest priority) to 16 (lowest priority).

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To view the copy priorities for devices 10 through 20 on Symmetrix 1234, enter:

```
symqos -sid 1234 -range 10:20 list
```

To view the copy priorities for all STD and BCV devices in device group DeviceGroup, enter:

```
symqos -g DeviceGroup query
```

To assign all devices of device group DeviceGroup to LRU group 2, enter:

```
symqos -g DeviceGroup set LRU 2
```

To assign all devices of device group DeviceGroup to LRU group GROUP_2, enter:

```
symqos -g DeviceGroup set LRUname GROUP_2
```

To enable host I/O device priority feature for Symmetrix 1234, enter:

```
symqos -pst -sid 1234 enable
```

To assign all STD devices of device group DeviceGroup to host I/O priority 1, enter:

```
symqos -pst -g DeviceGroup set hostio priority 1 -std
```

To view device priorities for device 10 through 20 on Symmetrix 1234, enter:

```
symqos -pst -sid 1234 -range 10:20 list
```

To enable cache partition feature for Symmetrix 1234, enter:

```
symqos -cp -sid 1234 enable
```

To create a cache partition on Symmetrix 1234, enter:

```
symqos -cp -name TestPartition -sid 1234 -target 10 -min 5 -max 40 -wp 50 -time 10 create
```

To add device to TestPartition on Symmetrix 1234, enter:

```
symqos -cp -name TestPartition -sid 1234 add dev 00C
```

To view the setting of cache partition TestPartition, enter:

```
symqos -cp -name TestPartition list -settings
```

symrcopy

Performs remote copy control operations between two storage arrays on a collection of device pairs listed in a device file.

SYNTAX

```
symrcopy [-h]

symrcopy -file FileName [-noprompt] [-star]

    create <-push {-hot | -cold} [differential]|
           -pull> {-hot [-donor_update]|-cold}>
           [-name Name] [-copy | -precop]
           [-force_copy] [-pace Pace]

    remove

symrcopy [-file FileName | -session_name SessionName] [-v | -noprompt]
        [-force] [-star]

    activate [-vxfs <MountPoint...> |
             [-ppath <SRCDEVS | PowerPath device...> |
              [-rdb <dbtype DbType -db DbName>] | [-consistent]

    recreate [-name Name] [-pace Pace] [-precop]

    restore [-pace Pace]

    rename -name Name

    set mode <copy | nocopy | precop>

    set pace Value

    terminate [-symforce] [-all_sessions]

symrcopy [-v | -noprompt]

    set ceiling Value -sid SymmID -dir <#|ALL> [-port <#|ALL>]

symrcopy [-sid SymmID]

    list [-offline] [-detail] [-wwn]

    list ceiling -dir <#|ALL> [-port <#|ALL>]

symrcopy [-file FileName | -name SessionName]
        [-offline] [-i Interval] [-c Count] [-star]

    query [-detail | -wwn]

    verify [-createinprog | -created | -recreateinprog|
           -recreated | -copyinprog | -copyonaccess | -copyonwrite |
           -copied | -terminateinprog | -failed | -verifyinprog |
           -restored | -restinprog | -precop [-cycled]]

symrcopy [-noprompt] [-sid SymmId]

    export [-file FileName | -name SessionName]
```

DESCRIPTION

The `symrcopy` command creates, starts, terminates, and recreates a Symmetrix DMX remote copy session between devices of two arrays. A device file must be used to define devices in the copy session. One of the arrays must be a Symmetrix DMX, which acts as the controlling array.

ARGUMENTS**activate**

Starts the copying process on an existing session.

create

Defines a new session.

export

Creates the file given with all of the session information for sessions matching the *SessionName*.

list

Lists all the sessions for a given Symmetrix array or both Symmetrix arrays, when you don't specify a SymmID, and both are Symmetrix arrays.

list ceiling

Lists the maximum bandwidth percentage for a given director, port, director and port, or all directors and ports.

query

Queries for the status of sessions.

recreate

Creates an incremental session on an existing session. Only valid for sessions not created with the *-differential* and *-copy* options.

remove

Removes remote devices from a differential session in the copied state.

rename

Changes the name of the session. Can only be executed on a differential session in the Copied state.

restore

Restore copies data from the remote device of an incremental push to the control device. Restore can only be run on a differential push session in the copied state.

set ceiling

Sets the maximum allowed bandwidth percentage for a given director, port, director and port or all directors and ports. Acceptable values are 0-100 or NONE to shut the ceiling function off.

set mode

While in the CopyInProg state, allows the session to be changed to nocopy, causing the session state to change to CopyOnAccess if the session was created with the pull option, or to CopyOnWrite if the session was created with the push option.

While in the CopyOnAccess or CopyOnWrite state, allows the session to be changed to Copy, causing the session state to be changed to CopyInProg.

Allows the session mode to be changed to precopy (while in the Created or Recreated state), causing the session state to change to Precopy.

`set pace`

While in the CopyOnProg state, allows the session pace to be changed to a value from 0 to 9, where 0 is the fastest pace, and 9 is the slowest pace.

`terminate`

Terminates a session and removes it from the Symmetrix array.

`verify`

Verifies that a session is in a specified state.

The verify action returns the following unique return codes if the verify criteria was not met:

Code #	Code Symbol
209	CLI_C_NOT_ALL_VERIFIED Some but not all of the devices are in the specified state.
210	CLI_C_NONE_VERIFIED None of the devices are in the specified state.

OPTIONS

`-all_sessions`

Terminates all sessions associated with the control device; use with `terminate`.

`-c`

Runs the specified query this many times. (Defaults to forever if `-i` is specified.)

`-cold`

Any directors that are mapped to the local device and can reach the targets may be used. Therefore, the source devices must be set to User Not Ready.

Also, on a push, there may be up to 16 targets.

`-consistent`

Causes the source and target pairs to be consistently copied.

`-copy`

Used with `create`. Causes the device copy to take place in the background. Normally the copying of tracks is not completed unless all tracks have been accessed during a pull, or all tracks have been written during a push.

After the operation is executed, the state of the device pair is CopyInProg. If all of the tracks are eventually moved to the target device, the state changes to Copied.

`-detail`

A more detail list or query. May not fit in some displays.

`-differential`

Used with the `-copy` option when creating a copy session, so that the session can later be recreated for a differential (incremental) copy.

`-dir`

Used with `list` and `set ceiling`. Sets the director number on which to list or set the ceiling.

-donor_update

Causes data written to the control device during a hot pull to be written to the remote device as well.

-file

Specifies a file that contains device pairs for the `symrcopy` command. A device pair is a control device and a remote device.

Note that the data flows from the control to the remote on a `-push`, but on a `-pull`, data flows from the remote to the control.

Control and remote devices may be specified as LUN World Wide Names or Symmetrix or CLARiiON device names.

Valid tags for the file are `symdev`, `clardev`, and `wwn`.

Only use white space to separate control and remote.

Lines that start with a '#' are ignored. Control devices are always in the left hand column, and remote devices are always in the right.

The usual file format will be:

```
"symdev=" <SymmID: SymDevName> " wwn=" <LUN WWN>
...
...
```

To specify more than one target per source device, include more records, indicating the new remote while duplicating the source device. Valid only for `-push -cold`.

-force

Attempts to force the operation even though one or more paired devices in the device file may not be in the normal, expected state(s) for the specified operation.

-force_copy

Attempts to force a create operation, even though one or more paired devices in the device file may not be large enough to contain the whole extents of the control device on a push, or the whole extents on the remote device for a pull.

If the operation is a pull, and the control device is too small, the session will be created so that it will only copy the total number of blocks that will fit into the control device.

If the operation is a push, and the remote device is too small, the session will be created so that it will only copy the total number of blocks that will fit into the remote device, if it is visible to the controlling host.

-h

Provides brief, online help information.

-hot

All directors that are mapped to the local device must be able to reach the targets. The source devices may be Read Write. Also, on a push, there may be only 1 target.

-i

Runs the specified query repeatedly with this many seconds between iterations. (Defaults 10 seconds if `-c` is used; 5 seconds is the minimum.)

`-name`

Indicates a name when creating or recreating a session.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-offline`

Used with `list` or `query` action to not query the Symmetrix for updated session information. Instead it relies on information in the database.

`-pace`

Sets the pace value used for the session; use with `create` and `recreate`.

`-port`

Sets the port number on which to list or set the ceiling. For `list` and `set ceiling`.

`-ppath`

Lists one or more PowerPath devices for which I/O is to be suspended just before the `activate` is performed and resumed as soon as the `activate` completes. As an alternative to the `list`, you can use the keyword `SRCDEVS`, which will specify to use the path names from the standard devices being controlled.

`-precopy`

Begins copying data immediately in the background at `create` or `recreate` time but without taking a point in time image of the device. Only available for hot push sessions.

`-pull`

If the session is created with the `-pull` option, when activated it will pull data from the remote to the control device.

`-push`

If the session is created with the `-push` option, when activated it will push data from the control to the remote.

`-rdb`

Freezes the log files and the specified database just before the `activate` is performed and thaws them as soon as the `activate` completes.

The host physical devices that the database log files reside must be PowerPath devices.

`-session_name`

Identifies the session (or group of sessions) you want to control.

`-star`

Allows control operations on devices that are in RDFA star mode.

`-symforce`

The Valid only for `terminate`. Used to terminate a session that has not yet finished copying.

`-v`

Provides a more detailed, verbose listing.

`-vxfs`

Lists one or more VERITAS VxFS filesystem mount points. The filesystem(s), mounted on this host, will be frozen just before the activate is performed and thawed as soon as the activate completes.

`-wwn`

Displays remote devices as world wide names; used with `list` and `query`.

PARAMETERS

Ceiling

The percentage of director/port bandwidth allowed for `symrcopy` usage.

DbName

Database name.

DbType

Database type. Oracle, SQLServer, Sybase, Informix, IBMUDB, Exchange, Exchange2007, SharePoint.

FileName

The name of the file that contains source and target pairs.

MountPoint

The file system mount point.

Name

An optional name that can be ascribed to a session.

SessionName

A previously assigned name that can be ascribed to a session.

SymdevName

A Symmetrix device name, such as, 001C.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To create a hot push session from an input file, enter:

```
symrcopy create -f input.txt -hot -push
```

To activate a session from an input file, enter:

```
symrcopy activate -f input.txt
```

To terminate a session from an input file, enter:

```
symrcopy terminate -f input.txt
```

Input File Examples

The following file will control a single session with control device 10 and remote device 34.

```
symdev=000000001234:10 symdev=000000005678:34
```

The following file will control two separate sessions with different control and remote devices.

```
symdev=000000001234:01 symdev=000000005678:42  
symdev=000000001234:02 symdev=000000005678:43
```

The following file shows a mix of `symdev` and `wwn` usage.

```
symdev=000000001234:01 symdev=000000005678:42  
symdev=000000001234:02 symdev=000000005678:43  
symdev=000000001234:03 wwn=600604800000000567853594D303434
```

The following file will control a session with one control device (01) and multiple remote devices. (41 and 42) (Note: this can only be used with `-cold` and `-push`.)

```
symdev=000000001234:01 symdev=000000005678:41  
symdev=000000001234:01 symdev=000000005678:42
```

symrdb

Displays mapping and performance information about one or more schemas, tables, files, tablespaces, or segments that are defined in a specified database instance.

SYNTAX

```
symrdb -h

symrdb [-h] [-v] -type Option [-db DbName] [-sid SymmID] [-rdfg GrpNum]
      [-R1|-R2] [-bcv|-nobcv|-vdev] [-data] [-log] [-control] [-force]

rdb2dg DgName [-dgtype REGULAR|RDF1|RDF2]

rdb2cg CgName [-cgtype RDF1|RDF2] [-apidb | -ppath | -rdf_consistency]

symrdb [-h] [-v] -type Option [-db DbName] [-sid SymmID] [-rdfg GrpNum]
      [-R1|-R2] [-bcv|-nobcv|-vdev] [-data] [-log] [-control] [-force]

tbs2dg -tbs TblSpName DgName [-dgtype REGULAR|RDF1|RDF2]

tbs2cg -tbs TblSpName CgName [-cgtype REGULAR|RDF1|RDF2]
      [-apidb | -ppath | -rdf_consistency]

symrdb list -type DbType [-db DbName] [-kb|-mb|-blocks] [-v]

      [TBS|FILE [-datalog]|SCHEMA|TABLE] [-unalloc]
      [FILE|SEG|TABLE] -tbs TblSpName
      [FILE|SEG|TABLE] -schema SchemaName

symrdb show -type DbType [-db DbName] [-kb|-mb|-blocks]
      [-expand|-collapse|-no_extents]

      [TBS TblSpName|FILE FileName|SCHEMA SchemaName|TABLE TableName]
      [-tbs TblSpName [FILE FileName|SEG SegmentName|TABLE TableName]]
      [-schema SchemaName [FILE FileName|SEG SegmentName|TABLE TableName]]

symrdb show -config [-all] [-h] [-v] -type DbType [-db DbName]

symrdb startup

      -type Oracle [ [FORCE] [RESTRICT] [PFILE=filename] [QUIET]
      [MOUNT [-db DbName] | [ [OPEN | OPEN_READ_ONLY |
      OPEN_READ_WRITE | OPEN_READ_WRITE_RECOVER | OPEN_RECOVER]
      [-db DbName] ] | NOMOUNT]] |
      [ [PFILE=FileName] MIGRATE [QUIET]]

      -type SqlServer -s instance [-c] [-f] [-m] [-n] [-x]
      [-p master_file_path] [-e error_log_path]
      [-l master_log_path] [-g virtual_addr_space]
      [-t trace_number]

      -type Sybase -f runserver_file [-m] [-t delay_time]

      -type IBMUDB [-n Node [ADDNODE -u Hostname -p Port
      [-c Computer] [-nt Netname]
      [NODE | CATALOG -tsn tablespace_node]] |
      [RESTART [-u hostname] [-p Port] [-nt Netname]] |
      [STANDALONE]]

symrdb shutdown

      -type Oracle [ABORT | IMMEDIATE | NORMAL |
      TRANSACTIONAL [LOCAL]]

      -type SqlServer -s instance
```

```
-type Sybase [-f srvname] [-w <wait|nowait>]

-type IBMUDB [FORCE | DROP] [DROP_ACT | CONTINUE | TERMINATE]
  [-f profile] [-n node]
```

```
symrdb stats -type DbType -target DBtarget [-h] [-v]
  [-i Interval] [-c Count]
```

DESCRIPTION

The `symrdb` command displays SRM information specific to a schema, table, file, tablespace or segment in a database instance. Detailed information can be obtained for tablespaces, schemas, files and tables by specifying the `-v` option with the `list` command or issuing the `show` command.

The `symrdb rdb2cg` and `rdb2dg` commands are used to convert a specified database into a composite group or device group. The `symrdb tbs2cg` and `tbs2dg` commands are used to convert a specified tablespace into a composite group or device group.

For database objects that are defined on Symmetrix devices, you can obtain logical-to-physical information about where the file, table, schema or tablespace extents are mapped on Symmetrix devices.

Note: Not all object types are supported by every RDBMS product. A segment only applies to the Oracle environment. A tablespace does not apply to Sybase.

The `symrdb startup` and `shutdown` commands allow the user to startup and shutdown the database manager instance on the client side. The supported platforms include Oracle, SQLServer, Sybase, and IBM DB2/UDB.

Note: The `startup` and `shutdown` commands do not support Informix databases.

For detailed interoperability information, please refer to E-Lab Interoperability Navigator which can be reached at <http://elabnavigator.EMC.com>.

Table 11 lists the environment variables that you can set to eliminate the repetition of arguments or options in your command line sequences. These are particularly useful when you are about to apply multiple database calls.

Table 11 Database environment variables

Variable name	Description	Default
SYMCLI_RDB_CONNECT	Specifies a user name, password, and remote service name for a user's relational database account (<i>user/password@service</i>).	None. Must be specified by user.
SYMCLI_RDB_NAME	Specifies the default relational database name (<i>DbName</i>).	NULL
SYMCLI_RDB_TYPE	Specifies a specific type (<i>DbType</i>) of database: Oracle Informix Exchange SharePoint SQLServer Sybase IBMUDB	NULL
SYMCLI_SCHEMA_NAME	Specifies a relational database schema name (<i>SchemaName</i>).	NULL
SYMCLI_TBS_NAME	Specifies a relational database tablespace name (<i>Tb/SpName</i>).	NULL

Note: SYMCLI_RDB_CONNECT must be set with your username and password for you to access the specified database with this command.

For SQL Server, the username and password are not required. In this case, the existing Windows credentials are used from the currently logged-in user. For SQL Server, the service name depends on the type of connection and MSCS configuration. For nontrusted connections, the service name is the ODBC System DSN. For trusted connections, use the SQL Server name, which is the hostname for the default instance, and the hostname/instancename for named instances. For trusted connections with SQL Server running on MSCS, use the virtual SQL Server name for the default instance, and for named instances use the VirtualSQLServerName/instancename.

For Oracle, the database user specified must have one of the following in order to run this utility:

- ◆ "Select any table" privilege (Oracle8i and earlier)
- ◆ SELECT_CATALOG_ROLE (Oracle9i and later)
- ◆ DBA role

If `list` is specified without a key word and neither `-tbs` nor `-schema` are present on the command line, the default is to list the database names. If `-db`, `-tbs`, or `-schema` are present on the command line, the default is to list the tables of the specified database, tablespace, or schema.

Given a database name, you can obtain the following:

- ◆ A list of files defined to make up the database
- ◆ A list of schemas defined within the database
- ◆ A list of tablespaces defined within the database
- ◆ A list of tables defined within the database

Given a database name and tablespace or schema name, you can obtain the following:

- ◆ A list of files that make up the tablespace or schema
- ◆ A list of segments defined within the tablespace or schema
- ◆ A list of tables defined within the tablespace or schema

If a name specified on the command line contains special shell characters, those characters must be escaped with a `\\` back slash (e.g., `$`, `'`, `\\`, etc.).

If `symrdb` is being run in client/server mode and the required RDBMS environment variables are set in the client's environment, they will be sent to the server to be used.

DB2

For more detailed information about configuration values, refer to the *Administration Guide: Performance* or the configuration parameters in the DB2 Information Center.

Sybase DB Mapping

When you run `symrdb` with a Sybase instance and the `OCS-12_0` directory is not located in the `$SYBASE` directory, you need to set `LD_LIBRARY_PATH`, `LIBPATH` or `SHLIB_PATH`, depending whether you are running on SunOS, AIX, or HP-UX. As long as `$SYBASE/OCS-12_0` is the location for the OCS libraries, the API will use this path. The caller can also set the `SYBASE_OCS` environment variable to specify the root directory for OCS.

IBM/UDB Mapping

When you call `symrdb` with an IBM DB2/UDB instance, you need to set `LD_LIBRARY_PATH`, `LIBPATH`, or `SHLIB_PATH`, depending if you are running on Solaris, AIX, or HP-UX.

Sybase, IBM/UDB, and Informix

IBM DB2/UDB, and Informix mapping are only available in the 32-bit SYMCLI kits.

ARGUMENTS

`list`

Lists all defined databases for the database instance. For Oracle, the name of the database instance is returned.

`list FILE`

Lists all defined files for a specified database instance, tablespace, or schema.

`list SCHEMA`

Lists all defined schemas for a specified database instance.

`list SEG`

Lists all defined segments for a specified tablespace or schema.

`list TABLE`

Lists all defined tables for a specified database instance, tablespace, or schema.

`list TBS`

Lists all defined tablespaces for a specified database instance.

`rdb2cg`

Translates the devices of a specified database into a composite group.

`rdb2dg`

Translates the devices of a specified database into a device group.

`shutdown -type IBMUDB`

Specifies the shutdown options for IBMUDB:

FORCE — Issues the FORCE APPLICATION (ALL) command.

DROP — Drops the node from the `db2nodes.cfg` file.

DROP_ACT — Indicates an initial call.

CONTINUE — Indicates a subsequent call. Continue processing after a prompt.

TERMINATE — Indicates a subsequent call. Terminate processing after a prompt.

profile — The name of the profile.

node — The node number.

`shutdown -type Oracle`

Specifies the shutdown options for Oracle:

ABORT — Proceeds with the fastest possible shutdown. Does not wait for calls to complete or users to disconnect.

IMMEDIATE — Does not wait for current calls to complete, prohibits further connects, and closes and dismounts the database. Finally, shuts down the instance. Does not wait for connected users to disconnect. Does not require instance recovery on next startup.

NORMAL — Waits for currently connected users to disconnect from the database, prohibits further connects, and closes and dismounts the database. Finally, shuts down the instance. Does not require instance recovery on next startup. **NORMAL** is the default option.

TRANSACTIONAL — Performs shutdown of an instance while minimizing interruption to clients. No client can start a new transaction on the instance.

LOCAL — Specifies a transactional shutdown on the local instance only.

`shutdown -type Sybase`

Specifies the shutdown options for Sybase database, where:

srvname — Specifies the logical name by which the Backup Server is known in the Server's `sys.servers` system table.

wait — Brings the server down slowly.

nowait — Shuts the server down immediately.

`shutdown -type SqlServer`

Specifies the shutdown options for SQL Server, where *instance* is the instance name to be shut down.

`show`

Shows database names, states pertaining to the connected server, status and usage of each of the databases.

`show FILE`

Shows detailed logical to physical mapping information about a file in the database instance, tablespace, or schema.

`show SCHEMA`

Shows detailed logical-to-physical mapping information about a schema in the database instance.

`show TABLE`

Shows detailed logical-to-physical mapping information about a table in a tablespace.

`show TBS`

Shows detailed logical to physical mapping information about a tablespace in the database instance.

`startup -type IBMUDB`

Specifies the startup options for DB2 databases, where:

ADDNODE — Issue the `ADD NODE` command.

RESTART — Issue the `RESTART DATABASE` command.

STANDALONE — Start the node in **STANDALONE** mode.

NODE — The containers for the temporary table spaces should be the same as those for the specified node.

CATALOG — The containers for the temporary table spaces should be the same as those for the catalog node of each database.

Profile — The name of the profile.

Node — The node number.

Hostname — The system name.

Port — The port number.

Netname — The net name.

tablespace_node — The node number from which the temporary table space definitions should be obtained.

computer — The computer name.

username/password — It is set in the environment variable SYMCLI_RDB_CONNECT. The parameters are mandatory with option ADDNODE on Windows, but is ignored on other operating systems.

```
startup -type Oracle
```

Specifies the startup options for Oracle databases, where:

FileName — To be used while starting up the instance.

DbName — The database name to mount or open. Refer to the Oracle document for the definition.

FORCE — Shuts down the current Oracle instance (if it is running) with the shutdown option ABORT, before restarting it.

RESTRICT — Allows only Oracle users with the RESTRICTED SESSION system privilege to connect to the database.

QUIET — Suppresses the display of the System Global Area information for the starting instance.

MOUNT — Mounts the database but does not open it.

OPEN — Mounts and opens database.

NOMOUNT — Causes the database not to be mounted upon instance startup.

MIGRATE — Starts the database in OPEN MIGRATE mode and sets system initialization parameters to specific values required to enable the database upgrade or downgrade scripts to run.

OPEN_RECOVER — Specifies to open the database, and that media recovery should be performed, if necessary, before starting the instance.

OPEN_READ_ONLY — Specifies READ ONLY to restrict users to read-only transaction, preventing them from generating redo logs.

OPEN_READ_WRITE — Specifies READ WRITE to open the database in read/write mode, allowing users to generate redo logs. This is the default.

OPEN_READ_WRITE_RECOVER — Specifies READ WRITE to open the database in read/write mode, and specifies that media recovery should be performed, if necessary, before starting the instance.

```
startup -type SqlServer
```

Specifies the startup options for SQL Server databases, where:

instance — Instance name to be started.

master_file_path — Master database file.

error_log_path — Error log file.

master_log_path — Master database log file.

virtual_addr_space — Amount of virtual address space in megabytes.

trace_number — Trace number.

-c — Shortens startup time.

-f — Starts an instance with minimal configuration.

-m — Starts an instance in single-user mode.

-n — Does not use the Windows application log to record SQL Server events.

-x — Disables the keeping of CPU time and cache-hit ratio statistics to allow the maximum performance.

startup -type Sybase

Specifies the startup options for Sybase databases, where:

runserver_file — The absolute path name of a runserver file used as a reference each time you restart a Sybase server.

-m — Starts the database in single-user mode.

delay_time — Estimated time to startup the Sybase server in seconds.

stats

Shows performance statistics about a specified database (type). The current supported databases are Oracle, SQL Server, Sybase, Exchange2007, and IBM DB2/UDB.

tbs2cg

Translates the devices of a specified tablespace into a composite group. Only data database files are translated.

tbs2dg

Translates the devices of a specified tablespace into a device group. Only data database files are translated.

OPTIONS

-all

Displays all the possible database configuration values, when used with -config.

-apidb

Creates the composite group only in the SYMAPI database.

-bcv

Adds BCV devices only to the target group.

-blocks

Displays size information in 512-byte blocks.

-c

Specifies the number (count) of times to display statistics. If this option is not specified and an interval (-i) is specified, statistics will display continuously.

-cgtype

Specifies the composite group type of devices to be translated.

-collapse

Collapses (if possible) the list of extents within the object (default).

-config

Displays the database configuration value.

-control

Operates on only the *control* database files. The default is all database files.

-data

Operates on only the *data* database files.

-datalog

Displays *data and log* as a separate file type item. The default is to treat *data and log* as file type *data*. This is for Sybase only.

-db

Targets a specific relational database name.

-dgtype

Specifies the device group type of devices to be translated.

-expand

Expands (if possible) the list of extents within the object.

-force

Attempts to force the operation, even though one or more devices in the volume group may already be part of another device or composite group.

-h

Provides brief, online help information.

-i

Indicates the repeat interval in seconds. The default interval is 10 seconds. The minimum interval is 5 seconds.

-kb

Displays size information in kilobytes.

-log

Operates on only the *log* database files.

-mb

Displays size information in megabytes (default).

-nobcv

Adds only standard devices to the target group. (The default behavior is to add both standard and BCV devices.)

-no_extents

Shows information about the object without the extent information.

-ppath

Creates the RDF composite group in PowerPath.

-R1

Adds R1 devices to the target device group.

-R2

Adds R2 devices to the target device group.

-rdf_consistency

Creates a composite group and allows it to be enabled for RDF consistency once devices have been added to the group.

-rdfg

Selects RDF devices that belong to the specified Symmetrix RA (RDF) group number.

-schema

Restricts the list to a schema name.

-sid

Applies a Symmetrix ID as a target for this operation.

-target

Specifies a database statistics output option.

Database type	Target metric supported
Oracle	INSTANCE SESSION FILE ALL
SqlServer	INSTANCE DATABASE OBJECT FILE ALL
Sybase	SERVER OBJECT DEVICE ALL
IBMUDB	DATABASE TABLE TABLESPACE ALL

-tbs

Restricts the list to a tablespace name.

-type

Applies a database type to the command.

Note: Statistics are not available for Informix, Exchange, and SharePoint databases.

`-unalloc`

Displays unallocated space for Sybase database files only.

`-v`

Provides a more detailed, verbose listing.

`-vdev`

Adds VDEVs (virtual devices) to the target group.

PARAMETERS

CgName

The composite group name.

DbName

A specific database name.

DbTarget

The metrics available for the specified database statistic.

DbType

The database type. Possible values are:

Oracle, SQLServer, Sybase, IBMDB2, Informix, IBMUDB, Exchange, Exchange2007, and SharePoint.

Note: Statistics are not available for Informix, Exchange, and SharePoint databases.

DgName

The device group name.

FileName

A specific database filename.

GrpNum

An RDF group number.

SchemaName

A specific database schema name.

SegmentName

A specific database segment name.

SymmID

The 12-digit ID of the Symmetrix array.

TableName

A specific database table name.

TblSpName

A specific database tablespace name.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

Before any commands are executed, variable SYMCLI_RDB_CONNECT must be set for database access. For example, to access Scott's database account on remote server acme, enter:

```
setenv SYMCLI_RDB_CONNECT \ "scott/tiger@acme"
```

To list all tables that reside in table space tbl_space1, enter:

```
symrdb -type Oracle -tbs tbl_space1 list TABLE
```

To display a detailed listing of the table name EMP that resides in schema SCOTT, enter:

```
symrdb -type Oracle -schema SCOTT show TABLE EMP
```

To display a detailed listing of the table name SYS\$TABLE that resides in tablespace tbl_space1, with the extent information in expanded mode, and in megabytes, enter:

```
symrdb -type Oracle -tbs tbl_space1 show TABLE SYS\\$TABLE -expand -mb
```

To define the database name HR as the default database name, enter:

```
setenv SYMCLI_RDB_NAME HR
```

To define the database login parameters to be user = sa, password = sa_pass, and service = local, enter:

```
setenv SYMCLI_RDB_CONNECT "sa/sa_pass@local"
```

To list all tablespaces that define database master, enter:

```
symrdb -type SQLServer -db master list TBS
```

To list all files that define database master, enter:

```
symrdb -type SQLServer -db master list FILE
```

To create a REGULAR device group named newdg with only the R1-BCV devices from the SQL Server database named master, enter:

```
symrdb -type SQLSERVER -db master rdb2dg newdg -R1 -bcv -dgtype REGULAR
```

To create a composite group named newcg with the R1 and R1-BCV devices from the Oracle table space named tbl_space1, enter:

```
symrdb -type ORACLE -tbs tbl_space1 tbs2cg newcg -cgtype RDF1 -R1
```

To start up an Oracle data manager with the mode OPEN READ ONLY, enter:

```
symrdb startup -type ORACLE OPEN_READ_ONLY
```

To shut down an Oracle data manager with the mode NORMAL, enter:

```
symrdb shutdown -type ORACLE NORMAL
```

To display statistics about a specified database Oracle every 30 seconds for one hour, enter:

```
symrdb stats -type ORACLE -i 30 -c 120 -target SESSION
```

```
H:M:S      sessionID  memory
A          B          C
```

Where:

```
A  Time of day
B  Session ID
C  memory usage per second
```

Note: All the statistics values are per second.

symrdf

Performs Symmetrix SRDF ping, control, or modify operations on a device group, composite group, device file, or on a device within a device or composite group. The group must have a type of either RDF1 or RDF2. The command lists all RDF devices, regardless if they are in a group. Performs Dynamic RDF group controls to add, modify, or remove a dynamic RDF group.

SYNTAX

```
symrdf -h
```

```
symrdf [-sid SymmID] [-i Interval] [-c Count]  
ping [-rdf]
```

```
list [pd|dev] [-v] [-R1|-R2|-both] [-rdfg GrpNum]  
      [-bcv|-nobcv] [-resv] [-offline] [-dynamic]  
      [-concurrent] [-consistency] [-rdfa] [-half_pair]  
      [-dup_pair] [-star_mode] [-star_sync_target] [-star_async_target]
```

Device Groups

```
symrdf -g DgName  
      [-v|-noecho] [-noprompt] [-force][--symforce]  
      [-bypass] [-bcv|-rbcv|-brbcv|-all] [-rdfg GrpNum] [-star]  
      [-i Interval][-c Count]  
establish [-full] [LdevName [LdevName...]]  
restore   [-full] [LdevName [LdevName...]] [-remote]  
split     [LdevName [LdevName...]]  
failover  [LdevName [LdevName...]] [-establish]  
failback  [LdevName [LdevName...]] [-remote]  
suspend   [LdevName [LdevName...]]  
resume    [LdevName [LdevName...]] [-remote]  
merge     [LdevName [LdevName...]]  
update    [-until InvalidTracks][LdevName [LdevName...]] [-remote]  
deletepair  
half_deletepair  
ready     [LdevName [LdevName...]] r1|r2  
not_ready [LdevName [LdevName...]] r1|r2  
rw_enable [LdevName [LdevName...]] r1|r2  
write_disable [LdevName [LdevName...]] r1|r2  
refresh   [LdevName [LdevName...]] r1|r2  
invalidate [LdevName [LdevName...]] r1|r2  
rw_disable [LdevName [LdevName...]] r2  
  
symrdf -g DgName [-v|-noecho] [-noprompt] [-force][--symforce]  
      [-bypass] [-bcv|-rbcv|-all] [-i Interval][-c Count] [-star]  
swap      [-refresh R1|R2]  
  
symrdf -g DgName [-bcv|-rbcv|-brbcv|-all] [-rdfg GrpNum]  
      [-offline] [-i Interval] [-c Count]  
query     [LdevName [LdevName...]] [-rdfa]  
verify    [-synchronized |-suspended [-enabled] |-susp_offline |  
          -split |-failedover |-updated |-syncinprog |-updateinprog  
          |-partitioned |-valid |-consistent [LdevName [LdevName...]]]  
  
symrdf -g DgName [-v] [-noprompt] [-bcv|-rbcv|-brbcv|-all] [-star][--force]  
      [-bypass] [-i Interval] [-c Count] [-rdfg GrpNum]  
set mode sync|semi|acp_disk|acp_wp|acp_off  
      [skew SkewVal] [LdevName [LdevName...]]  
set mode sync [-consistent]  
set mode async  
set domino on|off [LdevName [LdevName...]]  
set acp_skew SkewVal [LdevName [LdevName...]]  
set nr_if_invalid on|off [LdevName [LdevName...]]
```

Device group operations specific to SRDF/A

```

symrdf -g DgName [-v|-noecho] [-noprompt] [-force] [-symforce] [-star]
               [-bypass] [-bcv|-all] [-i Interval] [-c Count]
    enable
    disable
    failover [-immediate] [-establish]
    split    [-immediate]
    suspend  [-immediate]
    activate -rdfa_dse
    deactivate -rdfa_dse

symrdf -g DgName [-bcv|-rbcv|-brbcv|-all] [-rdfg GrpNum]
               [-offline] [-i Interval] [-c Count] [-rdfa]
    checkpoint

```

Composite Groups

```

symrdf -cg CgName [-v|-noecho] [-noprompt] [-force] [-symforce]
               [-bypass] [-i Interval] [-c Count] [-sid SymmID]
               [-bcv|-rbcv|-brbcv] [-star]
               [-rdfg sid:GrpNum,...|all,...|name:Name[,Name,...]]
    establish [-full] [LdevName [LdevName...]]
    restore   [-full] [-remote] [LdevName [LdevName...]]
    split     [LdevName [LdevName...]]
    failover  [LdevName [LdevName...]]
    failback  [-remote] [LdevName [LdevName...]]
    suspend   [LdevName [LdevName...]]
    resume    [-remote] [LdevName [LdevName...]]
    merge     [LdevName [LdevName...]]
    msc_cleanup
    update    [-until InvalidTracks] [-remote] [LdevName...]
    ready     r1|r2 [LdevName [LdevName...]]
    not_ready r1|r2 [LdevName [LdevName...]]
    rw_enable r1|r2 [LdevName [LdevName...]]
    write_disable r1|r2 [LdevName [LdevName...]]
    refresh   r1|r2 [LdevName [LdevName...]]
    invalidate r1|r2 [LdevName [LdevName...]]
    rw_disable      r2 [LdevName [LdevName...]]

symrdf -cg CgName [-offline] [-i Interval] [-c Count] [-sid SymmID]
               [-bcv|-rrbcv|-brbcv]
               [-rdfg sid:GrpNum,...|all|name:Name[,Name,...]]
    query [-detail] [LdevName [LdevName...]]
    verify [ -synchronized | -suspended [-enabled] |
            -susp_offline | -split | -failedover | -updated | -syncinprog |
            -updateinprog | -partitioned | -valid | -consistent |
            -cg_consistent] [LdevName [LdevName...]]

symrdf -cg CgName [-v] [-noprompt] [-force] [-bcv|-rbcv|-brbcv]
               [-bypass] [-i Interval] [-c Count] [-sid SymmID]
               [-rdfg sid:GrpNum,...|name:Name[,Name,...]] [-star]
    set mode sync|semi|acp_disk|acp_wp|acp_off [skew SkewVal]
           [LdevName [LdevName...]]
    set mode async
    set domino on|off [LdevName [LdevName...]]
    set acp_skew SkewVal [LdevName [LdevName...]]
    set nr_if_invalid on|off [LdevName [LdevName...]]

```

Composite Group Operations Specific to SRDF/A

```

symrdf -cg CgName [-v|-noecho] [-noprompt] [-force] [-symforce] \
               [-bcv|-rbcv|-brbcv] [-star] [-bypass] [-i Interval] \
               [-c Count] [-sid SymmID]
               [-rdfg sid:GrpNum,...|name:Name[,Name,...]] \
    failover [-immediate] [-establish]

```



```

split      [-immediate]
suspend    [-immediate]
activate   -rdfa_dse
deactivate -rdfa_dse

```

```

symrdf -cg CgName [-offline] [-i Interval] [-c Count]
checkpoint

```

Device file

```

symrdf -file Filename -sid SymmID -rdfg GrpNum [-v|-noecho] [-star]
        [-noprompt] [-force] [-symforce] [-i Interval] [-c Count] [-bypass]
establish [-full] [-remote]
restore    [-full] [-remote]
split
failover   [-establish]
failback   [-remote]
suspend
resume     [-remote]
merge
update     [-until InvalidTracks] [-remote]
createpair -type <RDF1 | RDF2> -rdfg GrpNum -establish | -restore |
        -invalidate [R1 | R2] [-g NewDg] [-remote]
deletepair
half_deletepair
swap [-refresh R1 | R2]
ready      r1 | r2
not ready   r1 | r2
rw_enable   r1 | r2
write_disable r1 | r2
refresh     r1 | r2
invalidate  r1 | r2
rw_disable  r2

symrdf -file Filename [-sid SymmID] [-rdfg GrpNum] [-offline]
        [-i Interval] [-c Count]
query [-rdfa]
verify [-synchronized | -suspended [-enabled] | -susp_offline |
        -split | -failedover | -updated | -syncinprog |
        -updateinprog | -partitioned | -valid | -consistent ]

symrdf -file Filename -sid SymmID -rdfg GrpNum [-force]
        [-v] [-noprompt] [-bypass] [-i Interval] [-c Count] [-star]
set mode semi|acp_disk|acp_wp|acp_off [skew SkewVal]
set mode sync [-consistent]
set mode async
set domino on|off
set acp_skew SkewVal
set nr_if_invalid on|off

```

Device file operations specific to SRDF/A

```

symrdf -file Filename -sid SymmID -rdfg GrpNum [-v|-noecho]
        [-noprompt] [-force] [-symforce] [-i Interval] [-c Count] [-bypass]
enable
disable
split      [-immediate]
failover   [-immediate] [-establish]
suspend    [-immediate]
activate    -rdfa_dse [-both_sides]
deactivate -rdfa_dse [-both_sides]

symrdf -file fileame -sid SymmID -rdfg GrpNum [-offline]
        [-i Interval] [-c Count]
checkpoint

```

Dynamic Groups

```
symrdf addgrp -label GrpLabel -rdfg GrpNum -sid SymmID
               -dir Dir -remote_rdfg GrpNum -remote_sid SymmID
               -remote_dir Dir [-i Interval] [-c Count] [-noprompt]
               [-link_domino] [-remote_link_domino]
               [-farpoint] [-fibre] [-gige]
               [-auto_link_recovery] [-remote_auto_link_recovery]
               [-link_limbo Secs] [-rem_link_limbo Secs]

symrdf modifygrp <-add|-remove> <-rdfg GrpNum|-label GrpLabel>
                 -sid SymmID [-dir Dir] [-remote_dir Dir] [-noprompt]
                 [-i Interval] [-c Count] [-star]

symrdf removegrp -sid SymmID <-rdfg GrpNum|-label GrpLabel> \
                 [-i Interval] [-c Count] [-noprompt] [-star]

symrdf monitor [-sid SymmID] [-i Interval] [-c Count] [-offline]
               [-percent <1-100> -action ScriptFile [-norepeat]]
               [-svp PoolName]
```

DESCRIPTION

The `symrdf` command invokes an RDF operation on a group of remotely mirrored standard devices, or on one remotely mirrored standard device. These operations include establishing (data copy from the source side to the target side), splitting the remotely mirrored pair, restoring (data copy from the target side to the source side), and querying the state of the remotely mirrored pair.

Both the `establish` and `restore` operations can be done fully (entire copy) or incrementally (only changed tracks are synchronized). By default, if the `-full` option is not specified, an incremental establish or restore is attempted.

Note: You cannot perform an establish or restore if the remote pair state is not Split or Suspended.

All these operations can be done on a device or composite group basis, individual device basis, list basis (for more than one device with one command), or device file. For device lists, you can either concatenate the list of device names (*LdevNames*) within the command, or on UNIX only, specify a specific import file that contains the device names. For example, to perform a split operation on multiple devices listed in a file, use the form:

```
symrdf -g DgName split `cat LdevListFile`
```

The file, read by this UNIX command, must have logical device names with one *LdevName* per line. A composite group that has been enabled for remote database consistency is called an RDF consistency group. With dynamic RDF group operations, dynamic RDF groups can be added, modified, and removed.

ARGUMENTS

`activate`

Activates SRDF/A DSE.

`addgrp`

Creates a Dynamic RDF group.

`checkpoint`

For SRDF/A-capable devices participating in an active SRDF/A session, the command returns to the caller when the data in the current cycle has been committed to the R2 side. All supplied devices should be in the same SRDF/A session.

createpair

Creates dynamic RDF pairs between the devices specified in the device file. The Symmetrix ID specified will be the R1 side by default, but can be the R2 side if the `-type RDF2` option is specified.

deactivate

Deactivates SRDF/A DSE.

deletepair

Deletes the dynamic RDF pairing in the specified device group and changes the device group to a regular device group.

disable

Disables consistency protection for SRDF/A-capable devices.

enable

Enables consistency protection for SRDF/A-capable devices.

establish

Resumes remote mirroring and initiates a data copy from source (R1) side to the target (R2) side. Depending on whether the establish operation is full or incremental, all or only the changed tracks are copied to the target (R2) side.

Write-disables the target devices to their local hosts. Subsequently, for each RDF pair, invalidates all or the needed tracks for the target (R2) side. Finally, a full data copy is started from the source (R1) side to target (R2) side.

Note: This action can only be executed if the standard RDF device(s) in the group have been RDF split or Suspended.

failback

Switches data processing back to the source (R1) side.

If the target (R2) is operational, write-disables the devices on the target side to their local hosts, and resumes I/O traffic on the RDF links. Then it write enables the device(s) on the source (R1) side to its/their local hosts.

failover

Switches data processing from the source (R1) to the target (R2) side.

If the source (R1) is operational, suspends I/O traffic on the RDF links and write-disables the devices on the source (R1) side to their local hosts. Then, it suspends traffic on the RDF links, and write-enables the device(s) on the target side to its/their local hosts.

half_deletepair

Deletes one-half of the designated dynamic RDF pair.

invalidate

Invalidates the source (R1) device(s) or the target (R2) device(s) so that a full copy can be initiated from the remote mirror.

list dev

Lists all RDF devices that are configured on the Symmetrix arrays attached to this host. `dev` is the default name type, which lists the devices using Symmetrix device names.

list pd

Lists all RDF devices that are visible to this host. `pd` lists the devices using physical device (host) names.

modifygrp

Modifies an existing Dynamic RDF group.

merge

Merges the device track tables between the source (R1) side and the target (R2) side for one or all devices in a device group.

monitor

Checks the total percent full of the SAVE devices currently configured in an SRDF/A DSE pool and can optionally execute a script file if a specified percentage is encountered.

msc_cleanup

Initiates an MSC cleanup operation.

not_ready

Sets the source (R1) device(s) or the target (R2) device(s) to be RDF Not Ready to their respective local host(s).

ping

Pings one or more Symmetrix arrays. By default, only the remotely connected Symmetrix arrays are pinged through the RDF links.

If the `-rdf` option is specified, an RDF-configured Symmetrix array that is locally attached is pinged via the RDF links. The default is to ping it locally via the I/O channel.

The ping action returns the following unique return codes if all or some of the targeted Symmetrix arrays were successfully pinged:

Code #	Code symbol and description
8	CLI_C_NOT_ALL_PINGED
9	CLI_C_NONE_PINGED

query

Returns information about the state of RDF mirroring of one or all device pairs in a device group.

ready

Sets the source (R1) device(s) or the target (R2) device(s) to be RDF Ready to their respective local host(s).

refresh

Marks the source (R1) device(s) or the target (R2) device(s) to refresh from the remote mirror.

removegrp

Removes a Dynamic RDF group.

restore

Resumes remote mirroring and initiates a data copy from the target (R2) side to the source (R1) side. Depends whether the establish operation is full or incremental; all or only the changed tracks are copied to the source (R1) side.

Write-disables the target devices to their local hosts. Subsequently, for each RDF pair, invalidates all or the required tracks for the source (R1) side. Finally, a data copy is started from the target (R2) side to the source (R1) side.

Note: This action can only be executed if the standard RDF devices in the group have been RDF split or suspended.

resume

Resumes I/O traffic on the RDF links for the remotely mirrored pair(s) in the group.

rw_disable

Disables the source (R1) device(s) or the target (R2) devices to their local hosts.

rw_enable

Sets the source (R1) devices or the target (R2) devices to be Read and Write enabled to the local hosts.

set acp_skew

Modifies the value of the skew factor for the set adaptive copy mode.

set domino

Sets the domino mode of one or more RDF pairs in a device group to be ON or OFF.

set link_limbo

Modifies the value of the link limbo factor for the specified RDF (RA) group.

set mode

Sets the RDF mode for one or more RDF pairs in a device group to be synchronous (*sync*), semi-synchronous (*semi*), adaptive copy - disk mode (*acp_disk*), adaptive copy - write pending mode (*acp_wp*), or turns off the adaptive copy mode (*acp_off*), and sets mode to asynchronous (*async*) for SRDF/A-capable devices.

set nr_if_invalid

Sets the Not Ready if Invalid setting to enabled or disabled (ON/OFF) for devices in the device list. When enabled for an R2 device, the device will become Not Ready if there are invalid tracks. Invalid tracks could be either remote invalids on the source (R1) side or target (R2) invalids on the source (R1) side.

split

Stops remote mirroring for the RDF pair(s) in the group. For each RDF pair, suspends I/O traffic on the RDF links and write enables the target devices to their local hosts.

Note: This action can only be executed if the remotely mirrored standard device(s) in the group are synchronized.

suspend

Suspends I/O traffic on the RDF links for the remotely mirrored pair(s) in the group.

swap

Swaps the RDF personality of the RDF device designations of a specified device group. Source R1 device(s) become target R2 device(s) and target R2 device(s) become source R1 device(s).

update

Starts an update of the source (R1) side after a failover and while the target(R2) side may still be operational to its local host(s).

verify

Verifies whether one RDF device pair or all RDF device pairs in a device group are in the Synchronized state. Optionally, it can verify whether the RDF device pair or all device pairs in a device group are in the Updated state, or in any valid RDF pair state.

The RDF verify action returns the following unique return codes if the verify criteria was not met:

Code #	Code symbol and description
4	CLI_C_NOT_ALL_SYNCHRONIZED
5	CLI_C_NONE_SYNCHRONIZED
6	CLI_C_NOT_ALL_UPDATED
7	CLI_C_NONE_UPDATED
14	CLI_C_NOT_ALL_VALID
15	CLI_C_NONE_VALID
31	CLI_C_NOT_ALL_SUSPENDED
32	CLI_C_NONE_SUSPENDED
33	CLI_C_NOT_ALL_FAILED_OVER
34	CLI_C_NONE_FAILED_OVER
35	CLI_C_NOT_ALL_UPDATEINPROG
36	CLI_C_NONE_UPDATEINPROG
37	CLI_C_NOT_ALL_PARTITIONED
38	CLI_C_NONE_PARTITIONED
39	CLI_C_NOT_ALL_ENABLED
40	CLI_C_NONE_ENABLED
41	CLI_C_NOT_ALL_SYNCHRONIZED_AND_ENABLED

Code #	Code symbol and description (continued)
42	CLI_C_NONE_SYNCHRONIZED_AND_ENABLED
43	CLI_C_NOT_ALL_SUSP_AND_ENABLED
44	CLI_C_NONE_SUSP_AND_ENABLED
45	CLI_C_NOT_ALL_SUSP_AND_OFFLINE
46	CLI_C_NONE_SUSP_AND_OFFLINE
70	CLI_C_NOT_ALL_CONSISTENT
71	CLI_C_NONE_CONSISTENT

Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

`write_disable`

Write-disables the source (R1) devices or the target (R2) devices to their local hosts.

OPTIONS

`-action`

Selects a script that should be run when the specified percent value is encountered. The full pathname to the action script needs to be specified. The first argument passed to the script is automatically set to the percent value. This option requires the `-percent` option.

`-add`

Adds supporting RDF directors to a Dynamic RDF group.

`-all`

Targets the SRDF action to all devices in the device group: standard RDF devices and locally attached BCV RDF devices.

Note: This option is only supported for device group operations and for list operations.

`-auto_link_recovery`

Enables auto-link recovery locally.

`-bcv`

Targets the SRDF action at the specified locally associated BCV device(s) that are configured as RDF Hop 1 BCV devices.

`-both`

Lists all RDF devices that are RDF1- or RDF2-capable, when used with `-dynamic`.

`-both_sides`

Targets the SRDF action at both sides of the RDF link.

`-brbcv`

Targets the SRDF action at the specified remotely associated RDF (Hop 2) BCV devices that can be paired with the remote mirrors of the local BCV devices.

`-bypass`

Bypasses any existing Symmetrix exclusive locks during the SRDF operation.

**CAUTION**

Use this option ONLY if you are SURE that no other SRDF operation is in progress in either the local and/or remote Symmetrix arrays.

-c

Specifies the number (count) of times to display or to acquire an exclusive locks on the Symmetrix host database, the local Symmetrix array, and the remote Symmetrix arrays. If this option is not specified and an interval (**-i**) is specified, the program will loop continuously to display, or until RDF control or set operation starts.

-cg

Applies a composite group name to the operation.

-cg_consistent

Verifies that the RDF enabled composite group is consistent across the entire composite group.

-concurrent

Confines the list to devices configured as concurrent RDF.

-consistency

Displays the RDF consistency state when listing RDF devices.

-consistent

Verifies that the R2 mirror of SRDF/A device pairs are in the consistent RDF pair state. When used with `set mode sync`, transition from async to sync mode will be consistent.

-detail

Displays detailed information specific to the `enable` mode for a CG.

-dir

Specifies a comma-separated list of local Symmetrix directors, such as 1a, 1b, etc.

-dup_pair

Lists devices whose partner is the same RDF personality.

-dynamic

Confines the list to just dynamic RDF devices.

-enabled

Verifies whether the RDF device pair(s) are in the Enabled Consistency state.

-establish

When used with `createpair` option, begins a full copy from the source to the target, synchronizing the dynamic RDF pairs in the device file.

When used with the `failover` option, swaps the personality of dynamic RDF pairs and initiates an incremental establish.

`-failedover`

Verifies whether the RDF device pairs are in the Failed Over state.

`-farpoint`

Uses the FarPoint communication protocol.

`-fibre`

Uses the Fibre Channel communication protocol.

`-file`

Specifies a device file for RDF operations. Device pairs are a standard device number on the specified Symmetrix ID, and a standard device on the remote Symmetrix array accessible by the specified RA group.

`-force`

Attempts to force the operation even though one or more devices in the device group may not be in the normal, expected state(s) or the specified operation.

`-full`

Requests a full establish or restore operation. If this option is not specified, an incremental establish or restore is attempted.

`-g`

Applies a device group name to the operation. For `createpair`, the device group will be created with the devices in the device file.

`-gige`

Uses the Gigabit Ethernet protocol.

`-h`

Provides brief, online help information.

`-half_pair`

Lists devices whose partner is not an RDF device.

`-i`

Specifies the repeat interval, in seconds, to display or to acquire an exclusive locks on the Symmetrix host database, the local Symmetrix array, and the remote Symmetrix arrays. The default interval is 10 seconds. The minimum interval is 5 seconds.

`-immediate`

Applies only to SRDF/A-capable devices. Causes the SRDF/A session to be dropped immediately if a failover, split, or suspend operation is requested.

`-invalidate`

Marks the (R1) device(s) or the (R2) device(s) in the list to be invalidated for a full copy when an RDF pair is created.

`-label`

Specifies the label for a Dynamic RDF group.

`-link_domino`

Enables local link domino.

`-link_limbo`

This option is for advanced users only. Specifies a link limbo period (range is 0-120 seconds). This period specifies the length of time for Enginuity to wait from the point of link-down-detection before actually updating the link status as down. If the link status is still sensed as Not Ready after the link limbo time expires, devices are then marked Not Ready to the link. Default time is 10 seconds.

`-nobcv`

Lists standard SRDF devices only (excludes RDF BCV devices).

`-noecho`

Does not echo to the screen the progress status of the RDF action.

`-noprompt`

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

`-norepeat`

Specifies that the action script should only be run once if the threshold has been met. Used with the action script option on the `monitor` command.

`-offline`

Makes the Symmetrix array data connection offline from the host in-memory database for this action.

`-partitioned`

Verifies whether the RDF device pairs are in the Partitioned state.

`-percent`

Causes the action script to be executed when the percent full argument is encountered.

`-R1`

Lists RDF1 (R1) devices only.

`-R2`

Lists RDF2 (R2) devices only.

`-rbcv`

Targets the SRDF action at the specified remotely associated RDF (Hop 2) BCV devices that can be paired with the remote mirrors of the local standard devices.

`-rdf`

Pings the specified Symmetrix array via the RDF links even though it may be also attached locally to the host.

`-rdfa`

Lists or queries only devices that are SRDF/A-capable.

`-rdfa_dse`

Indicates that the target of the operation is the SRDF/A Delta Set Extension (DSE) feature.

`-rdfg`

Applies a Symmetrix RDF (RA) group number to the command to restrict the list to just the RDF devices of an RDF group. When used with control, modify, and query actions, this option targets a specific RDF group number or ALL when devices are configured as RDF concurrent.

For composite groups, the format is comma-separated combinations `SID:GRP,SID:GRP` or a comma-separated list of predefined names in the form: `name:Name,Name,...`

`-refresh`

Marks the source R1 device(s) or the target R2 device(s) to refresh from the remote mirror after a swap operation.

`-remote`

Requests a remote data copy with the `failback`, `restore`, and `update` actions. When the concurrent link is Ready, data will also be copied to the concurrent RDF mirror. These operations require the remote data copy option for the concurrent link to be suspended.

When used with the `createpair` action, converts a dynamic R1 device to a concurrent RDF device by dynamically adding a second remote mirror.

`-remote_auto_link_recovery`

Enables auto-link recovery remotely.

`-remote_dir`

Specifies a comma-separated list of remote Symmetrix directors, such as 1a, 1b, etc.

`-remote_link_domino`

Enables link domino remotely.

`-remote_link_limbo`

This option is for advanced users only. Specifies a remote link limbo period (range is 0-120 seconds). This period specifies the length of time for Engenuity to wait from the point of remote-link-down-detection before actually updating the remote link status as down. If the remote link status is still sensed as Not Ready after the link limbo time expires, devices are then marked Not Ready to the remote link. Default time is 10 seconds.

`-remote_rdfg`

Specifies the RDF group number for a remote Symmetrix array.

`-remote_sid`

Specifies the remote Symmetrix array's unique ID.

`-remove`

Removes supporting RDF directors from a Dynamic RDF group.

`-restore`

Begins a full copy from the target to the source, synchronizing the dynamic RDF pairs in the device file.

`-resv`

Lists all Symmetrix devices that are visible to this host and that have SCSI reservations.

`-sid`

Limits listing of Symmetrix devices visible to this host to ones that belong to the specified Symmetrix array.

`-split`

Verifies whether the RDF device pairs are in the Split state.

`-star`

Specifies that the action is targeted for devices in STAR mode.

`-star_mode`

Lists devices currently in STAR mode.

`-star_async_target`

Targets the action to devices on the Async RDF leg for tracking changes between two target STAR sites.

`-star_sync_target`

Targets the action to devices on the Sync RDF leg for tracking changes between two target STAR sites.

`-suspended`

Verifies whether the RDF device pairs are in the Suspended state.

`-susp_offline`

Verifies whether the RDF device pairs are in the Suspended state and the SRDF link is Offline.

`-svp`

Specifies the SRDF/A DSE SAVE device pool name.

`-symforce`

Requests that the Symmetrix array force the operation to occur that overrides instances where they are normally rejected.



CAUTION

Use care when applying this option as data could be lost or corrupted. Use of this option is not recommended, except in an emergency.

Note: To enable the `-symforce` option for RDF use, a parameter called `SYMAPI_ALLOW_RDF_SYMFORCE` in the `options` file must be set to `TRUE`.

With `-symforce`, a `split` command will execute on an RDF pair, even when they are in a Sync in Progress or Restore in Progress state. During the execution of an `establish` or `restore` command, `-symforce` will inhibit the verification of valid tracks on the device at the source.

`-synchronized`

Verifies whether the RDF device pairs are in the Synchronized state.

`-syncinprog`

Verifies whether the RDF device pairs are in the SyncInProgress state.

`-type`

When creating RDF devices, indicates the RDF type of the devices in the Symmetrix ID specified (RDF1 or RDF2).

`-until`

Used with the `update` argument; identifies a number of invalid tracks that are allowed to build up from the active R2 local I/O before another update (R2 to R1 copy) is retrigged. This allows continuous R1 updates to occur every time the invalid track threshold is reached on the active R2 side. Note that these update sequences start with an immediate update once this command is started.

`-updated`

Verifies whether the RDF device pairs are in the R1 Updated state.

`-updateinprog`

Verifies whether the RDF device pairs are in the R1 UpdInProgress state.

`-valid`

Verifies whether the RDF device pairs are in a Valid state.

`-v`

Provides a more detailed, verbose listing.

PARAMETERS

CgName

The composite group name (user-defined and unique to this host).

DgName

The device group name.

Dir

A comma-separated list of Symmetrix directors (such as 1a, 1b, etc.).

GrpNum

The RDF (RA) group number for `-rdfg`. Possible values are *nn* | ALL. The value ALL specifies all RDF groups.

Filename

The device file name.

GrpLabel

The Dynamic RDF group label.

LdevName

The logical device name, such as DEV002.

Name

The logical name associated with the RDF (RA) groups(s).

PdevName

The hostname for the physical device, such as `/dev/rdisk/c2t0d2s3`.

R1

The operation is targeted at the local SRDF device, known as the source (R1) device.

R2

The operation is targeted at the remote SRDF device, known as the target (R2) device.

SkewVal

The skew factor for the adaptive copy mode. Possible values range from 0 to 65534 tracks. For devices larger than a 2 GB capacity drive, a value of 65,535 can be specified to target all the tracks of any given drive.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES

To create an RDF R1 device group called `prod`, enter:

```
symdg create prod -type RDF1
```

To add an RDF R1 device, `acct1`, to the device group `prod`, enter:

```
symld -g prod add dev 0006 acct1
```

To fully establish standard device `acct1` (fully copy the R1 mirror to the R2 mirror) in group `prodDB`, enter:

```
symrdf -g prodDB establish -full acct1
```

To split all standard RDF devices in group `prod`, enter:

```
symrdf -g prod split
```

To perform an incremental restore from the R2 target side to the R1 source side for the RDF pair `acct1` in group `prodDB`, enter:

```
symrdf -g prodDB restore acct1
```

To query information about all RDF standard devices in group `prodDB`, enter:

```
symrdf -g prodDB query
```

To invoke a failover operation on multiple logical RDF devices (DEV001, DEV002, DEV010, and DEV011) in group `prodDB`, enter:

```
symrdf -g prodDB failover DEV001 \  
DEV002 \  
DEV010 \  
DEV011
```

For UNIX only, to invoke a failover operation on multiple logical RDF devices in group `ProdDB` that are listed in a separate file (`yourldevlist`), enter:

```
symrdf -g ProdDB failover `cat yourldevlist`
```

In this UNIX example, the imported file has the exact same logical device name listing and format as shown in the previous example.

The following example creates an SRDF dynamic RDF pair executed from a file called `devices`. The `devices` file contains Symmetrix device names that will constitute the dynamic pairs. The local source Symmetrix is `sid 810`.

```
symrdf createpair -g ProdDB -file devices -sid 810 -rdfg 2 -invalidate r2 -nop -type RDF1
```

Communication is via RDF group 2. The `-invalidate` option indicates that the R2 devices are the targets that will be refreshed from the R1 source devices.

The device file syntax contains 2 columns. R1 devices are listed in the first column and R2 devices on the remote system are listed in the second column as follows:

```
010A  00B7
010F  00BF
0106  00C5
```

To delete the RDF created pair, enter:

```
symrdf deletepair -g ProdDB -rdfg 2
```

symrecover

Provides the user interface to the EMC SRDF Session Recovery tool.

SYNTAX

```
symrecover [-h]

symrecover [-env | -version]

symrecover start [-g DgName | -cg CgName]
                 -mode {SYNC | ASYNC} [-out <LogPath>]
                 [-options OptionFile]
```

DESCRIPTION The `symrecover` command provides the user interface to the EMC SRDF Session Recovery tool. The various compound actions perform the necessary commands, in the proper order, to allow the user to monitor and restart a single EMC SRDF/S or SRDF/A session.

This command can be run from either the R1 or the R2 side as long as the group being monitored is fully viewable from the host. Either `-g` or `-cg` must be specified.

`PATH` is a REQUIRED Environment Variable setting. The fully qualified path to the PERL binary directory that is shipped with Solutions Enabler must be added to the head of default system path. Optionally the monitor can be invoked by fully qualifying the PERL executable.

ARGUMENTS

`start`

Starts the recovery session.

OPTIONS

`-cg`

Specifies the name of the composite group to monitor.

`-env`

Displays the default option settings. All other coded options are ignored. This option is ignored if coded in the options file.

`-g`

Specifies the name of the device group to monitor.

`-h`

Provides brief, online help information.

`-mode`

Specifies the type of SRDF session to be monitored. Valid values are SYNC and ASYNC. There is no default and this option must be specified.

`-options`

Specifies the fully qualified file containing the following program options:

Double quote characters are allowed to frame the option's value but are not required. If quotes are used leading and trailing blanks are preserved in all enclosed values.

Options with no CLI value can be assigned 0 for disable and 1 for enable. Comments are allowed using the pound (#) character anywhere on the line. Blank lines are permitted. The `-g` and `-cg` options can not be placed in the options file.

Option names are case sensitive.

For example:

```
#
# Option file for cg TestCG01
#
monitor_cycle_time = 180
    # Changing monitor
    # cycle time from 300
    # (default) to 180
    # seconds
# Currently installed symcli location
symcli_dir =
C:\program files\tps\emc\symcli\bin
#
monitor_only = 1
#
```

-out

Specifies an alternate fully qualified directory location to be used for the log file. If the output directory can not be created or written to a warning message is issued and monitoring continues and messages will be displayed on the console but no messages will be written to the output log file. The default is to the log in the current working directory.

-version

This returns the installed `symrecover` version. This option is ignored if coded in the options file.

PARAMETERS

CgName

The composite group name.

DgName

The device group name.

LogPath

An alternate directory location for the log file directory. Overrides the default directory.

OptionFile

The filename and path of an internal log file if it is different from the default.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

OPTION FILE

The option file is created by the user. It should conform to the following syntax:

```
#Comment
email_server= <e_srvr_addr> /
[email_addr_target= <e_addr1, e_addr2, ..., ...>
[email_subject= <err_subject_string>]
[email_log_level= SeverityLevel]
goldcopy_type_r2= CopyType
goldcopy_bcv_r2_mir_state_startup= CopyState
goldcopy_bcv_r2_mir_state_post_restart= CopyState
goldcopy_bcv_r2_mir_resync_int= ResyncTime
goldcopy_max_wait_bcv= MaxWaitTime
log_level= SeverityLevel
monitor_cycle_time= CycTime
monitor_only=[0 | 1] |
run_once=[0 | 1] |
run_until_first_failure=[0 | 1]
rdfg <concur_def>
restart_adcopy_resync_threshold= Tracks
restart_attempt_pause= Time
```

```

restart_delay_time= Time
restart_group_on_startup
restart_max_attempts= #
restart_max_wait_adcopy_sync= Time
restart_max_wait_state_change= StateTime
restart_max_wait_warn_interval= WarnTime
restart_rdfa_min_cycle_warn_interval= CycleWarnTime
restart_rdfa_min_cycle_warn_value= WarnTime
restart_state_transmit_warn_interval= Time
restart_state_transmit_wait_time= TransWaitTime
restart_sync_type= SyncType
restart_window= Time

# End of Option File script

```

OPTION FILE ARGUMENTS

The following are the descriptions of the various option parameters available within an option file:

```
email_addr_target= <e_addr1, e_addr2, ..., ...>
```

Email notification address on errors. If any of the `email_*` options are specified, then this option must also be specified to activate email alerts. Multiple comma delimited addresses may be specified. There is no default value.

```
email_log_level= SeverityLevel
```

The severity level desired for the email alert triggering message. Possible values are:

- 0 — Off.
- 1 — Only Errors will be reported.
- 2 — Errors and Warnings will be reported.
- 3 — Errors, Warnings, and Informational messages will be reported.
- 4 — All messages will be reported including all SymCLI commands and responses.

Note: For each message that meets the particular logging level requirement, an email will be shipped with that message.

It is highly recommended that at most this be set to either a 1 or a 2.

If the required email options (`email_server` and `email_addr_target`) are not specified, then the default value is 0. If they are specified then the default value is 1.

```
email_server= <e_srvr_addr>
```

Specifies the host target email server. If any of the `email_*` options are specified then this option must also be specified to activate email alerts. There is no default value.

```
email_subject= <err_subject_string>
```

Specifies the email notification subject on errors. The default value is:
SymRecover Alert: Host [HostName] Group [DgName]

Note: The R2 BCVs need to have been paired with the R2 devices prior to use by this tool.

```
goldcopy_bcv_r2_mir_state_post_restart= CopyState
```

Following a successful SRDF/A session restart or BCV resync, specifies what state the R2 gold copy should be. Possible values are:

- establish — the devices should be left established.
- split — the devices should be split.

The default is split and this value is case insensitive.

Note: If the goldcopy type is BCV and the default state of the BCVs are establish this has been shown to exacerbate under certain conditions SRDF/A session drops.

`goldcopy_bcv_r2_mir_state_startup= CopyState`

Specifies the desired state of the R2 BCV gold copy upon routine startup. Possible values are:

- establish — the devices should be established.
- split — the devices should be split.
- none — the devices should be unchanged.

The default is none and this value is case insensitive.

Note: If the goldcopy type is BCV and the default state of the BCVs is establish this has been shown to exacerbate under certain conditions SRDF/A session drops.

`goldcopy_bcv_r2_mirror_resync_interval= ReSyncTime`

Defines the amount of time in minutes when the gold copy BCV mirror will be automatically resynchronized and then split. This action will only take place during non-error periods.

Valid values are 0, and 15 to maxint. Zero (0) indicates that the mirrors are never to be automatically synchronized outside of error producing events. The default is 0.

Note: If the goldcopy type is BCV, then the act of frequently synchronizing the R2 BCVs has been shown to exacerbate under certain conditions SRDF/A session drops.

`goldcopy_max_wait_bcv= MaxWaitTime`

Specifies the maximum length of time in seconds that during a restart the program will wait for a group finish synchronizing the standards with the BCVs.

Possible values are 0 to maxint. The default is 0 which is to wait forever.

`goldcopy_type_r2= CopyType`

Specifies the type of goldcopy to be created on the R2 side. Possible values are:

- none — no gold copy is desired. All other `goldcopy_*` options are ignored.
- bcv — a BCV gold copy on the R2 side is desired

The default is bcv and this value is case insensitive.

`log_level=`

The desired logging level. Possible values are:

- 0 — Off
- 1 — Only Errors will be reported
- 2 — Errors and Warnings will be reported
- 3 — Errors, Warnings, and Informational messages will be reported
- 4 — All messages will be reported.

The default is 3.

`monitor_cycle_time= CycleTime`

Defines the number of seconds to pause between monitor status scans. The minimum value is 30 seconds, the maximum is 3600 seconds. The default value is 300 seconds.

`monitor_only= [0 | 1]`

Specifies to only monitor the state of specified group. No recovery actions will take place. This option is not enabled by default.

Note: The `monitor_only`, `run_once`, and `run_until_first_failure` options are mutually exclusive.

`rdfg=`

Specifies the concurrent RDF definition for the group. This value is taken directly as specified and no data validation is done on it. Monitoring of concurrent RDF defined groups is only supported when `symrecover` is executed from the R1 side of the SRDF/A session.

This option is not set by default and non-concurrent RDF groups are assumed.

Note: If the group is a composite group and consistency is enabled, this must be of the "name:" format and this value is case sensitive.

`restart_adcopy_resynch_threshold= #`

Specifies the number of tracks outstanding that during recovery will trigger a switch over to SRDF/A. The default value is 30000.

`restart_attempt_pause= Time`

Inserts a specified wait time before an attempt is made to restart a failed session to allow for things to settle down. Then after the `restart_attempt_pause` is complete, `symrecover` redrives the overall monitor loop. If there is still a problem, the restart failure count is incremented and a restart is attempted.

Valid values are 30 to 3600 seconds. The default is 60 seconds.

`restart_delay= Time`

Inserts a specified wait time after an attempt is made to restart a failed session and the attempt itself fails.

Valid values are 0 (no delay, immediately restart) to maxint. The default is 30 seconds.

`restart_group_on_startup`

On `symrecover` startup, if the group being monitored is not initially in a CONSISTENT state, `symrecover` will consider that an error condition and exit. If this option is specified, `symrecover` will attempt to recover the group on startup. This option is not enabled by default.

`restart_max_attempts= #`

Specifies the maximum number of restart attempts that are performed within the `restart_window` interval. After this limit is reached the program will terminate.

The range is from 0 to maxint. The value of 0 means to infinitely attempt. The default is 5 attempts.

`restart_max_wait_adcopy_sync= Time`

Specifies the length of time in seconds that during a restart, the program will wait for a group to achieve the `restart_adcopy_resynch_threshold` number of track pending.

Valid values are 0 to maxint. The value of 0 means to infinitely wait. The default is 0.

`restart_max_wait_state_change= StateTime`

Specifies the length of time in seconds that during a restart the program will wait for a group to change to a desired state once requested.

Valid values are 0 to maxint. The value of 0 means to infinitely wait. The default is 0.

`restart_max_wait_warn_interval= WarnTime`

Specifies the length of time in seconds that during a restart while waiting for a state change to occur for a progress warning message to be displayed.

Valid values are 0 and 30 to maxint. The value of 0 means to wait forever. The default is 600 seconds.

`restart_rdfa_min_cycle_warn_interval= CycleWarnTime`

Specifies the length of time in seconds where a warning message is repetatively displayed when the RDFa minimum cycle time exceeds the `restart_rdfa_min_cycle_warn_value` parameter.

Valid values are 30 to maxint. The default is 600.

`restart_rdfa_min_cycle_warn_value= WarnTime`

Specifies the maximum value in seconds to which a trigger can occur with a warning message, indicating that the RDFa minimum cycle time has exceeded this value.

Valid values are 0 and 30 to maxint. The value of 0 means this feature is turned off. The default is 0.

`restart_state_syncinprog_wait_time= Time`

The maximum length of time in seconds that during a group syncinprog state that the a sleep is done before rechecking the group status.

Valid values are 30 to maxint. The default is 120 seconds.

`restart_state_transmit_wait_time= TransWaitTime`

Specifies the maximum length of time in seconds that during a group transmit idle state, a sleep is done before rechecking the group status.

Valid values are 30 to maxint. The default is 120 seconds.

`restart_state_transmit_warn_interval= Time`

Specifies the interval of time in seconds that while a group remains in a transmit idle state, a warning message is generated.

Possible values are 0 to maxint. The default is 300 seconds.

`restart_sync_type= SyncType`

Specifies the type of synchronization to be used following the detection of a failed SRDF/A session. Possible values are:

ADCOPY — Adaptive copy disk

SYNC — Synchronous mode

NONE — No intermediate track resynch stage will be attempted. A direct re-establish using the existing SRDF session mode will be attempted.

The default is ADCOPY.

restart_window= Time

Specifies the length of time in seconds starting with the first failure which begins the clock for counting all successive failures. Any failures that occur within this timespan are considered grouped. This window is used to determine the maximum number of restarts that are permitted per window of time.

The minimum value is 1800 seconds, the maximum is 86400 seconds. The default is 3600 seconds.

run_once= [0 | 1]

Specifies to check the status of the group once. If the group needs recovery actions perform them. Exit after one check. This option is not enabled by default. This option ignores the setting of *restart_max_attempts*.

Note: The *monitor_only*, *run_once*, and *run_until_first_failure* options are mutually exclusive.

run_until_first_failure= [0 | 1]

Specifies to monitor the group until the first failure occurs and then exit without performing any recovery action. This option is not enabled by default. This option ignores the setting of *restart_max_attempts*.

Note: The *monitor_only*, *run_once*, and *run_until_first_failure* options are mutually exclusive.

OPTION FILE PARAMETERS

#

An interger value.

Attempts

The number of restart attempts.

CopyState

Specifies the desired state of the R2 BCV gold copy.

CopyType

Specifies the type of goldcopy to be created on the R2 side.

CycleWarnTime

The time in seconds.

CycleTime

The time in seconds.

EmailAddrTgt

The email notification address for errors. If any of the email * options are specified, this option must also be specified to activate alerts.

EmailLogLevel

The severity level for the email alert.

EmailServerAddr

The email server address.

ErrSubjectString

The subject of the error notification.

MaxWaitTime

The time in seconds.

ReSyncTime

The time in minutes.

SeverityLevel

The severity level desired for the email alert triggering message.

Statetime

The time in seconds.

SyncType

The type of synchronization to be used following the detection of a failed SRDF/A session.

Time

The time in seconds.

Tracks

The number of tracks outstanding that during recovery will trigger a switch over to SRDF/A.

TransWaitTime

The time in seconds.

WarnTime

The time in seconds.

symreplicate

Performs automated consistent replication of data via BCV pairs and over SRDF links.

SYNTAX

```
symreplicate -h

start    [-g DgName | -cg CgName] -options OptionFile
         [-sid SymmID] [-log LogFile] [-noprompt]
         [-preaction ScriptFile] [-postaction ScriptFile]
         [-foreground] [-recover] [-postcycle ScriptFile]
         [-steperror ScriptFile] [-vxfs MountPoint... |
         -ppath <STDDEVS|PowerPathPdevName...> |
         -rdb -dbtype DbType [-db DbName] | -consistent]
         [-setup [-optimize | -optimize_rag | -exact]] [-recover]

setup    [-g DgName | -cg CgName] -options OptionFile
         [-sid SymmID] [-log LogFile] [-optimize | -optimize_rag | -exact]
         [-foreground] [-noprompt] [-recover]

stop     [-g DgName | -cg CgName | -log LogFile] [-noprompt]
         [-sid SymmID] [-step]

restart  [-g DgName | -cg CgName | -log LogFile] [-noprompt] [-recover]
         [-foreground] [-options OptionFile] [-recover] [-sid SymmID]

query    [-g DgName | -cg CgName | -log LogFile] [-sid SymmID]
         [-i Interval] [-c Count]

show     [-g DgName | -cg CgName | -log LogFile] [-sid SymmID]
         [-args] [-devs] [-opts] [-all]

list     [-sid SymmID] [-sort Field]

delete   [-g DgName | -cg CgName | -log LogFile] [-sid SymmID]

release  [-g DgName | -cg CgName | -log LogFile] [-sid SymmID] [-force]
stats    [-g DgName | -cg CgName | -log LogFile] [-sid SymmID]
         [-cycle] [-itrks] [-all]
```

DESCRIPTION

Following a path over SRDF links and cascading via BCVs, the `symreplicate` command performs automated incremental data copies of the standard device. By default, the replication process is performed in the background. `symreplicate` supports both single- and multi-hop SRDF configurations. You can start, stop, or restart a replicate session.

If the replicate session should unexpectedly terminate due to a system crash, you may need to manually release the locks. For more information on locks, refer to the *EMC Solutions Enabler Symmetrix Base Management CLI Product Guide*.

ARGUMENTS

`delete`

Deletes the `symreplicate` log files written to the Symmetrix file system. Requires either the `-log`, `-g` or `-cg` option.

`list`

Lists the `symreplicate` log files written to the Symmetrix file system.

`query`

Returns the status of a current replicate session.

release

Releases device locks that are still held from a terminated `symreplicate` session.

restart

Restarts a terminated replicate session at the point where it was stopped.

setup

Places all devices into the initial state, then waits you start the replication session.

show

Displays the information contained in the `symreplicate` log file. Requires either the `-log` or `-g` option.

start

Starts a new replicate session.

stats

Displays cycle time and/or invalid track statistics.

stop

Stops the existing replicate session.

OPTIONS

`-all`

Displays all available information including the arguments, devices, and options for a `show` argument in the `symreplicate` session; or invalid tracks and cycle statistics for a `stat` argument. This is the default for both arguments.

`-args`

Used with the `show` command. Displays information about the command line arguments used to begin the `symreplicate` session.

`-c`

Specifies the number (count) of times to display. If this option is not specified and an interval (`-i`) is specified, the program will loop continuously to display or to start the mirroring operation. When no interval (`-i`) is specified, it uses a default of 10 seconds.

`-cg`

Applies a composite group name to the command.

`-consistent`

Consistently splits all of the BCV pairs on the local Symmetrix array for a typical SRDF configuration, or on the Hop 1 remote Symmetrix array for a multi hop configuration. Requires a TimeFinder/CG license and Enginuity Version 5x68 or higher.

`-cycle`

Display cycle time statistics. Used with the `stats` argument only.

`-db`

Specifies the relational database name (not required for Oracle) used with consistent instant splits.

-dbtype

Specifies a relational database type used with a consistent instant split (refer to the parameter *DbType*).

-devs

Used with the `show` command. Displays devices participating in the symreplicate session.

-exact

Causes the setup to split all STDs and BCVs exactly as they appear (or associated/ added) in the group. Used only with the `setup` argument or option.

-force

Force option. Valid for a release action only.

-foreground

Makes the replicate process run in the foreground (background is the default). (Does not apply to Windows platforms.)

-g

Applies the device group name to the command.

-h

Provides brief, online help information.

-i

Specifies the interval of time (in seconds) to repeat the query commands before the action finds and reports the pairs fully synchronized. Used with the `query` action.

-itrks

Displays invalid track statistics. Used with the `stat` argument only.

-log

Specifies a log file (defined by the user) that is used internally by symreplicate.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-optimize

Causes the setup to split all pairs and perform an optimized STD-BCV pairing within the Symmetrix array. Used only with the `-setup` option.

-optimize_rag

Causes the setup to split all pairs and perform an optimized STD-BCV pairing within the Symmetrix RA groups. Used only with the `-setup` option.

-options

Specifies an option file that specifies required parameters of the replicate behavior. (Not all these parameters are optional as some are required to properly perform your replicate session.)

-opts

Displays options from the `symreplicate` options file that were used to start the `symreplicate` session. Used with the `show` command.

-postaction

Applies a script as a post-action to the instant split operation. Information about the completed cycle is provided through the following command line arguments:

P1 — Device group name

P2 — Current cycle number

P3 — Number of cycles (*NumCycles*, refer to [“symreplicate FILE PARAMETERS” on page 261.](#))

P4 — Cycle duration in seconds

Note: The `-postaction` option is not available on all platforms.

-postcycle

Specifies a script file to be performed after each replication cycle. Information about the completed cycle is provided through the following command line arguments:

P1 — Device group name

P2 — Current cycle number

P3 — Number of cycles (*NumCycles*, refer to [“symreplicate FILE PARAMETERS” on page 261.](#))

P4 — Cycle duration in seconds

Note: The `-postcycle` option is not available on all platforms.

-ppath

Applies a list of one or more PowerPath devices for which I/O is to suspend just before the instant split action is performed and resumed (as soon as the foreground split portion completes).

As an alternative to specific PowerPath device names, you can specify `STDDEVS` that targets all standard devices in the replication session.

-preaction

Applies a script as a pre-action to the instant split operation. Information about the cycle is provided through the following command line arguments:

P1 — Device group name

P2 — Current cycle number

P3 — Number of cycles (*NumCycles*, refer to [“symreplicate FILE PARAMETERS” on page 261.](#))

P4 — Cycle duration in seconds

Note: The `-preaction` option is not available on all platforms.

-rdb

For consistent split actions. Indicates that the device I/O of the specified database will be frozen just before the instant split is performed and thawed as soon as the foreground split completes.

The host physical devices where the database resides must be PowerPath devices.

-recover

Recovers locked devices. Under certain circumstances, `symreplicate` may exit with devices left in a locked state. This may happen when an RDF link goes down unexpectedly. `symreplicate` will not be able to start (or restart) after the link is brought back up because of the locked devices. When this situation is detected, `symreplicate` will suggest that you use the `-recover` option to recover the locked devices so that you are not required to manually release the device locks. Use this option with caution and ensure that no other `symreplicate` session is currently running that uses the same devices.

-setup

Performs the necessary steps to place devices in the initial state before replication begins.

-sid

Specifies the Symmetrix ID of the array where the `symreplicate` log file is written. The specified Symmetrix array must be running Enginuity Version 5669 or higher.

-sort

Specifies how the `symreplicate` log filenames are to be sorted, either by name or type. The default is to sort by name.

-step

Used with the stop action. Stops the replication session after the current execution step completes. Otherwise, the session will stop at the end of a complete copy cycle.

-steperror

Specifies a script file to be performed when `symreplicate` encounters an error during normal cycling. This script file takes effect after a `symreplicate` session has been successfully launched. Diagnostic information about the error is provided through the following command line arguments:

P1 — Device group name

P2 — Current cycle number

P3 — Number of cycles (*NumCycles*, refer to [“symreplicate FILE PARAMETERS” on page 261.](#))

P4 — Cycle duration in seconds

P5 — Step number at which the error occurred

P6 — Text message describing when the error occurred. Details about the error are written to the SYMAPI log file.

This option does not replace the necessity to check for a nonzero exit status from `symreplicate`. Errors that occur before the `symreplicate` session is launched do not cause the script to execute.

Note: The `-steperror` option is not available on all platforms.

-vxfs

For consistent splits. Specifies a list (for Solaris and HP-UX hosts only) of one or more VERITAS VxFS file system mount points. The file systems mounted on this host will be frozen just before the instant split is performed and thawed as soon as the foreground split completes.

PARAMETERS

CgName

The composite group name (user-defined to span Symmetrix arrays and RA groups).

DbName

The relational database name.

DbType

The relational database type.

Oracle,
SQLServer
IBMUDB
Exchange,
Exchange2007
SharePoint

DgName

The device group name (user-defined and unique to this host).

Field

The field to use when sorting the filenames. Valid fields are *name* and *type*.

LogFile

The filename and path of an internal log file belonging to the user.

OptionFile

The name of the text file that contains required parameters of the replicate behavior.

MountPoint

The file system mount point.

PowerPathPdevName

A PowerPath device name (one or more physical device names can be entered).

ScriptFile

The filename of your pre- or post-action script.

SymmID

The Symmetrix ID.

symreplicate FILE PARAMETERS

The `symreplicate` file is where you can set and edit required parameter entry lines to control the replicate behavior. The following are possible parameter entries and values for the options file:

`SYMCLI_REPLICATE_HOP_TYPE=RepType`

Defines your configured environment in which to operate the data replication session. This parameter is not optional and must be specified. Possible *RepType* values are:

SINGLE — Single-hop configuration

MULTI — Multi-hop configuration

`SYMCLI_REPLICATE_USE_FINAL_BCV=TRUE | FALSE`

Indicates whether to update the BCV in the final (last) remote Symmetrix array (for multi-hop only) with a replicate data copy (`TRUE` is the default). If the option is set to `FALSE`, the second hop BCV devices will be omitted.

`SYMCLI_REPLICATE_PROTECT_BCVS=NONE | BOTH | LOCAL | REMOTE`

By default (`NONE`), establishes BCV-STD pairs without the protective establish behavior, relating to two-way mirrored BCV devices. When set to just `LOCAL` or just `REMOTE`, it causes the two mirrors of the BCV to be moved or joined to the standard device. When set to `BOTH`, both the local BCV mirrors and the remote BCV mirrors get joined to their standard device.

`SYMCLI_REPLICATE_CYCLE=CycleTime`

Defines the period to wait between copy operations in total *minutes* or in an *hours:minutes* (*hh:mm*) format.

`SYMCLI_REPLICATE_CYCLE_DELAY=Delay`

Specifies the minimum time to wait between adjacent cycles. Even if a cycle overruns the specified *CycleTime* and *OvfMethod* is set to `IMMEDIATE` when *Delay* is specified, the session waits this delay time before beginning another cycle.

`SYMCLI_REPLICATE_NUM_CYCLES=NumCycles`

The *NumCycles* value is the number of cycles to perform before exiting. If you specify a value of zero, the replicate session cycles forever. The *NumCycles* default value is zero.

`SYMCLI_REPLICATE_CYCLE_OVERFLOW=OvfMethod`

Describes what to do if the cycle overruns the specified *CycleTime*. Possible *OvfMethod* values are:

`IMMEDIATE` — Begins next cycle immediately (the default)

`NEXT` — Skips this copy cycle and wait for the next to begin

`SYMCLI_REPLICATE_LOG_STEP=TRUE | FALSE`

When set to `TRUE`, writes a log entry to the SYMAPI log file after each step of the `symreplicate` cycle is completed. The entry displays the time that the step ended and whether the step was successful.

`SYMCLI_REPLICATE_GEN_TIME_LIMIT=<TimeLimit>`

Indicates how long errors of a general nature should be retried (for example, attempting to acquire a Symmetrix array lock). Currently, the general *TimeLimit* only applies when initiating an RDF split or establish operation. The default general *TimeLimit* is 00:30 if not specified.

The *TimeLimit* value enables you to control how long `symreplicate` retries certain types of operations. *TimeLimit* must be specified using one of the following formats:

hh:mm — Specifies the number of hours and minutes

sss — Specifies the number of seconds

A *TimeLimit* specified as zero (0) indicates that no time limit applies, causing the operation to be retried indefinitely.

`SYMCLI_REPLICATE_RDF_TIME_LIMIT=<TimeLimit>`

Indicates how long to wait for RDF devices to enter a specific state. For example, after successfully issuing the command to establish an R2 BCV device with the corresponding R1 standard device, `symreplicate` waits the indicated length of time for the devices to become synchronized. The default RDF *TimeLimit* is 04:00 if not specified.

`SYMCLI_REPLICATE_BCV_TIME_LIMIT=<TimeLimit>`

Indicates how long to wait for BCV devices to enter a specific state. For example, after successfully issuing the command to establish a BCV device with the corresponding standard device, `symreplicate` waits the indicated length of time for the devices to become synchronized. The default BCV *TimeLimit* is 02:00 if not specified.

`SYMCLI_REPLICATE_GEN_SLEEP_TIME=<SleepTime>`

Indicates how long `symreplicate` should sleep before retrying a general operation (for example, attempting to acquire a Symmetrix array lock). Currently, the general *SleepTime* only applies when initiating an RDF split or establish operation. The default general *SleepTime* is 10 seconds if not specified.

The *SleepTime* value enables you to control how long `symreplicate` sleeps before retrying certain types of operations. *SleepTime* must be specified using one of the following formats:

hh:mm — Specifies the number of hours and minutes

sss — Specifies the number of seconds

A *SleepTime* must be specified as greater than zero (0).

`SYMCLI_REPLICATE_RDF_SLEEP_TIME=<SleepTime>`

Indicates the minimum length of time that `symreplicate` should sleep before retrying an RDF device operation. For example, after issuing the command to establish an R2 BCV device with the corresponding R1 standard device, `symreplicate` sleeps the indicated length of time before retrying the operation. The default RDF *SleepTime* is 15 seconds if not specified.

`SYMCLI_REPLICATE_BCV_SLEEP_TIME=<SleepTime>`

Indicates the minimum length of time that `symreplicate` should sleep before retrying a BCV device operation. For example, after issuing the command to establish a BCV device with the corresponding standard device, `symreplicate` sleeps the indicated length of time before retrying the operation. The default BCV *SleepTime* is 10 seconds if not specified.

`SYMCLI_REPLICATE_MAX_BCV_SLEEP_TIME_FACTOR=<Factor>`

Provides a way to specify the maximum time that `symreplicate` sleeps before checking again to see if BCV devices have entered a specific state. The product of this value multiplied by the sleep time gives the maximum time that `symreplicate` sleeps. The factor is specified using a nonzero integer. If not specified, the default factor is 3.

Note: By default, `symreplicate` sleeps between 10 and 30 seconds when checking on the state of BCV devices, up to a maximum time of 2 hours.

`SYMCLI_REPLICATE_MAX_RDF_SLEEP_TIME_FACTOR=<Factor>`

Provides a way to specify the maximum time that `symreplicate` sleeps before checking again to see if RDF devices have entered a specific state. The product of this value multiplied by the sleep time gives the maximum time that `symreplicate` sleeps. The factor is specified using a nonzero integer. If not specified, the default factor is 4.

Note: By default, `symreplicate` sleeps between 15 and 60 seconds when checking on the state of RDF devices, up to a maximum time of 4 hours.

`SYMCLI_REPLICATE_PROTECT_BCVS=<Protection>`

Indicates how `symreplicate` should perform the TimeFinder establishes when two-way mirrored BCV devices are used. If specified, all mirrors of the specified BCV devices join with the mirrors of the standard device. You may specify one of the following values:

NONE	Performs a normal TimeFinder establish (default).
LOCAL	Performs a protected BCV establish for the local devices only in a single hop configuration.
FIRST_HOP	Performs a protected BCV establish for the first hop devices only in a multi-hop configuration.
REMOTE	Performs a protected BCV establish for the remote devices only in a single hop configuration.
SECOND_HOP	Performs a protected BCV establish for the second hop devices only in a multi-hop configuration.
BOTH	Performs a protected BCV establish for both the local and remote devices (single hop) or the first and second hop devices (multi-hop).

`SYMCLI_REPLICATE_TF_CLONE_EMULATION=<TRUE/FALSE>`

Indicates that TimeFinder clone emulation is enabled. By default, clone emulation is disabled. A value of TRUE indicates that clone emulation is enabled.

`SYMCLI_REPLICATE_PERSISTENT_LOCKS=<TRUE/FALSE>`

Causes `symreplicate` to acquire the device locks for the session with the `SYMAPI_DLOCK_FLAG_PERSISTENT` attribute. The default is FALSE indicating that the persistent attribute should not be used when acquiring the device locks for the session. A value of TRUE indicates that the persistent attribute should be used.

`SYMCLI_REPLICATE_CONS_SPLIT_RETRY=<NumRetries>`

Specifies the number of error recovery attempts that will be made when a consistent split operation fails because the timing window closed before the split operation completed. A default retry value of 3 will be used if the `SYMCLI_REPLICATE_CONS_SPLIT_RETRY` option parameter is not specified when a consistent split (`-consistent`) is requested. A retry value of 0 indicates that no retry attempts should be made.

`SYMCLI_REPLICATE_R1_BCV_EST_TYPE=<EstablishType>`

Specifies the establish type for the local/first hop BCV devices. *EstablishType* specifies the way that BCV establish operations will be executed by TimeFinder. One of the following values may be specified:

SINGULAR BCV devices will be established one at a time; the next device will not be established until the previous device has been established.

SERIAL BCV devices will be established as fast as the establish requests can be accepted by the Symmetrix array.

PARALLEL BCV devices establish requests will be passed in parallel to each of the servicing DA directors.

`SYMCLI_REPLICATE_R1_BCV_DELAY=<EstablishDelay>`

Denotes how long to wait between issuing establish requests. Establish types of `SINGULAR` and `PARALLEL`, for an `<EstablishDelay>` can be specified through the `SYMCLI_REPLICATE_R1_BCV_DELAY`.

`SYMCLI_REPLICATE_FINAL_BCV_EST_TYPE=<EstablishType>`

Identifies the establish type for the remote/second hop BCV devices.

`SYMCLI_REPLICATE_FINAL_BCV_DELAY=<EstablishDelay>`

Denotes how long to wait between issuing establish requests for the remote/second hop BCV devices. For an establish type of `PARALLEL` the delay value indicates how long to wait before passing the next establish request to an individual servicing DA director. An establish delay of 0 to 30 seconds may be specified with a value of 0 being the default.

`SYMCLI_REPLICATE_ENABLE_STATS=<TRUE/FALSE>`

Enables or disables the gathering of statistics. By default, statistics gathering is enabled. A value of `FALSE` indicates that statistics gathering is to be disabled.

`SYMCLI_REPLICATE_STATS_RESET_ON_RESTART=<TRUE/FALSE>`

Resets statistics when a restart action is executed. By default the statistics are not reset upon restart of a symreplicate session. A value of `TRUE` indicates that statistics are to be reset when restarting a symreplicate session.

Option file format

The options file should conform to the following syntax example, where the desired value is entered for the italicized text. Lines beginning with a `"#"` (comment) are ignored by SYMCLI.

```
#Comment
SYMCLI_REPLICATE_HOP_TYPE=<RepType>
SYMCLI_REPLICATE_CYCLE=<CycleTime>
SYMCLI_REPLICATE_CYCLE_OVERFLOW=<OvfMethod>
SYMCLI_REPLICATE_CYCLE_DELAY=<Delay>
SYMCLI_REPLICATE_NUM_CYCLES=<NumCycles>
SYMCLI_REPLICATE_USE_FINAL_BCV=<TRUE/FALSE>
SYMCLI_REPLICATE_LOG_STEP=<TRUE/FALSE>
SYMCLI_REPLICATE_GEN_TIME_LIMIT=<TimeLimit>
SYMCLI_REPLICATE_GEN_SLEEP_TIME=<SleepTime>
SYMCLI_REPLICATE_RDF_TIME_LIMIT=<TimeLimit>
SYMCLI_REPLICATE_RDF_SLEEP_TIME=<SleepTime>
SYMCLI_REPLICATE_BCV_TIME_LIMIT=<TimeLimit>
SYMCLI_REPLICATE_BCV_SLEEP_TIME=<SleepTime>
SYMCLI_REPLICATE_MAX_BCV_SLEEP_TIME_FACTOR=<Factor>
SYMCLI_REPLICATE_MAX_RDF_SLEEP_TIME_FACTOR=<Factor>
SYMCLI_REPLICATE_PROTECT_BCVS=<Protection>
SYMCLI_REPLICATE_TF_CLONE_EMULATION=<TRUE/FALSE>
SYMCLI_REPLICATE_PERSISTENT_LOCKS=<TRUE/FALSE>
SYMCLI_REPLICATE_CONS_SPLIT_RETRY=<NumRetries>
SYMCLI_REPLICATE_R1_BCV_EST_TYPE=<EstablishType>
SYMCLI_REPLICATE_R1_BCV_DELAY=<EstablishDelay>
SYMCLI_REPLICATE_FINAL_BCV_EST_TYPE=<EstablishType>
SYMCLI_REPLICATE_FINAL_BCV_DELAY=<EstablishDelay>
SYMCLI_REPLICATE_ENABLE_STATS=<TRUE/FALSE>
SYMCLI_REPLICATE_STATS_RESET_ON_RESTART=<TRUE/FALSE>
```

Note: For proper session behavior, either a *CycleTime* or a *Delay* time nonzero value should be specified, even though their default values are zero. The *RepType* must be specified.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To start a replicate session for device group `newdg` with parameters in options file `opt.txt`, enter:

```
symreplicate -g newdg start -options opt.txt
```

where file `opt.txt` contains the following parameters and comment lines:

```
#Copy the data in a single hop setup...
SYMCLI_REPLICATE_HOP_TYPE=SINGLE
```

```
#...every 15 minutes
SYMCLI_REPLICATE_CYCLE=15
```

```
#...or as often as possible, if 15 minutes isn't enough
SYMCLI_REPLICATE_CYCLE_OVERFLOW=IMMEDIATE
```

To query the status of the above session, enter:

```
symreplicate -g newdg query
```

To terminate the session, enter:

```
symreplicate -g newdg stop
```

To resume the replicate session, enter:

```
symreplicate -g newdg restart
```

symreturn

Indicates a return value within pre-action and post-action scripts.

SYNTAX `symreturn [-h] [<return code>]`

DESCRIPTION `symreturn` is the suggested method of exiting a command script used by the `symmir -instant split` command.

The command script is specified as an argument to the `-preaction` or `-postaction` option to the `symmir` command.

ARGUMENTS `<return code>`

A return code can be supplied to indicate a success or failure result code from the script. If no return code is supplied, a success is assumed.

The return code can be user-defined to indicate a unique error condition that might occur in a specific situation during script processing.

OPTIONS `-h`

Provides brief, online help information.

RETURN CODES Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES To exit the script with a successful return code, enter:

```
symreturn 0
```

symrslv

Displays detailed mapping information about a disk storage object.

SYNTAX

```
symrslv -h

symrslv [-version] [-kb|-blocks|-mb] [-no_extents|-expand|-pdev_extents]

    pd PdevName

    lv LvolName -g VgName [-stripe_column] [-type VgType]

    file FileName [-collapse|-phys_collapse]

    dir Directory

    fs MountPoint
```

DESCRIPTION

The `symrslv` command displays detailed logical-to-physical mapping information about a disk storage object. Specifically, it provides detail concerning the physical extents of these objects. The object types supported are:

- ◆ Physical devices
- ◆ Logical volumes
- ◆ Regular files (in file systems mounted on physical devices)
- ◆ Regular files (in file systems mounted on logical volumes of a logical volume manager)
- ◆ Directories
- ◆ File systems

Note: VERITAS Quick I/O devices (or the symbolic links to them) are treated like physical devices by `symrslv` and require the `pd` argument.

The `-collapse` flag is applicable to files that reside on file systems that are mounted on a striped or RAID 5 LVM mirror. This collapse is a logical collapse, meaning the data can be reconstructed with the metadata returned. The `phys_collapse` flag causes a physical collapse, which means that the data cannot be reconstructed with the metadata returned.

In the lists of mirror physical extents and mirrored physical devices for the disk storage object, CLARiiON devices are distinguished from other device types by a (C) indicator.

symrslv on Windows 2000

On Windows 2000, `symrslv` does not support files stored on NT DiskAdmin logical volumes.

On Windows 2000, `symrslv` does not support directories or system files like `PAGEFILE.SYS`.

ARGUMENTS

None.

MODIFIERS

The following are command modifiers:

`dir`

Applies the command to a regular host directory name.

`file`

Applies the command to a regular host filename.

fs

Applies the command to a specific file-system mount point.

lv

Applies the command to a logical volume name of a logical volume manager.

pd

Applies the command to a physical device name.

OPTIONS

-blocks

Displays size information in 512-byte blocks.

-collapse

Displays the file information with extent data collapsed (when possible). Particularly, in striped or RAID 5 environments, the collapse behavior filters out the extents in the output list that are physically contiguous and logically consistent.

-expand

Expands (if possible) the extent information about the specified object (the default is to collapse the listing).

-g

Applies the command to a volume group name of a logical volume manager.

-h

Provides brief, online help information.

-kb

Displays size information in kilobytes.

-mb

Displays size information in megabytes (default).

-no_extents

Shows information about the object without the extent information.

-pdev_extents

Shows information about Pdev-level extents only (without showing the underlying meta device configuration).

-phys_collapse

Physically collapses the extent (where possible).

-stripe_column

Displays the extent's stripe column number on the striped volume.

-type

Targets a specific logical volume group type.

`-version`

Displays SYMAPI build and runtime versions.

PARAMETERS

Directory

A specific directory name.

FileName

A specific filename.

LvolName

A specific logical volume name.

MountPoint

A specific file-system mount point.

PdevName

A specific physical device name.

VgName

A specific volume group name.

VgType

A specific logical volume group type. Possible values are:

DEFAULT
 AIX_LVM
 AIX_VXVM
 AS400_LVM
 DYNIX_SVM
 EMC_PVM
 LINUX_LVM
 LINUX_POOL
 LINUX_VXVM
 HP_LVM
 HP_VXVM
 NT_DISKADM
 NT_LDM
 ORACLE_ASM
 OSF1_LSM
 SUN_VXVM
 SUN_SOLSTICE

Note: On the AS/400 platform, only the `lv` and `pd` arguments are supported.

RETURN CODES

Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES

To display the physical extent information in kilobytes about the physical device `/dev/rdisk/c2t0d2s2`, enter:

```
symrslv -kb pd /dev/rdisk/c2t0d2s2
```

To display the physical extent information in blocks about logical volume `lv011` in volume group `ProdVG`, enter:

```
symrslv -blocks -g ProdVG lv lv011
```

To display the physical extent information in megabytes about file `accounts_hr`, enter:

```
symrslv -mb file accounts_hr
```

To display the physical extent information in megabytes about the file system with mount point `/`, enter:

```
symrslv -mb fs /
```

To display the physical extent information in blocks about directory `/usr`, enter:

```
symrslv -blocks dir /usr
```

symsnap

Performs TimeFinder/Snap control operations on a device group, composite group, devices within the group, or on pairs listed in a device file.

SYNTAX

symsnap -h

```
symsnap -g DgName [-v] [-noprompt] [-i Interval] [-c Count]
               [-force] [-preserveTGTLocks -lockid LockNum] [-star]

    create      [-exact] [-bcv | -rdf | -rbcv] [-skip] [-svp PoolName] [-concurrent]
               <[LdevName [VDEV pd PdevName]]>...> |
               <[LdevName [VDEV dev SymDevName]]>...> |
               <[LdevName [VDEV ld LDevName]]>...>

    activate    [-not_ready] [-bcv | -rdf | -rbcv] [-skip] [-concurrent]
               [-preaction ScriptFile] [-postaction ScriptFile]
               [-vxfs <MountPoint...>]
               [-consistent [-both_sides]]
               [-ppath <SRCDEVS | PowerPathPdevName...> |
               [-rdb -dbtype DbType [-db DbName] ]
               <<[LdevName [VDEV pd PdevName]]>...> |
               <<[LdevName [VDEV dev SymDevName]]>...> |
               <<[LdevName [VDEV ld LdevName]]>...>

    terminate   [-symforce] [-bcv | -rdf | -rbcv] [-skip] [-restored]
               <<[LdevName [VDEV pd PdevName]]>...> |
               <<[LdevName [VDEV dev SymDevName]]>...> |
               <<[LdevName [VDEV ld LdevName]]>...> |
               <<[LdevName [SYM pd PdevName]]>...> |
               <<[LdevName [SYM dev SymDevName]]>...> |
               <<[LdevName [SYM ld LdevName]]>...> |
               <<[LdevName [BCV pd PdevName]]>...> |
               <<[LdevName [BCV dev SymDevName]]>...> |
               <<[LdevName [BCV ld LdevName]]>...>

    restore     [-full] [-bcv | -rdf | -rbcv] [-not_ready]
               <<[LdevName [VDEV pd PdevName]]>...> |
               <<[LdevName [VDEV dev SymDevName]]>...> |
               <<[LdevName [VDEV ld LdevName]]>...>

symsnap -g DgName [-offline] [-i Interval] [-c Count] [-bcv | -rdf | -rbcv]

    query       [LdevName [LdevName...]] [-multi] [-restore | -changed]
               [-attach] [-pools] ]

    verify       [-created | -copied | -copyinprog | -copyonwrite |
               -restinprog | -restored | -failed] [-force] [-concurrent]
               <<[LdevName [VDEV pd PdevName]]>...> |
               <<[LdevName [VDEV dev SymDevName]]>...> |
               <<[LdevName [VDEV ld LdevName]]>...> |
               <<[LdevName [SYM pd PdevName]]>...> |
               <<[LdevName [SYM dev SymDevName]]>...> |
               <<[LdevName [SYM ld LdevName]]>...> |
               <<[LdevName [BCV pd PdevName]]>...> |
               <<[LdevName [BCV dev SymDevName]]>...> |
               <<[LdevName [BCV ld LdevName]]>...>

symsnap -g DgName [-v] [-noprompt] [-i Interval] [-c Count]

    attach      <<[LdevName VDEV pd PdevName]]>...>
               <<[LdevName VDEV dev SymDevName]]>...>
               <<[LdevName VDEV ld LdevName]]>...>
```



```

detach      <<LdevName VDEV pd PdevName>...>
            <<LdevName VDEV dev SymDevName>...>
            <<LdevName VDEV ld LdevName>...>

symsnap -cg CgName [-v] [-noprompt] [-i Interval] [-c Count]
          [-force] [-sid SymmID] [-star] -rdfg <SymmID:<GrpNum[, GrpNum,...] |
          all>[,...] | name:Name[,Name,...]>]]

create      [-exact] [-bcv | -rdf | -rbcv] [-skip] [-svp PoolName] [-concurrent]
            <<[LdevName [VDEV pd PdevName]]>...>
            <<[LdevName [VDEV dev SymDevName]]>...>
            <<[LdevName [VDEV ld LDevName]]>...>

activate    [-not_ready] [-bcv | -rdf | -rbcv] [-skip] [-concurrent]
            [-preaction ScriptFile] [-postaction ScriptFile]
            [-vxfs <MountPoint...>]
            [-ppath <SRCDEVS | PowerPathPdevName...>]
            [-rdb -dbtype DbType [-db DbName] ]
            [-consistent [-both_sides]]
            <<[LdevName [VDEV pd PdevName]]>...>
            <<[LdevName [VDEV dev SymDevName]]>...>
            <<[LdevName [VDEV ld LdevName]]>...>

terminate   [-symforce] [-bcv | -rdf | -rbcv] [-skip] [-restored]
            <<LdevName [VDEV pd PdevName]>...>
            <<LdevName [VDEV dev SymDevName]>...>
            <<LdevName [VDEV ld LdevName]>...>
            <<LdevName [SYM pd PdevName]>...>
            <<LdevName [SYM dev SymDevName]>...>
            <<LdevName [SYM ld LdevName]>...>
            <<LdevName [BCV pd PdevName]>...>
            <<LdevName [BCV dev SymDevName]>...>
            <<LdevName [BCV ld LdevName]>...>

restore     [-full] [-bcv | -rdf | -rbcv]] [-not_ready]
            <<LdevName [VDEV pd PdevName]>...>
            <<LdevName [VDEV dev SymDevName]>...>
            <<LdevName [VDEV ld LdevName]>...>

symsnap -cg CgName [-offline] [-i Interval] [-c Count] [-bcv | -rdf | -rbcv] [-sid SymmID]
          -rdfg <SymmID:<GrpNum[, GrpNum,...]|all>[,...] | name:Name[,Name,...]>]]

query       [-multi] [-restore] [-changed] [-attach] [-sid SymmID] {-pools}
            [LdevName [LdevName...]]

verify      [-created | -copied | -copyinprog | -copyonwrite |
            -restinprog | -restored | -failed] [-force] [-concurrent]
            <<[LdevName [VDEV pd PdevName]]>...>
            <<[LdevName [VDEV dev SymDevName]]>...>
            <<[LdevName [VDEV ld LdevName]]>...>
            <<[LdevName [SYM pd PdevName]]>...>
            <<[LdevName [SYM dev SymDevName]]>...>
            <<[LdevName [SYM ld LdevName]]>...>
            <<[LdevName [BCV pd PdevName]]>...>
            <<[LdevName [BCV dev SymDevName]]>...>
            <<[LdevName [BCV ld LdevName]]>...>

symsnap -cg CgName [-v] [-noprompt] [-i Interval] [-c Count]
          [-sid SymmID]

attach      <<LdevName VDEV pd PdevName>...>
            <<LdevName VDEV dev SymDevName>...>
            <<LdevName VDEV ld LdevName>...>

detach      <<LdevName VDEV pd PdevName>...>
            <<LdevName VDEV dev SymDevName>...>

```

```

        <<LdevName VDEV ld LdevName>...>

symsnap -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
        [-v] [-force] [-noprompt] [-i Interval] [-c Count]
        [-preserveTGTLocks -lockid LockNum] [-star]

        create      [-skip] [-svp <PoolName>]

        activate    [-not_ready] [-skip]
                    [-preaction ScriptFile] [-postaction ScriptFile]
                    [-vxfs <MountPoint...>]
                    [-ppath <SRCDEVS | PowerPathPdevName...>]
                    [-rdb -dbtype DbType [-db DbName] ]
                    [-consistent [-both_sides]]

        terminate   [-symforce] [-skip] [-restored]

        restore     [-full] [-not_ready]

symsnap -sid SymmID <-file DeviceFileName | -noprompt 'redirect stdin'>
        [-force] [-i Interval] [-c Count]

        query       [-multi] [-restore] [-changed] [-attach] [-pools]

        verify      [-created | -copied | -copyonwrite | -restinprog |
                    -restored | -failed]

symsnap -sid SymmID <-file DeviceFile | -noprompt 'redirect stdin'> [-v] [-noprompt]
        [-i Interval] [-c Count]

        attach

        detach

symsnap [-sid SymmID] [-i Interval] [-c Count] [-offline]

        list        -pools [-all] | [-svp PoolName] |
                    [-savedevs [-fba | -ckd | -ckd3390 | -ckd3380 -as400] [-all]
                    [-svp PoolName]]

symsnap -sid SymmID [-offline]

        show pool PoolName [-all] [-fba | -ckd | -ckd3390 | -ckd3380 -as400]

symsnap [-sid SymmID] [-i Interval] [-c Count] [-offline]
        [-percent <1-100> -action <ScriptFile> [-norepeat]]
        [-svp PoolName]

        monitor

```

DESCRIPTION The `symsnap` command performs EMC TimeFinder/Snap operations on a device group, on a device within a device group, on a composite group, on a device within a composite group, or on pairs listed in a device file. These operations include creating and activating a source device with a target device in a copy session, restoring, and terminating the copy session. Other operations include `query` and `list` features for checking the state of the device pair. Save devices can also be listed and monitored for a percentage full.

All Snap operations can be performed on a group or individual device basis. The source device can be a standard device or a BCV device, and the target device must be a virtual device. Before a target device can be paired with a source device, the target must have previously been associated with the device group or composite group. The target and source devices must be of the same size and emulation type.

ARGUMENTS**activate**

Activates a virtual copy session with the devices in the device group with one or more target devices that are associated with the group.

While the operation is in progress, the state of the device pair is CopyOnWrite. If the source device is completely written to, the state changes to Copied.

attach

Attaches a virtual (VDEV) target device to a source device to become the preferred target device to be paired with the source device when a device create is issued.

create

Creates a virtual copy session with the devices in the device group with one or more target devices that are associated with the group. While the operation is in progress, the state of the device pair is CreateInProgress. When the operation completes, the state changes to Created.

detach

Detaches a VDEV target device from the source device so that it is no longer the preferred target device to be paired with that source device.

list

Lists snap sessions, SAVE devices, or SAVE device pools.

monitor

Checks the total percentage full of the SAVE devices currently configured and can optionally execute a script file if a specified percentage is encountered.

query

Returns information about the state of mirroring of one or all device pairs in a device group.

restore

Restores a virtual device (VDEV) to another device. After the restore operation, the target of the restore is left in a Ready state unless the `-not_ready` option is used.

show pool

Shows detailed information about the SAVE device pool.

terminate

Terminates (stops) the existing internal copy session between the specified source and target devices in a device group.

verify

Verifies, by default, whether one device pair is or all device pairs in a device group are in the CopyOnWrite state.

The verify action returns one of the following possible return codes if the verify criteria was not met:

Code #	Code Symbol
12	CLI_NOT_ALL_RESTORED
13	CLI_C_NONE_RESTORED
29	CLI_C_NOT_ALL_RESTINPROG

Code #	Code Symbol
30	CLI_C_NONE_RESTINPROG
55	CLI_C_NOT_ALL_COPIED
56	CLI_C_NONE_COPIED
60	CLI_C_NOT_ALL_CREATED
61	CLI_C_NONE_CREATED
66	CLI_C_NOT_ALL_COPYONWRITE
67	CLI_C_NONE_COPYONWRITE

Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

OPTIONS

-action

Selects a script that should be run when the specified percent value is encountered. You must specify the full pathname to the action script. The first argument passed to the script is automatically set to the percent value. This option requires the `-percent` option.

-all

Specifies to include active and inactive information in the display calculations for the group(s).

-as400

Specifies to only list or monitor AS400 devices.

-attach

Displays target attachment information for the standard device(s) in the device group.

-bcv

Signifies BCV devices as the source devices and VDEV devices as the target devices. This option can only be used with groups, that is, device groups or composite groups.

BCV

Specifies a BCV target device.

-both_sides

Activates all locally and remotely associated VDEV pairs in an RDF group.

-c

Specifies the number (count) of times to display or to acquire an exclusive lock on the Symmetrix host database. If this option is not specified but an interval (`-i`) is specified, the program will loop continuously to display or start the mirroring operation.

-cg

Applies a composite group name to the command.

-changed

Displays where the tracks were changed that resulted in a write to the SAVE device.

-ckd

Confines the `list` action to display only the CKD devices.

-ckd3380

Confines the `list` action to display only the CKD3380 devices.

`-ckd3390`

Confines the `list` action to display only the CKD3390 devices.

`-concurrent`

Verifies the standard device and multiple target devices, when used with `verify`. Creates a session with an additional target device, when used with `create`.

`-consistent`

Causes the source and target pairs to be consistently activated.

`-copied`

Verifies that the snap device pair(s) are in the Copied state.

`-copyonwrite`

Verifies that the snap device pair(s) are in the CopyOnWrite state.

`-created`

Verifies that the snap device pair(s) are in the Created state.

`-db`

Specifies the name of the relational database. This is not required for Oracle.

`dev`

Indicates a Symmetrix device name.

`-dbtype`

Specifies the relational database type.

`-exact`

Applies to group operations that causes the standard and BCV device pairing algorithm to select the pairs according to the exact order in which they were added to the specified device group. This option overrides all other pairing algorithms.

`-failed`

Verifies that the snap device pair(s) are in the Failed state.

`-fba`

Species to only list or monitor FBA devices.

`-file`

Applies a device file to the command. The device file contains device pairs (by device number) listing a pair per each line (the source device first, a space, and the VDEV target device last within each line entry). Device files can include comment lines that begin with the pound sign (#).

`-force`

Attempts to force the operation even though one or more paired devices in the device group may not be in the normal, expected state(s) for the specified operation.

`-full`

Causes a full restore to take place. This option is used with the `restore` command.

`-g`

Applies a device group name to the command.

-h

Provides brief, online help information.

-i

Specifies the repeat interval, in seconds, to display or to acquire an exclusive lock on the Symmetrix host database. The default interval is 10 seconds. The minimum interval is 5 seconds. When used with the `verify` action, the number of seconds specified, indicates the interval of time (in seconds) to repeat the `verify` command(s) before the `verify` action finds and reports the pairs fully copied.

ld

Indicates a logical device name.

-lockid

Specifies the lock holder ID (as a hexadecimal value) for preserving the target locks on the control operation.

-multi

Applies to a `query` operation in a multi-target environment to show all targets that are paired with source devices. It lists the devices in chronological order.

-noprompt

Requests that no prompts are returned after the command is entered. The default is to prompt the user for confirmation.

-norepeat

Specifies that the action script should only be run once if the percent threshold has been met. When the `monitor -action` is used.

-not_ready

Performs the Snap operation, but leaves the target device(s) as Not Ready to its host(s). That is, each target will be set to Not Ready prior to the completion of the operation.

-offline

Specifies that the Symmetrix array data connection is offline from the host in-memory database.

pd

Indicates a physical device name.

-percent

Displays a message and optionally executes an action script when the specified percentage full argument has been reached.

-pools

Displays a list of SAVE device pools.

-postaction

Causes the script argument to be executed after a snap session has been activated.

-ppath

Lists one or more PowerPath devices for which I/O is to be suspended just before the activate is performed and resumed, as soon as `activate` completes.

As an alternative to the list, the key word `SRCDEVS` can be supplied, which will use the pathnames from the standard devices being controlled.

-preaction

Causes the script file to be executed before a Copy session is activated.

-preserveTGTLocks

Prevents the action from engaging device locks on the target devices. The target devices must already be locked by the same lock holder ID. Requires the `-lockid` option.

-rbcv

Causes the command to use the RBCV devices as the source devices and the RDEV devices as the target devices. This option can only be used with groups, that is, device groups or composite groups.

-rdb

Freezes the log files and specified database just before the activate is performed, and thaws them as soon as the activate completes.

The host physical devices that the database log files reside must be PowerPath devices.

-rdf

Indicates that the control operation is targeted for the remote Symmetrix array.

-rdfg

Selects RDF devices that belong to the specified Symmetrix RA (RDF) group number.

-restinprog

Verifies that the device pair(s) are in the RestInProg state.

-restore

Shows from which virtual device the snap pair was restored. Shows the restore session as being either in the RestInProg or Restored state.

-restored

Verifies that the device pair(s) are in the Restored state.

-savedevs

When used with the `list` action, displays the current space used on SAVE devices.

-sid

Applies the command to the specified Symmetrix ID. Used with the `-file` option to select the Symmetrix array on which to perform the operation, or with the `-cg` option to restrict the operation to a single Symmetrix array.

-skip

Skips the source locks action. Will not lock the source devices if all of the specified source devices are either locked or all are unlocked.

-star

Indicates that the action is targeted for devices in STAR mode.

-svp

Filters the list based on the supplied *PoolName*.

-symforce

Requests that the Symmetrix array force the operation to occur where they are normally rejected. On terminate, it causes the Symmetrix array to stop a Snap session.



CAUTION

Use care when applying this option as data can be lost or corrupted.

When used with the `terminate` action, the Symmetrix terminates the synchronized Snap pair.

VDEV

Specifies a virtual target device.

SYM

Specifies a Symmetrix target device (STD, BCV, or VDEV).

-v

Provides a more detailed, verbose output.

-vxfs

Lists one or more VERITAS VxFS file system mount points. The file system(s) mounted on this host are frozen just before the `activate` is performed, and thawed when the `activate` completes.

PARAMETERS

CgName

The composite group name.

DbName

The relational database name.

DbType

The relational database type. Possible values:

Oracle
 SQLServer
 IBMUDB
 Informix
 IBMUDB
 Exchange
 Exchange2007
 SharePoint

DgName

The device group name.

DeviceFilename

The device filename. The device file contains device pairs (*SymDevnames*) listing a pair per each line (the source device first, a space, followed by the target device name on each line).

GrpNum

The RDF group number.

LdevName

The logical device name of either the standard (such as DEV002) or the BCV device (such as BCV005).

LockNum

The lock number ID as a hexadecimal value.

MountPoint

File system mount point.

Name

The logical name associated with the RDF (RA) group(s).

PoolName

The name of the SAVE device pool.

PdevName

The physical device (host) name for the Snap target device (such as `/dev/rdisk/c2t0d2s2`).

PowerPathPdevName

A PowerPath device name (one or more physical device names can be entered).

ScriptFile

The full pathname of the script to be executed.

SymDevname

The Symmetrix device name, unique per Symmetrix array, for the snap target device (such as 001C).

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To create device group `ProdDB` as a Regular device group, enter:

```
symdg create ProdDB
```

To define device group `ProdDB` as the default device group, enter:

```
setenv SYMCLI_DG ProdDB
```

To add standard device `/dev/rdisk/c1t1d1s2` to device group `ProdDB` and name it `act1`, enter:

```
symld add pd c1t1d1s2 act1
```

To add VDEV device `/dev/rdisk/c2t0d2s2` to device group `ProdDB` and name it `myvdev1`, enter:

```
symld add pd c2t0d2s2 myvdev1
```

To create a copy of the source device `act1` in group `ProdDB` with a specified target device (associated with the group), enter:

```
symsnap create act1 vdev ld myvdev1  
symsnap activate act1 vdev ld myvdev1
```

To terminate the device `act1` in group `ProdDB`, enter:

```
symsnap terminate act1 vdev ld myvdev1
```

To query information about all paired devices in device group `ProdDB`, enter:

```
symsnap query
```

symstar

Performs Symmetrix SRDF Star control operations on a composite group.

SYNTAX

```
symstar -h

symstar show CgName [-detail]

symstar -cg CgName [-noprompt] {-wkload SiteName}

    buildcg -site SiteName

    cleanup -site SiteName {-force} [-v]

    connect -site SiteName {-force} [-v] [-full]
            [-keep_data SiteName [-remote]]

    disable [-force] [-v]

    disconnect -site SiteName {-force} [-v]

    enable [-force] [-v]

    halt [-reset] [-force] [-v]

    isolate -site SiteName [-force] [-v]

    protect -site SiteName [-force] [-v]

    query [-detail]

    reset -site SiteName [-force] [-v]

    setup -options optionsfile [-clear] [-reload options]

    switch -site SiteName [-keep_data SiteName] [-force]
            [-full] [-v]

    unprotect -site SiteName [-force] [-v]
```

DESCRIPTION

The `symstar` command provides query and composite control operations used to manage an SRDF Star environment.

ARGUMENTS

`buildcg`

Reads the internal definition for the Star configuration and creates the matching host composite group.

`cleanup`

Cleans up stale information after a disaster failure (loss of WorkloadSite).

`connect`

Makes an SRDF connection and starts the data flow.

`disable`

Disables the Star consistency protection.

`disconnect`

Suspends the SRDF data flow.

`enable`

Enables the Star consistency protection.

`halt`

Write disables devices and synchronizes SRDF data to remote sites.

`isolate`

Isolates the SyncTargetSite or AsyncTargetSite from the Star replication. The RDF2 devices of the isolated site are made read/write enabled to their hosts.

`protect`

Waits for SRDF data to synchronize to the remote SyncTargetSite or AsyncTargetSite and turns on RDF consistency protection.

`query`

Displays the status of the Star configuration.

`reset`

Cleans up stale information after a transient failure (loss of connectivity) to the SyncTargetSite or AsyncTargetSite.

`setup`

Reads and validates the host composite group that will be used to manage the SRDF Star replication.

Setup builds an internal representation of the composite group and saves it in the directories `/var/symapi/config/Star/def` (for UNIX) or `\Program Files\EMC\SYMAPI\config\Star\def` (for Windows).

`show`

Displays the contents of the internal definition for the Star configuration.

`switch`

Performs the necessary operations to allow the workload to be started at the SyncTargetSite or AsyncTargetSite.

`unprotect`

Disables RDF consistency protection for the devices on the RDF links to the remote SyncTargetSite or AsyncTargetSite.

OPTIONS

`-cg`

Identifies the name of the host composite group.

`-clear`

Used with the `setup` command to change the starmode settings of all the RDF groups to Off. This should only be used when Star is disabled and both SyncTargetSite and AsyncTargetSite are Unprotected.

`-detail`

Used with the `query` and `show` commands to include extended information in the output.

-force

Allows the action to proceed even if the Star environment is not currently in the proper state for the action. When used with the `switch` command, this will also allow the user to specify the `-keep_data SiteName` option if the current state of that site's data is not considered to be consistent.

-full

If SRDF differential resynchronization is not available, this results in a full resynchronization.

-keep_data

Used with the `switch` command to identify which sites data will be used. If you switch to the `SyncTargetSite` and choose to keep the data of the `AsyncTargetSite`, the SRDF devices will be reconfigured to make a new R1/R2 pairing.

-noprompt

Specifies to not prompt before performing action.

-options

Identifies the name of the file containing the options to be used for this Star configuration.

-reload_options

Used with the `setup` command to read the specified options file to update the options values in the internal definition. You cannot change any `SITE_NAME` values with this option.

-remote

Specifies the remote data copy flag. Used with `connect` action when remote data is to be kept and concurrent link is ready. Data will also be copied to the concurrent RDF mirror. Not required if concurrent link is suspended.

-reset

Used with the `halt` command to allow the application to be restarted at the same site after the `halt` command completes or fails.

-site

Specifies the site name for which the given command should be applied.

-wkload

Allows user to specify the current workload site name if `symstar` fails to determine the current workload site name.

-v

Provides a more detailed, verbose listing.

PARAMETERS*CgName*

The name of the host composite group.

OptionsFile

The name of a file containing the `symstar` options.

SiteName

The user specified name for the SyncTargetSite or AsyncTargetSite.

FILES The option file is created by the user. It should conform to the following syntax:

```
SYMCLI_STAR_WORKLOAD_SITE_NAME — <Wname>
SYMCLI_STAR_SYNCTARGET_SITE_NAME — <Sname>
SYMCLI_STAR_ASYNC_TARGET_SITE_NAME — <Aname>
SYMCLI_STAR_ADAPTIVE_COPY_TRACKS — <Numtracks>
SYMCLI_STAR_ACTION_TIMEOUT — <Numsecs>
SYMCLI_STAR_TERM_SDDF — <YES/NO>
```

Where:

<Wname> is a user specified name for the site where the concurrent RDF1 devices are local. The default value is SITE_A.

<Sname> is a user specified name for the synchronous target site. It must match the name assigned to the SRDF/S RDF groups in the composite group. The default value is SITE_B.

<Aname> is a user specified name for the asynchronous target site. It must match the name assigned to the SRDF/A RDF groups in the composite group. The default value is SITE_C.

<Numtracks> is the number of invalid tracks to reach before transitioning out of adaptive copy mode and setting the mode to SRDF/S or SRDF/A. The default value is 30000.

<Numseconds> is the maximum number of seconds to wait to achieve consistency protection, R2_Recoverable STAR protection or for devices to reach <Numtracks> invalid tracks while syncing RDF devices. The default value is 18000.

<YES/NO> indicates whether SDDF sessions are terminated on both SYNC and ASYNC target sites at the time of `symstar disable`. If set to NO, SDDF sessions on both SYNC and ASYNC target sites are not terminated (deactivated instead) at the time of `symstar disable`.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To create the composite group for STAR protection, enter:

```
symcg create MyStar -type RDF1 -rdf_consistency
```

To add the concurrent RDF devices to the MyStar composite group, enter:

```
symcg -cg MyStar addall dev -sid 63 -rdfg 31
```

In the example above, the concurrent RDF devices use RDF groups 30 and 31. The SRDF/S RDF group is 30, the SRDF/A RDF group is 31.

To assign the RDF group names in the MyStar composite group, enter:

```
symcg -cg MyStar -rdfg 63:30 set -name synctgt
symcg -cg MyStar -rdfg 63:31 set -name asynctgt
```

To assign the recovery RDF groups in the MyStar composite group, enter:

```
symcg -cg MyStar -rdfg 63:30 set -recovery_rdfg 20
symcg -cg MyStar -rdfg 63:31 set -recovery_rdfg 21
```

To create the definition for the `symstar` command, enter:

```
symstar -cg MyStar setup -option options.file
```

To connect the synchronous target site, enter

```
symstar -cg MyStar connect -site synctgt
```

To protect the synchronous target site, enter:

```
symstar -cg MyStar protect -site synctgt
```

To connect the asynchronous target site, enter

```
symstar -cg MyStar connect -site asynctgt
```

To protect the asynchronous target site, enter:

```
symstar -cg MyStar protect -site asynctgt
```

To enable the STAR protection for the `MyStar` composite group, enter:

```
symstar -cg MyStar enable
```

symstat

Displays statistics information about a Symmetrix array, any or all directors, a device group, a disk, or a device.

SYNTAX

```
symstat -h
symstat [-i Interval] [-c Count]

[-type REQUESTS [-g DgName [-bcv | -all]]]
[-type REQUESTS] -sid SymmID -RepType rdfa [-v]
  [-g ALL|-rdfg <#|ALL>|-cg <CgName|ALL>]

[-type REQUESTS] -g DgName -RepType rdfa [-v]
[-type REQUESTS] -sid SymmID -RepType rdf [-g ALL | -rdfg <#|ALL>]
[-type REQUESTS] -g DgName -RepType rdf
[-type REQUESTS] -sid SymmID -RepType rcopy [-name <SessionName>]
-type REQUESTS [-sid SymmID] -CA <#|ALL>
-type REQUESTS [-sid SymmID] -EA <#|ALL>
-type REQUESTS [-sid SymmID] -EF <#|ALL>
-type REQUESTS [-sid SymmID] -RA <#|ALL>
-type REQUESTS [-sid SymmID] -SA <#|ALL>
-dir <#|ALL> [-sid SymmID -RepType rcopy]

-type PREFETCH [-sid SymmID] [-DA <#|ALL>]

-type CACHE [-sid SymmID] [-CA <#|ALL>]
-type CACHE [-sid SymmID] [-EA <#|ALL>]
-type CACHE [-sid SymmID] [-RA <#|ALL>]
-type CACHE [-sid SymmID] [-SA <#|ALL>]
-type CACHE [-sid SymmID] [-dir <#|ALL>]
-type CACHE [-sid SymmID] [-lru <#|ALL|name>]
-type CACHE -sid SymmID -RepType rdfa
  [-g ALL | -rdfg <#|ALL> | -cg <CgName|ALL>]
-type CACHE -g DgName -RepType rdfa

-type CYCLE -sid SymmID -RepType rdfa
  [-g ALL | -rdfg <#|ALL> | -cg <CgName|ALL>]
-type CYCLE -g DgName -RepType rdfa

-type PORT [-sid SymmID] -dir <#|ALL> [-port <#|ALL>]
-type PORT -sid SymmID -dir <#|ALL> [-port <#|ALL>] -RepType rcopy

-type PATH -sid SymmID -RepType rcopy [-by_session | -by_port]

-type DISK -sid SymmID [-disk <DA|ALL>[,<int|ALL>[,<id|ALL>]]]

-type BACKEND -g DgName -ld LdevName [-mirror #]
-type BACKEND -pd PdevName [-mirror #]
-type BACKEND -dev SymDevName [-sid SymmID] [-mirror #]

-type MEMIO -g DgName [-ld LdevName | -bcv | -all]
-type MEMIO -pd PdevName
-type MEMIO -dev SymDevName [-sid SymmID]

-type DMSP -g DgName -ld LdevName
-type DMSP -pd PdevName
-type DMSP -dev SymDevname [-sid SymmID]

-type RDF [-dev SymDevName | -g DgName | -ld LdevName]
  [-rdfg <#|ALL>] [-dir <#|ALL>] [-dir <#> -rdflink]

-type ISCSI [-sid SymmID] -RE # -ip <RemoteIPAddr>]
  [-rdf_spdlimt | -rdf_nw_comp | -spdlimt_grp]

-type ISCSI [-sid SymmID] -SE # -ip <RemoteIPAddr>] [-tcp_conn | -gige_dir]
```


DESCRIPTION	The <code>symstat</code> command provides statistics information about a Symmetrix array, a director, a device group, a disk, or a device. This statistic call can also be used to display DMSP (dynamic mirroring service policy) information for a device.
ARGUMENTS	None.
OPTIONS	<code>-all</code> Returns statistics for standard and BCV devices in the device group. <code>-bcv</code> Returns statistics for BCV devices in the device group. The default behavior excludes BCV devices. <code>-by_port</code> Organizes the path output by active R-Copy port. <code>-by_session</code> Organizes the path output by remote copy session name. <code>-c</code> Specifies the number (count) of times to display statistics. If this option is not specified and an interval (<code>-i</code>) is specified, statistics will be displayed continuously. <code>-CA</code> Confines the action to a channel director number. To select all channel directors, specify <code>ALL</code>. <code>-cg</code> Specifies the composite group name. <code>-DA</code> Confines the action to a disk director number. To select all disk directors, specify <code>ALL</code>. <code>-dev</code> Applies Symmetrix device names to the action. <code>-dir</code> Confines the action to a director number. To select all directors, specify <code>ALL</code>. <code>-disk</code> Applies the action to a physical disk (<code>DA, int, id</code>). For example, SCSI ID 4 on interface C of DA 2A would be <code>-disk 2A,C,4</code>. The syntax <code>-disk 02A:C4</code> is also valid. <code>-EA</code> Confines the action to an ESCON director number. To select all ESCON directors, specify <code>ALL</code>. <code>-EF</code> Confines the action to an FICON director number. To select all FICON directors, specify <code>ALL</code>.

-g

Confines the action to a device group. The -dg option is also valid.

-gige_dir

Collects network statistics for the director (iSCSI).

-h

Provides brief, online help information.

-i

Specifies the repeat interval in seconds. The default interval is 10 seconds. The minimum interval is 5 seconds.

-ip

Specifies the remote IP address (to gather RDF network stats for iSCSI).

-ld

Applies logical device names to the action.

-link

Specifies the link CPU number used to gather certain iSCSI statistics, such as TCP connection information and Gig-E director information.

-lru

Specifies the Least Recently Used cache management group. LRU statistics are not supported on Enginuity version 5x70 or later.

-mirror

Requests statistics from a specified mirror (1-4).

-name

Specifies an optional, user-defined remote copy session name defined when the session was created.

-pd

Applies physical device names to the action.

-port

Specifies the director port number. The ALL selects all ports for the specified director.

-RA

Confines the action to a RDF director (adapter) number. To select all RDF directors, specify ALL.

-rdfig

Returns statistics for the SRDF/A sessions by RA group number. To select all RA group numbers, specify ALL.

-rdf_nw_comp

Collects RDF network compression statistics (iSCSI statistics).

`-rdflink`

Collects RDF link-level statistics.

`-rdf_spdlmt`

Collects RDF speedlimit information (iSCSI statistics).

`-RE`

Specifies a Gig-E director configured as RDF.

`-RepType`

Specifies the replication type. Possible values are:

rdfa
rdf
rcopy

`-SA`

Confines the action to a front-end (SCSI or fiber) director number. To select all front-end directors, specify `ALL`.

`-SE`

Specifies a Gig-E director configured as SCSI.

`-sid`

Applies the action to the specified Symmetrix ID.

`-spdlmt_grp`

Collects speedlimit group statistics (iSCSI statistics).

`-tcp_conn`

Collects TCP connection-based statistics for iSCSI.

`-type`

Type of performance information to display. The default is to display REQUESTS information. Individual disk/director subtotals and totals are provided. Possible statistics type values are:

BACKEND

Report back-end I/O requests and throughput for selected devices.

CACHE

Report cache activity for selected front-end or remote link director(s) only.

CYCLE

Report cycle summary information for SRDF/A sessions that have active status or have non zero cache usage.

DMSP

Report dynamic mirroring service policy (DMSP) stats for the selected device(s). DMSP statistics are not supported on Enginuity version 5772 and later.

DISK

Report back-end I/O requests and throughput for the selected disks or all disks.

MEMIO

Report cache memory to disk activity for selected device(s).

PATH

Report rcopy path information for non-incremental sessions. Symmetrix arrays that have all or some incremental sessions will report an error.

PORT

Report performance statistics for a director port.

PREFETCH

Report track prefetch disk activity for selected back-end director(s) only.

REQUESTS

Report I/O requests and throughput for selected device(s) or any type of director(s). This is the default.

-v

Provides a more detailed, verbose listing.

PARAMETERS

#

The director number.

CgName

Composite group name.

DA

The disk director (DA) number.

DgName

Device group name.

id

The director SCSI number of the specified physical disk to the statistics action.

int

The director interface number to the specified physical disk.

LdevName

The logical device name either supplied by the user or automatically assigned when a device is added to a device group.

LinkCpuNum

The link CPU number.

PdevName

The physical (host) name for the device, such as `/dev/rdisk/c2t0d2s3`.

RemoteIPAddr

The remote IP address.

SymDevName

The Symmetrix device name, such as 000C.

SymmID

The 12-digit ID of the Symmetrix array.

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES

To display statistics about all Symmetrix devices in device group `ProdDB` every 60 seconds, enter:

```
symstat -g ProdDB -i 60
```

To display statistics about Symmetrix device `log1` in device group `ProdDB` every 2 minutes (120 seconds), enter:

```
symstat -g ProdDB -ld log1 -i 120
```

To display statistics about all RDF directors in the specified Symmetrix array every 60 seconds for 10 times, enter:

```
symstat -i 60 -c 10 -RA ALL -sid 098712341357
```

To display statistics about all devices in the specified Symmetrix array every 5 minutes (300 seconds), enter:

```
symstat -sid 098712341357 -i 300
```

To display MEMIO statistics about all devices in the `prodDB` device group every 10 seconds 100 times, enter:

```
symstat -g ProdDB -i 10 -c 100 -type MEMIO
```

To display REQUEST statistics about all devices in the `prod` device group every 10 seconds 100 times, enter:

```
symstat -g prod -i 10 -c 100 -type REQUEST
```

To display REQUEST statistics about all front-end SA directors in the specified Symmetrix array every 10 seconds 100 times, enter:

```
symstat -SA ALL -c 100 -sid 57
```

To display CACHE statistics about all front-end SA directors in the specified Symmetrix array every 7 seconds 100 times, enter:

```
symstat -SA ALL -i 7 -c 100 -type cache -sid 57
```

To display PREFETCH statistics about ALL back-end DA directors in the specified Symmetrix array every 10 seconds, enter:

```
symstat -DA ALL -type prefetch -sid 57
```

To display BACKEND statistics about device 068 in the specified Symmetrix array every 10 seconds, enter:

```
symstat -type backend -i 10 -dev 068 -sid 57
```

To display DISK statistics about physical drive 02A:C5 in the specified Symmetrix array every 5 seconds, enter:

```
symstat -type disk -i 5 -sid 57 -disk 2A,C,5
```

To display DMSP statistics about device 0068 in the specified Symmetrix array every 10 seconds, enter:

```
symstat -type DMSP -i 10 -dev 0068 -sid 57
```

symvg

Displays information and performs operations on logical volume groups that are defined by the platform's logical volume manager.

SYNTAX

```
symvg -h

symvg [-type VgType]

    list [-v]

    show VgName

    deport VgName [-newvg NewVgName] [-overwrite] [-mapfile FileName]
        [-host HostID]

    import [VgName] [-newvg NewVgName] [-mapfile FileName] [-cluster] [-clear]

    rescan

    create VgName [-p PartitionSize] PdevName...

    destroy VgName

    adddev VgName PdevName...

    rmdev VgName PdevName...

    recover VgName

symvg [-v] [-type VgType] [-force] [-sid SymmID]
    [-rdfg GrpNum] [-R1|-R2] [-bcv|-nobcv] [-vdev]

    vg2dg VgName DgName [-dgtype REGULAR | RDF1 | RDF2]

    vg2cg VgName CgName [-cgtype REGULAR | RDF1 | RDF2]
        [-apidb | -ppath | -rdf_consistency]
```

DESCRIPTION

The `symvg` command displays information and performs operations on logical volume groups that are defined by the platform's logical volume manager.

Note: Users should run `symcfg sync` before running `symvg show` to make sure the device status is reported correctly.

Additionally, the user can convert the devices of a specified volume group to a device or composite group.

In the list of physical device members for a volume group, CLARiiON devices are distinguished from other device types by a (C) indicator.

For detailed interoperability information, please refer to E-Lab Interoperability Navigator which can be reached at <http://elabnavigator.EMC.com>.

Note: The `recover` action is not supported for the following volume managers: AIX LVM on the AIX platform, HP LVM on the HP-UX platform, and native LVM on the Linux platform.

The `import` and `deport` operations have different requirements, as listed in [Table 12](#).

Table 12 Options table for import and deport operations

Type	Action	VgName	-newvg	-mapfile	-cluster
AIX_LVM	Import	Mandatory	Optional	Mandatory	N/A
AIX_LVM	Deport	Mandatory	N/A	N/A	N/A
AIX_VxVM	Import/Deport	Mandatory	Optional	N/A	N/A
EMC_PVM	Import	Optional	Optional	Mandatory	N/A
EMC_PVM	Import	Mandatory	Optional	Optional	N/A
EMC_PVM	Deport	Mandatory	N/A	Optional	N/A
HP_LVM	Import/Deport	Mandatory	N/A	Mandatory	N/A
HP_VxVM	Import/Deport	Mandatory	Optional	N/A	N/A
LINUX_LVM	Import/Deport	Mandatory	N/A	Mandatory	N/A
LINUX_VxVM	Import/Deport	Mandatory	Optional	N/A	N/A
NT_LDM	Import	Mandatory	Optional	N/A	Optional
NT_LDM	Deport	Mandatory	N/A	N/A	N/A
OSF1_LSM	Import/Deport	Mandatory	Optional	N/A	N/A
SUN_VxVM	Import/Deport	Mandatory	Optional	N/A	N/A
SUN_SOLSTICE	Import/Deport	Mandatory	N/A	N/A	N/A

Note: On the Windows platform `import` and `deport` operations are supported for VERITAS VxVM 2.7 and higher, whereas the provisioning operations such as `create`, `destroy`, `adddev`, and `rmdev` are supported for VERITAS VxVM 3.0 and higher.

Note: For AIX LVM import operations the `-mapfile` option is used to specify a device name that existed as part of the volume group.

Note: For VERITAS volume managers on all host operating systems, the `deport` operation on volume groups named `rootdg` is not allowed.

Note: On the HP-UX platform with HP-UX LVM, if the volume group contains an EMC Symmetrix disk then the other Symmetrix disks that can be part of the volume group should have the same attributes. For example, if a volume group contains an EMC Symmetrix disk which is of type 2-way-mir then, the Symmetrix disks that can be added to the volume group can only be of type 2-way-mir.

Note: On the Solaris platform with SUN_SOLSTICE volume manager, a volume group named `solstice` cannot be created.

ARGUMENTS

`adddev`

Extends a volume group by adding the specified devices to the volume group.

create

Creates a volume group using the specified devices.

deport

Deports a specified volume group so that it can be imported later.

destroy

Destroys a volume group.

import

Imports a specified volume group into the system.

list

Lists all the logical volume groups that have been defined for this host.

recover

Recovers a failed volume group.

rescan

Rescans all the volume groups. This operation is currently supported for only the logical disk manager (LDM) volume groups on the Windows 2000 platform.

rmdev

Reduces a volume group name removing the specified devices from the volume group.

show

Shows information about a specified logical volume group.

vg2cg

Translates the devices of a specified volume group into a composite group.

vg2dg

Translates the devices of a specified volume group into a device group.

OPTIONS**-apidb**

Creates the composite group in the SYMAPI database only.

-bcv

Adds BCV devices only to the target group.

-cgtype

Specifies the composite group type of devices to be translated.

-clear

Imports a volume group and clears the host ID on the volume group. This flag is for VERITAS volume managers only.

-cluster

Imports a Windows NT LDM volume group as a cluster.

`-dgtype`

Specifies the device group type of devices to be translated.

`-force`

Attempts to force the operation, even though one or more devices in the volume group may already be part of another device or composite group.

`-h`

Provides brief, online help information.

`-host`

Specifies the ID of the host on which the deported volume group can be imported.

`-mapfile`

Provides the filename where the volume group information is stored when an import or deport is performed.

`-newvg`

Provides the new volume group name for the volume group.

`-nobcv`

Adds only standard devices to the target group. (The default behavior is to add both standard and BCV devices.)

`-overwrite`

Overwrites an existing mapfile. Used in conjunction with the `-mapfile` option.

`-p`

Specifies the partition size in megabytes. This option is valid only for AIX_LVM type LVM.

`-ppath`

Creates the RDF composite group in PowerPath.

`-R1`

Adds R1 devices to the target device group.

`-R2`

Adds R2 devices to the target device group.

`-rdf_consistency`

Creates a composite group, and enables it for RDF consistency after devices have been added.

`-rdfg`

Selects RDF devices that belong to the specified Symmetrix RA (RDF) group number.

`-sid`

Applies a Symmetrix ID as a target for this operation.

`-type`

Targets a specific volume group type.

`-v`

Provides a more detailed, verbose listing.

`-vdev`

Adds virtual devices to the target group.

PARAMETERS

CgName

A composite group name.

DgName

A device group name.

FileName

A file name where the volume group information is stored when performing an import or deport operation.

GrpNum

An SRDF RA group number.

HostID

The host on which the deported volume group can be imported.

NewVgName

A new logical volume group name.

PartitionSize

The partition size for a device in megabytes.

PdevName

A fully qualified device path of a character device.

SymmID

A unique Symmetrix ID.

VgName

A specific logical volume group name.

VgType

A specific logical volume group type. Possible values are:

AIX_LVM	HP_LVM	NT_DISKADM
AIX_VXVM	HP_VXVM	NT_LDM
AS400_LVM	LINUX_LVM	ORACLE_ASM
DEFAULT	LINUX_POOL	OSF1_LSM
DYNIX_SVM	LINUX_VXVM	SUN_SOLSTICE
EMC_PVM	HP_VXVM	SUN_VXVM

RETURN CODES Refer to [Appendix E, “SYMCLI Return Codes,”](#) for a complete list of return codes.

EXAMPLES To list all the logical volume groups, enter:

```
symvg list
```

To list all the Sun Solaris VERITAS VxVM logical volume groups in a list format, enter:

```
symvg list -type SUN_VXVM
```

To create a composite group named `newcg` with the R1 and R1 BCV devices from the volume group named `thisvg`, enter:

```
symvg vg2cg thisvg newcg -cgtype RDF1 R1
```

To create a REGULAR device group named `newdg` with only the R1 BCV devices from the volume group named `thisvg`, enter:

```
symvg vg2dg thisvg -R1 -bcv newdg -dgtype REGULAR
```

To deport a volume group named `testvg` out of the system, enter:

```
symvg deport testvg
```

The following example deports the volume group named `testvg` so that it can be imported on a host named `foo`. This option is available only with VxVM on HP and SUNOS platforms.

```
symvg deport testvg -host foo
```

To import a volume group named `testvg` into the system, enter:

```
symvg import testvg
```

The following example illustrates an import operation on an AIX LVM volume group named `aixtestvg`:

```
symvg import aixtestvg -mapfile hdisk22
```

In the previous example, the `-mapfile` option specifies a device name, in this case `hdisk22`, which existed as part of the volume group `aixtestvg` when the volume group was deported.

To create a volume group named `testvg` on the host system, enter:

```
symvg create testvg /dev/rdisk/c0t0d0s2
```

To create a volume group named `aixtestvg`, of type AIX LVM, with partition size of 16 MB, enter:

```
symvg create aixtestvg -p 16 /dev/rhdisk40
```

To add a device to the volume group named `testvg`, enter:

```
symvg adddev testvg /dev/rdisk/c0t0d1s2
```

To remove two devices from the volume group named `testvg`, enter:

```
symvg rmdev testvg /dev/rdisk/c0t0d1s2 /dev/rdisk/c0t5d5s2
```

To remove the volume group named `testvg` from the system, enter:

```
symvg destroy testvg
```

This appendix describes the environment variables for the SYMCLI.

- ◆ [Environment variables.....302](#)

Environment variables

SYMCLI provides environment variables that can be preset to streamline and expedite your command line session. These environment variables can be set to common argument values for a series of associated commands, which eliminates repeated key strokes for your given session.

To view a list of environment variables that can be set for a given SYMCLI session, enter:

```
symcli -env
```

To view the environment variables you currently have set, enter:

```
symcli -def
```

Table 13 describes the environment variables that are supported.

Table 13 Environment variables

Variable name	Description	Default
SYMCLI_ACCESS_PIN	For <code>symacl</code> with ADMIN privileges, to enable the commit, prepare, and release actions, this variable must be set to the ADMIN PIN (4 to 12 characters). If this is not set, you will always be prompted for a PIN.	NULL
SYMCLI_ASM_CONNECT	When mapping Oracle ASM, this variable must be set with connection information for the ASM instance. Format: <code>user/passwd@service</code>	NULL
SYMCLI_BCV_EST_TYPE	Specifies the default method for establishing BCV pairs. Possible values are: SINGULAR Specifies to issue an establish to a single device, including a meta member, at a time. This method allows other tasks access to the Symmetrix array when doing a large number of establishes. PARALLEL Specifies to issue an establish to each servicing disk adapter (DA) in parallel, and then wait for a DA to finish before issuing another establish to that DA. This method will keep the Symmetrix DAs the busiest. SERIAL Specifies to issue establishes as fast as the Global Special Task (GST) queue can handle them. However, all members of a meta must be established before continuing to the next meta or device. This is the default method when using meta devices.	PARALLEL
SYMCLI_BCV_DELAY	When the SYMCLI_BCV_EST_TYPE parameter (described earlier in this table) is set to SINGULAR or PARALLEL, this parameter specifies how long (in seconds) to wait between sending commands to the Symmetrix array. Possible values range from 0 to 30.	0
SYMCLI_BCV_PAIR_POLICY	Specifies the BCV pair cancel policy that SYMCLI subsequently uses when incrementally establishing a new BCV pair or when the maximum number of BCV pairs is reached. Possible values are: CANCEL_OLDEST CANCEL_NEWEST DONT_CANCEL	CANCEL_OLDEST
SYMCLI_CG	Specifies a default composite group name.	None
SYMCLI_CLONE_COPY_MODE	Specifies the mode in which Clone sessions are created. Can be set to NOCOPY, COPY, PRECOPY, COPY_DIFF, or PRECOPY_DIFF.	NOCOPY
SYMCLI_CLONE_EMULATION	Specifies whether TimeFinder commands should be mapped to Clone commands by default. Can be set to ENABLED or DISABLED.	DISABLED

Table 13 Environment variables (continued)

Variable name	Description	Default
<code>SYMCLI_CLONE_PAIR_POLICY</code>	Specifies the CLONE terminate policy, that SYMCLI uses when establishing a new clone and the maximum number of clones has been reached. Can be set to <code>TERM_OLDEST</code> or <code>DONT_TERM</code> .	<code>DONT_TERM</code>
<code>SYMCLI_CONNECT</code>	Specifies the SYMAPI server connection information.	<code>NULL</code>
<code>SYMCLI_CONNECT_TYPE</code>	Defines the local or remote mode of the host or client connection to the Symmetrix array. Possible values for the client are: LOCAL Defines a local connection to the Symmetrix array. (Not used for a client/server connection.) REMOTE Defines a client operation in which all the remote SYMCLI commands are strictly executed on the server, and the Symmetrix configuration database is strictly read and updated remotely. REMOTE_CACHED Defines a client operation in which the remote Symmetrix configuration database is modified remotely but cached in memory locally. Those functions that are control operations or that modify the configuration database are executed remotely. These modifications to the remote configuration database are then cached locally.	<code>LOCAL</code> (when <code>SYMCLI_CONNECT</code> is NOT set) REMOTE (when the SYMAPI thin client is installed) REMOTE_CACHED (when <code>SYMCLI_CONNECT</code> is set)
<code>SYMCLI_CTL_ACCESS</code>	Specifies how to obtain a lock on the Symmetrix configuration database file before starting a Symmetrix control operation. Possible values are: EXCLUSIVE PARALLEL	<code>EXCLUSIVE</code>
<code>SYMCLI_DB_FILE</code>	Specifies the configuration database file pathname for the host Symmetrix array's configuration data.	<code>sympi_db.bin</code>
<code>SYMCLI_DG</code>	Specifies a default device group name.	<code>None</code>
<code>SYMCLI_GENERATOR_FILE</code>	Specifies a file to write a log of all active commands (BCV, SRDF, and Snap).	<code>None</code>
<code>SYMCLI_LDEV_NAMING</code>	Specifies a default device naming convention other than logical device names. Possible values are: <code>DEFAULT</code> , <code>SYMDEV</code> , or <code>PDEV</code> . <code>SYMDEV</code> or <code>PDEV</code> are for Symmetrix device names or physical device names, respectively. (<code>DEFAULT = LdevNaming</code>)	<code>DEFAULT</code> (LdevNaming)
<code>SYMCLI_LOCKID</code>	Specifies the lock holder ID for commands that require the lock ID.	<code>None</code>
<code>SYMCLI_LOG</code>	Specifies a single file to be used as the log file where all new entries are appended to the file.	<code>None</code>
<code>SYMCLI_MAP_PRESERVE_CASE</code>	When set to 1, the case of the output fields is preserved. This setting is only valid for Windows environments.	<code>None</code>
<code>SYMCLI_MAX_BCV_PAIRS</code>	Normally, SYMCLI allows up to 8 BCV device pairs, which can be incrementally established with standard devices. The maximum number of pairs can be custom adjusted from 1 to 16 pairs with this variable.	<code>8</code>
<code>SYMCLI_MODE</code>	Specifies the command output reporting style to be compatible with prior SYMCLI versions. Possible values are <code>V43</code> , <code>V50</code> , <code>V51</code> , <code>V52</code> , <code>V53</code> , <code>V54</code> , <code>V55</code> , <code>V60</code> .	<code>None</code>
<code>SYMCLI_NOLOGGING</code>	When set to 1, logging is disabled.	<code>0</code>
<code>SYMCLI_NOPROMPT</code>	When set to 1, disables verification prompts.	<code>0</code>
<code>SYMCLI_OFFLINE</code>	When set to 1, online access to Symmetrix device status is disabled (Symmetrix configuration database access only).	<code>0</code>

Table 13 Environment variables (continued)

Variable name	Description	Default
<code>SYMCLI_OSM_VERSION</code>	Specifies the version reported by the SYMCLI OSM SRDF Compatibility mode.	4.0.0
<code>SYMCLI_OUTPUT_MODE</code>	Can be set to a specific mode to output SYMCLI utilities. Valid modes are limited to <code>Standard</code> , <code>XML_ELEMENT</code> and <code>XML</code> .	Standard
<code>SYMCLI_PDEV_FILE</code>	Can be set to specify the pathname location of a physical-device definitions file. These definitions replace the physical devices previously discovered or defined.	NULL
<code>SYMCLI_RCOPY_COPY_MODE</code>	Specifies the mode in which Rcopy sessions are created. Can be set to <code>COPY_DIFF</code> , <code>NOCOPY_DIFF</code> , <code>COPY_NODIFF</code> , or <code>NOCOPY_NODIFF</code> .	None
<code>SYMCLI_RDFG_CONSISTENCY</code>	Can be set to enable consistency verification on an RDF Group level for consistent operations.	DISABLE
<code>SYMCLI_RDB_CONNECT</code>	Can be set to specify the default relational database connection information in the format <code>user/password@service</code> .	NULL
<code>SYMCLI_RDB_NAME</code>	Specifies the default relational database name (<i>DbName</i>).	NULL
<code>SYMCLI_RDB_TYPE</code>	Specifies a specific type (<i>DbType</i>) of database. Possible values: Oracle Informix SQLServer Sybase IBMUDB Exchange SharePoint	NULL
<code>SYMCLI_REMOVE_SYMS</code>	When set to 1, a discover will remove from the Symmetrix configuration database, any record of a Symmetrix array and its dependent devices and device groups, when the Symmetrix array is no longer reachable.	0
<code>SYMCLI_SCHEMA_NAME</code>	Specifies a relational database schema name (<i>SchemaName</i>).	NULL
<code>SYMCLI_SID</code>	Specifies a default Symmetrix ID.	None
<code>SYMCLI_SKIP_ON_FAILURE</code>	When set to 1, causes the <code>symcfg discover</code> command (which scans all bus-connected devices) to skip over any Symmetrix array encountered in an error state. This allows the command to complete the scan of the remaining units. (Otherwise, the command faults as it fails to complete the interrogation of all the Symmetrix arrays.)	0
<code>SYMCLI_SNAP_PAIR_POLICY</code>	Specifies the SNAP terminate policy, that SYMCLI uses when establishing a new snap and the maximum number of snaps has been reached. Can be set to <code>TERM_OLDEST</code> or <code>DONT_TERM</code> . The default is <code>DONT_TERM</code> which causes the snap operations to fail.	DONT_TERM
<code>SYMCLI_SVP</code>	Can be set as the default savedev pool name.	DEFAULT_POOL
<code>SYMCLI_TBS_NAME</code>	Specifies a relational database tablespace name (<i>TblSpName</i>).	NULL
<code>SYMCLI_UPPERCASE</code>	When set to 1, specifies that any user input in lowercase is entered as uppercase.	0
<code>SYMCLI_VERBOSE</code>	When set to 1, enables the verbose response mode for SRDF and BCV control operations.	0
<code>SYMCLI_VG</code>	Specifies a default logical volume group name.	None

Table 13 **Environment variables (continued)**

Variable name	Description	Default
SYMCLI_WAIT_ON_DB	When set to 1, SYMCLI will wait to obtain a lock on the Symmetrix configuration database when locked by another user. By default, a busy database will return an error.	0
SYMCLI_WAIT_ON_GK	When set to 1, causes the SYMCLI to wait for the retrieval of Symmetrix information when all gatekeepers are busy. Otherwise, a busy gatekeeper will cause an error.	0
SYMCLI_XML_SCHEMA	Can be set to specify a URL to the XML Schema document describing the output of SYMCLI in XML mode. It is advised that the schema is placed in a public location and this variable set to point to it. Without this variable set, no mention of a schema will occur. Note that this setting does nothing in non-XML mode.	None

This appendix describes the SYMCLI options file.

- ◆ Options file 308

Options file

The `options` file in the SYMAPI configuration directory contains behavior parameters that can be set to critically change the default behavior of SYMCLI operations, SYMAPI calls, and their control actions. It can be used to impart certain global restrictions as well as customize and streamline command line coding to your specific environment.



CAUTION

This file and the text in this appendix are for experienced SYMCLI or SYMAPI users and are not a prerequisite for normal use. Improper adjustment of these parameters can impose unwanted restriction of features or possibly render your Symmetrix environment inoperative.

The `options` file is located in the SYMAPI configuration directory:

Directory	System
<code>/var/symapi/config</code>	UNIX
<code>C:\Program files\EMC\Symapi\config</code>	Windows
<code>your_specific_installation_directory</code>	OpenVMS, AS/400, MVS

Editing and file format

This is an editable file to change behavior defaults of certain SYMCLI or SYMAPI commands. The file contains editable behavior parameters set to certain optional defaults in the line entries. Commented lines beginning with a pound sign (#) are ignored by SYMCLI.

Removing parameters

To remove any parameter option, remove the line entry, rename the file, or comment the line by adding a pound sign (#) at the beginning of the line entry.

Possible optional parameters

The following are possible optional parameter entries for the `options` file:

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
<code>SYMAPI_ACC_ADMIN_VIA_SERVER</code> Enables/disables the client SYMAPI/SYMCLI access control commands for <code>prepare</code> , <code>release</code> , and <code>commit</code> actions to execute at the SYMAPI server.	= DISABLE ENABLE	Access Control
<code>SYMAPI_ACC_DISPLAY_VIA_SERVER</code> Enables/disables the client SYMAPI/SYMCLI access control display commands for <code>list</code> and <code>show</code> actions to execute at the SYMAPI server.	= DISABLE ENABLE	Access Control
<code>SYMAPI_ALLOW_CELERRA_DEV_CTRL</code> Allows controls on Celerra devices.	= ENABLE DISABLE	Base Controls, Config Manager
<code>SYMAPI_ALLOW_DEV_IN_MULT_GRP</code> Enables devices to belong to multiple groups.	= ENABLE DISABLE	Base Controls, Config Manager
<code>SYMAPI_ALLOW_RDF_SYMFORCE</code> Indicates whether users can specify <code>-symforce</code> when performing RDF control operations.	= TRUE FALSE	SRDF

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
SYMAPI_ALLOW_SCRIPTS_VIA_SERVER Specifies whether to allow pre-action and post-action scripts for TimeFinder commands to be run via the SYMAPI server.	= ENABLE DISABLE	TimeFinder
SYMAPI_APPREG_AUTO_EXPIRATION Specifies whether to expire entries in the application registration table, based on their age.	= DISABLE ENABLE	Base
SYMAPI_APPREG_EXPIRATION_PERIOD Sets the number of days after which an entry can be expired.	= <i>nnn (15 to 365)</i> 90	Base
SYMAPI_BCV_ESTAB_INC_TO_FULL Causes an incremental BCV establish to automatically be converted to a full establish, if needed.	= ENABLE DISABLE	TimeFinder
SYMAPI_BCV_SINGULAR_INTERVAL When SYMAPI_DEFAULT_BCV_ESTABLISH_TYPE is set to SINGULAR, the SYMAPI pauses this (INTERVAL) many seconds before sending in the next request.	= <i>nn (0 to 30)</i> 0	TimeFinder
SYMAPI_CG_TIMEOUT Sets the time-out period during which the host will attempt to trip a failed consistency group.	= <i>nnn (10 to 120)</i> 30	SRDF Consistency Groups
SYMAPI_CG_TIMEOUT_ACTION Specifies which action to take for an SRDF consistency group time out.	= FAIL RETRY	SRDF Consistency Groups
SYMAPI_CLONE_COPY_ON_WRITE Sets clone nocopy mode to copy-on-write (ENABLE) or copy-on-access (DISABLE).	ENABLE DISABLE	TimeFinder
SYMAPI_COLLAPSE_STRIPED_META_EXTENTS Specifies whether mapping commands can be entered without having to type the <code>-collapse</code> option in every command.	= DISABLE ENABLE	Mapping
SYMAPI_CTRL_OF_NONVISIBLE_DEVS Blocks the SYMAPI/SYMCLI control commands from targeting devices that are not visible to this host.	= DISABLE ENABLE	Base, (All)
SYMAPI_CTRL_VIA_SERVER Blocks the client SYMAPI/SYMCLI control commands from executing at the SYMAPI server.	= DISABLE ENABLE	Base, (All)
SYMAPI_DATED_LOGFILE_NAME Enables/disables the creation of dated SYMAPI log files.	= DISABLE ENABLE	Base, (All)
SYMAPI_DB_FILE_COMPRESSION Minimizes the overall database file size by compressing the file. When enabled, only SYMAPI versions 5.3 or higher can write to or read the compressed database file. SYMAPI versions prior to 5.3 cannot read compressed database files.	= DISABLE ENABLE	Base, (All)

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
SYMAPI_DEFAULT_BCV_ESTABLISH_TYPE Specifies how the DA director processes the Establish action on BCV and standard devices.	= SINGULAR SERIAL PARALLEL SINGULAR: devices are established one at a time. The next device will not be established until the previous device has been established. SERIAL: devices are passed to the Symmetrix array as fast as they can be accepted. PARALLEL: devices are passed in parallel to the servicing DA directors. SYMAPI ensures that no more than one establish per the servicing DA will be outstanding at any one time.	TimeFinder
SYMAPI_DEFAULT_BCV_RESTORE_TYPE Sets the default behavior for a BCV Restore operation.	= SINGULAR SERIAL PARALLEL SINGULAR: devices are restored one at a time. The next device will not be restored until the previous device has been restored. SERIAL: devices are passed to the Symmetrix array as fast as they can be accepted. PARALLEL: devices are passed in parallel to the servicing DA directors. SYMAPI ensures that no more than one restore per the servicing DA will be outstanding at any one time.	TimeFinder
SYMAPI_DEFAULT_BCV_SPLIT_TYPE Sets the default behavior for a BCV Split operation.	= INSTANT REGULAR INSTANT: improves the performance of a typical split operation by performing a quick foreground BCV Split. REGULAR: performs a regular BCV Split operation.	TimeFinder
SYMAPI_DEFAULT_SNAP_TERM_TYPE Sets the way a DA director processes the Terminate action on Snap devices.	= PARALLEL SERIAL PARALLEL: devices are passed in parallel to the servicing DA directors. SYMAPI ensures that no more than one termination per the servicing DA will be outstanding at any one time. SERIAL: devices are passed to the Symmetrix array as fast as they can be accepted.	TimeFinder
SYMAPI_ENABLE_DEVICE_RESERVATIONS Specifies whether to enable device reservations.	FALSE TRUE FALSE: do not enable device reservations. TRUE: enable device reservations.	Device reservations
SYMAPI_ENFORCE_DEVICE_RESERVATIONS Specifies whether to enforce a device reservation.	FALSE TRUE FALSE: do not enforce device reservations. TRUE: do not enforce API enforced device reservations.	Device reservations
SYMAPI_ENHANCED_USER_AUTHENTICATE Enables enhanced (KERBEROS) user authentication.	= ENABLE DISABLE	Base, (All)
SYMAPI_GNS_CS_STALE_DATA_TIMEOUT Sets the timeout period, in seconds, for the client's in-memory GNS group information before the server is polled for updates.	1 - 15 1	Base, GNS/ client-server REMOTE_CACHED
SYMAPI_GNS_MIRROR_GROUP_CONTROL Allows group modifications to device groups that were created by a remote GNS daemon via remote SRDF mirroring.	= ENABLE DISABLE	Base, GNS
SYMAPI_IO_DRAIN_TIMEOUT Controls the amount of time, in seconds, that PowerPath will wait for incoming I/Os to finish before responding that the I/Os are suspended.	= nnn (5 - 120) DEFAULT 60	TimeFinder, Mapping

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
SYMAPI_IO_THAW_INTERVAL Controls the amount of time, in seconds, that PowerPath will suspend I/Os before automatically restarting them.	= <i>nnn</i> (5 - 120) DEFAULT <i>never timeout</i>	TimeFinder, Mapping
SYMAPI_LOGFILE_DATE_FORMAT Changes the date format in the log entries.	= FORMAT2 FORMAT1 FORMAT2: <i>yyyy-mm-dd</i> FORMAT1: <i>mm/dd/yyyy</i>	Base, (All)
SYMAPI_LOGFILE_FORMAT Controls the presence of the optional fields within log file records.	= userid activityid pid tid userid: include user ID activityid: include activity ID pid: include process tid: include thread	Base, (All)
SYMAPI_LOGFILE_RETENTION Sets the maximum number of days to retain a log entry in the file, after which the entry is deleted.	= <i>nnn</i> (0, 5 to 1825) 30 (on Service Processor) 0 (on all other hosts)	Base, (All)
SYMAPI_MAX_CLIENTS Adjusts the limit of the number of clients to allow in a client/server environment.	= <i>nnn</i> 100 (on other hosts) 10 (on Service Processor)	Base
SYMAPI_PARALLEL_RA_GROUPS Locks RA groups during RDF control actions, instead of applying Symmetrix array locks.	= ENABLE DISABLE	SRDF
SYMAPI_RCOPY_GET_MODIFIED_TRACKS Enables/disables the calculation of modified tracks.	= TRUE FALSE	Open Replicator
SYMAPI_RCOPY_INTERACTION_CHECKS Specifies whether to remove the syncing of Open Replicator data and the checking of interactions.	= DISABLE ENABLE DISABLE: user determines that there will be no interactions with existing Open Replicator sessions when performing SRDF or TimeFinder operations. ENABLE: the API gathers data about Open Replicator sessions and uses that to find possible interactions when running SRDF and TimeFinder controls.	RDF, TimeFinder
SYMAPI_RCOPY_SESSION_LIMIT This option requires Enginuity 5771 or higher. Specifies how many sessions are allowed at any one time on this array.	= 0 - 512 128	Open Replicator
SYMAPI_RDF_CG_TO_PPATH Sets the default behavior for copying RDF1 and RDF2 composite groups to PowerPath, assuming PowerPath is installed on the host. When enabled, newly created RDF1 and RDF2 type composite groups will be copied to the PowerPath database.	= ENABLE DISABLE	Base (RDF1 and RDF2 composite groups)
SYMAPI_RDF_RW_DISABLE_R2 Causes the R2 device to be set to read/write disabled, or not-ready, on the RA during establish, restore, failback, or createpair-establish operations.	= ENABLE DISABLE	SRDF
SYMAPI_SERVER_SECURITY_LEVEL Specifies the session security level.	= SECURE NONSECURE ANY SECURE: accept secure sessions only. NONSECURE: accept non-secure sessions only (client and server do not initialize secure socket library). ANY: accept both types.	SYMAPI Client/Server

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
SYMAPI_SNAP_CONTROL_INTERVAL Spaces the Snap <code>create</code> and <code>terminate</code> operations, which can be processor intensive, to allow other queued operations to occur. Sets the time interval for the operation to pause, from 0 to 30 seconds.	= <i>nn</i> (0 to 30) 0	TimeFinder
SYMAPI_SNAP_COUNT_MODIFIED_TRACKS Sets Snap to return a count of the changed tracks. This option is ignored when the request is made remotely.	= TRUE FALSE	TimeFinder
SYMAPI_SNAP_DEFAULT_POOL_COMPAT Sets the Snap default pool compatibility to display disabled devices. (ENABLE). The default is DISABLE.	= ENABLE DISABLE	TimeFinder
SYMAPI_SNAP_PERSISTENT_RESTORE Specifies whether Snap restores are performed as Persistent Restores.	= DISABLE ENABLE	TimeFinder
SYMAPI_SYNC_DIRECTION Confines TimeFinder operations to either just Establish or Restore actions.	= ESTABLISH RESTORE BOTH ESTABLISH: blocks the host from executing an Establish operation. RESTORE: blocks the host for executing a Restore operation. BOTH: does not restrict the host for TimeFinder actions.	SRDF, TimeFinder
SYMAPI_TF_COUNT_MODIFIED_TRACKS Sets TimeFinder to return a count of the changed tracks. This option is ignored when the request is made remotely.	= TRUE FALSE	TimeFinder
SYMAPI_TF_MULTI_ESTAB_REST Causes TimeFinder to use the Multi-instant Establish and Restore feature.	= DISABLE ENABLE	TimeFinder
SYMAPI_TF_NOT_READY_BCVS Causes a User Not_Ready to occur on the BCV devices before a Restore or an Establish command.	= ENABLE DISABLE	TimeFinder
SYMAPI_TF_RDF_SUSPEND Causes TimeFinder to suspend the RDF link of an R1-BCV prior to an Establish or Restore command. Normally, this is done by Engenuity.	= ENABLE DISABLE	TimeFinder
SYMAPI_THREE_CHAR_SYMDEVNAME Allows the use of the three-character naming convention for the Symmetrix device name (SymDevName) supported in previous releases, rather than the new four-character convention.	= DISABLE ENABLE	Base, (All)
SYMAPI_TRACK_SIZE_32K_COMPATIBLE Specifies how to report device sizes.	= DISABLE ENABLE DISABLE: report device sizes in their native mode, depending on the Symmetrix model. ENABLE: report device sizes in terms of a 32 KB track size.	SYMAPI Client/Server
SYMAPI_UNIQUE_ACL_PARTITION_IDS For AIX and HP-UX hosts. Determines how partition IDs are generated.	= DISABLE ENABLE DISABLE: causes SYMAPI to use a single unique ID for all partitions running on the system. ENABLE: causes SYMAPI to generate unique IDs for each partition running on the machine.	Access Control

Optional behavior parameter Description	= <optionalvalue defaultvalue>	Component affected
SYMAPI_USE_GNS Stores and maintains, in a common repository, SYMAPI device group (DG) and composite group (CG) definitions across Symmetrix arrays that are visible to all locally-attached hosts.	= ENABLE DISABLE	Base, GNS
SYMAPI_USE_RDFD Allows the creation of RDF_CONSISTENCY composite groups, to be managed by the RDF daemon.	= ENABLE DISABLE	Base, RDF Consistency
SYMAPI_WAIT_FOR_BCV_BG_SPLIT Sets the default behavior for the BCV Split operation to wait for the background split to be complete before returning your call.	= TRUE FALSE	TimeFinder
SYMAPI_WAIT_FOR_BCV_SYNC Sets the default behavior for the BCV Establish operation to wait for the Establish operation to complete before returning your call.	= TRUE FALSE	TimeFinder
SYMAPI_WAIT_ON_LOCKED_GK Specifies whether to wait when a locked gatekeeper device is encountered.	= ENABLE DISABLE	Base, (All)

As shown in the table, a parameter may affect all components or just certain SYMCLI component areas.

This chapter provides the manpage descriptions of the Solutions Enabler daemons.

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Daemon support overview

To improve performance on a number of applications or scripts running at once, you can employ Solutions Enabler daemons (services) that run in the background with root privileges to a local Symmetrix storage resource. When you use daemons, applications do not have to run as a privileged user.

The available daemons are as listed below. Additional information is contained in the specific documentation for each. Note that on certain platforms, only some of these daemons are supported.

Table 14 **Daemon support matrix**

Daemon name	Platforms supported	Description	Daemon-specific parameters documentation
storapid	UNIX ^a , Win32, MVS/zOS, AS400, BS200, Open VMS	Base API daemon	<i>EMC Solutions Enabler Installation Guide</i>
storgnsd	UNIX, Win32	Group Name Services daemon	<i>EMC Solutions Enabler Symmetrix Array Management CLI Product Guide</i>
storrdfd	UNIX, Win32	RDF daemon	<i>EMC Solutions Enabler Symmetrix SRDF Family CLI Product Guide</i>
storevntd	UNIX, Win32	Event daemon	<i>EMC Solutions Enabler Installation Guide</i>
storsrvd	UNIX, Win32, MVS/zOS, AS400, BS200, Open VMS	SYMAPI Server daemon	<i>EMC Solutions Enabler Installation Guide</i>
storwatchd	UNIX	UNIX only: Watchdog daemon	<i>EMC Solutions Enabler Installation Guide</i>
storsrmd storsrmd64	Solaris, AIX, HP-UX	SRM daemon	<i>EMC Solutions Enabler Storage Resource Management CLI Product Guide</i>
stororad		SRM daemon for Oracle DB	
storora64d		SRM daemon for Oracle DB (64-bit)	
storudbd		SRM daemon for UDB DB	
storifmxd		SRM daemon for Informix DB	
storsqld		SRM daemon for SQL DB	
storsybs12d		SRM daemon for Sybase DB - version 12	
storsybs12.5d		SRM daemon for Sybase DB - version 12.5	
storsybs12.5_64d		SRM daemon for Sybase DB - version 12.5 (64-bit)	

a. UNIX represents Sun, AIX, HP-UX, Linux, and OSF1/Tru64 systems.

storapid

DESCRIPTION

The `storapid` daemon is optional - and is run at the user's discretion.

If `storapid` is running, the Solutions Enabler runtime libraries (SYMAPI, STORAPI) forward all I/O operations on Symmetrix storage arrays to it for processing.

The `storapid` daemon only performs these I/O operations on behalf of local users who are authorized to use it.

- ◆ Privileged users (root on UNIX, in the Administrator's group on Windows) are implicitly authorized to make use of `storapid`.
- ◆ Otherwise, users listed in the `daemon_users` authorization file are permitted to make use of `storapid`. This file is located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

Within this file, user `smith` is authorized via the following line:

```
smith      storapid
```

For compatibility with prior releases, users can also be authorized to make use of `storapid` by using an entry in the older `bdmnusers` file located in the same directory.

Within this file, user `smith` is authorized via the following line:

```
smith
```

It is important that both of these authorization files (`daemon_users` and `bdmnusers`) be adequately protected - such that they can only be modified by privileged users.

If a user is not authorized to make use of `storapid`, the Solutions Enabler libraries will perform these I/O operations directly - in the context of the user/application.

OPTIONS

The `stordaeomon` command can be used to start, stop and monitor the `storapid` daemon. See the `stordaeomon` man page for details.

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

Some of the more commonly used options are the following.

```
storapid:client_use = never | if-running | require | optional
```

Specifies the client use of the `storapid`. The default setting is `optional`.

```
storapid:data_caching = enable|disable
```

Enables or disables data caching of Symmetrix configuration and statistical data, as defined by internal caching policies. The default setting is `disable`.

```
storapid:data_compression = enable|disable
```

Enables or disables the use of data compression for cached data. The default setting is `disable`.

```
storapid:inquiry_timeout = nn
```

Specifies how long Inquiry results are to remain in cache before expiring, and new data is retrieved from the host and array. A value of -1 indicates the data never expires. A value of zero indicates the data always expires. The default setting is 900 seconds (15 minutes.)

```
storapid:base_timeout = nn
```

Specifies how long Symmetrix data categorized as 'Base' is to remain in cache before expiring, and new data is retrieved from the array. 'Base' results are considered those containing configuration-type data that rarely, if ever, changes. A value of -1 indicates the data never expires. A value of zero indicates the data always expires. The default setting is 86400 (1 day.)

```
storapid:dynamic_timeout = nn
```

Specifies how long Symmetrix data categorized as 'dynamic' is to remain in cache before expiring, and new data is retrieved from the array. A value of -1 indicates the data never expires. A value of zero indicates the data always expires. 'Dynamic' results are considered those containing configuration-type data subject to frequent or constant change. The default setting is 15 seconds.

```
storapid:statistics_timeout = nn
```

Specifies how long Symmetrix data categorized as 'statistics' is to remain in cache before expiring, and new data is retrieved from the array. A value of -1 indicates the data never expires. A value of zero indicates the data always expires. This value should be adjusted, as necessary, to match the lowest interval option (-i) used with CLI commands. The default setting is 15 seconds.

DIAGNOSTICS

Diagnostic messages are written to the log file `storapid-yyyymmdd.log` if the `logfile_type` option is set to `dated`, or to the log files `storapid.log0` and `storapid.log1`. Log files are located in the following directory:

```
UNIX:      /var/symapi/log
Windows:   c:\Program Files\EMC\SYMAPI\log
```

stordaeomon

Controls the EMC Solutions Enabler daemon processes. This command can be used to start, stop, or query on a daemon's status.

SYNTAX

```
stordaeomon [-h] [-scripting]

list [-v] [-running] [-all] [-brief] [-exit_num_running]

start DaemonName [-inst inst] [-wait numsecs] [-args ...]

shutdown DaemonName [all [-immediate] [-abort] [-wait numsecs]

install DaemonName [-autostart] [-inst inst]

uninstall DaemonName

show DaemonName

showlog DaemonName [-lines numlines]

getvar DaemonName -name var

setvar DaemonName -name var=value

action DaemonName -cmd ...

setoption DaemonName -name option=value [-force]

disable all [-duration numminutes]

enable all
```

DESCRIPTION

The `stordaeomon` is used to start, stop, query status from or otherwise control the Solutions Enabler daemons.

Note: Note that `stordaeomon` can only manage daemons installed on the local machine. It cannot be used for the daemons that will be used by `symapisrv` on a remote host.

For the `start` and `shutdown` operations, `stordaeomon` will wait for as many as 30 seconds for the specified daemon(s) to actually start or exit. The `-wait N` option can be used to specify a different value or to indicate that `stordaeomon` should not wait at all.

ARGUMENTS

action

Asks the daemon to perform some action. The action to be performed follows the `-cmd` option. The documentation for a daemon list any operational actions supported by that daemon. Also, an action of 'help' for an individual daemon will list all supported actions.

disable

Disables subsequent daemon starts (such as, with `stordaeomon start`). This operation is only supported with a daemon name of `all` -- applying to all daemons. Note that there is no effect on daemons that are already running. This operation is provided for use by the Solutions Enabler install scripts. Its use in other scenarios is strongly discouraged. The `-duration` option, if supplied, gives the number of minutes to hold this disabled state. This defaults to 60.

enable

Enables subsequent daemon starts -- reversing the effect of an earlier `disable` operation. This operation is only supported with a daemon name of `all` -- applying to all daemons.

getvar

Retrieves a configuration setting for the running specified daemon. The name of the setting is given by the *Var* parameter. The settings, if any, that can be changed for a daemon are detailed in the documentation for that daemon.

install

Installs the specified daemon. On Windows, this records the daemon within the Service Control Manager database. On UNIX, this has no effect unless the *-autostart* is supplied as well.

If the *-autostart* flag is provided as well, the operating system is told to automatically start the daemon at system boot time. On Windows, the Service Control Manager handles this startup. On UNIX, this is done by creating an appropriate OS initialization script (with Solaris, under */etc/init.d* and */etc/rc3.d*).

list

Lists daemons installed on the host - along with an indication (*) of which are currently running.

setoption

Updates the *daemon_options* file with an options setting for the daemon. The name of the option and its value are given by the *Option=Value* parameter. By default, a line for this option (including the daemon name) must already be present in the *daemon_options* file -- (perhaps commented out). For example, for the *storapid* daemon and the *XXX* option: *# storapid:XXX = ... storapid:XXX = ...* The *-force* option can be supplied to override this behavior - adding the setting regardless of whether it is already present in the file or not.

setvar

Changes a configuration setting for the running specified daemon. The name of the setting and its value are given by the *Var=Value* parameter. The settings, if any, that can be changed for a daemon are detailed in the documentation for that daemon.

show

Displays a status message for the specified daemon.

showlog

Displays the location of the log files used by the specified daemon. If the *-lines* option is specified, the contents of the log file are displayed as well.

shutdown

Shuts down the specified daemon. If *all* is specified, all running daemons are stopped.

Unless the *-immediate* option is specified as well, daemons will not actually terminate until any clients currently connected to them have first disconnected (exited). While in this shutdown pending state, connections from new clients will not be accepted.

start

Starts the specified daemon. Only privileged users (root or Administrator) can perform this operation.

uninstall

Un-installs the specified daemon. On Windows, this removes the definition from the Service Control Manager database. On UNIX, the only effect is to undo any startup file changes that were made by a prior *install -autostart* operation for the daemon.

OPTIONS**-h**

Provides brief, online help.

-scripting

Omits any descriptive header messages. This may be useful in scripts when parsing output from *stordaeon*.

-v

Displays a status message for each daemon that is running.

-brief

Displays only daemon names, 1 per line.

-running

Lists only daemons that are actually running at this time.

-all

Lists all daemons - even those not installed on the local host.

-exit_num_running

Sets *stordaeon*'s exit status to the number of daemons that are currently running.

-wait

Waits up to the specified number of seconds for the specified daemon(s) to actually start or terminate. By default, this value is 30 (seconds). If a value of 0 is supplied, *stordaeon* will return immediately instead of waiting for the daemon to start or terminate.

-inst

Starts or installs one or more specific instances of a daemon. This option should rarely be needed. Refer to the documentation on each of the database daemons for information on when its use would be appropriate. This option can be used to start multiple instances of certain of the database daemons. One or more instance names can be specified.

-args ...

Indicates that the remaining arguments are passed to the daemon being started for its use. Refer to the documentation for each of the daemons to see which, if any, additional arguments they accept. This option must be the last *stordaeon* option. The first argument following this must begin with a dash (-).

-cmd

Indicates that the remaining arguments are passed to the daemon as a command to be executed. Refer to the documentation for each of the daemons to see which, if any, commands they accept.

-immediate

Asks the specified daemon(s) to shutdown immediately. By default, it will wait for the existing client connections to terminate before exiting.

-abort

Sends a KILL signal, instead of asking the specified daemon(s) to shut themselves down. Only privileged users (root) can use this option. [Supported on UNIX only.]

-lines

Displays the end (tail) of the daemon's log file. If omitted, this defaults to 20.

`-name`

Indicates the name of the setting to be changed and its value. The `Var=Value` parameter is required.

`-autostart`

Starts the daemon automatically at system boot time.

`-force`

Performs the operation even if the specified option is not already present within the `daemon_options` file -- or if the `daemon_options` file doesn't exist.

`-duration`

Indicates the number of minutes to disable the daemons. If omitted, this defaults to 60.

PARAMETERS

Inst

One or more daemon instance names, in a comma separated list. For example: `-inst 80` or `inst 80,90,100`. As noted above, this parameter should rarely be needed. For the `install` argument: only a single name may be supplied.

NumSecs

The maximum number of seconds to wait for the specified daemons to terminate.

Daemon

The daemon name - as displayed by the `list` argument. For the `show`, `shutdown` and `showlog` arguments, this daemon name must include any instance qualifier used to start the daemon. Refer to the examples section. For the `shutdown` argument, the value `all` causes the operation to be performed on all running daemons.

NumLines

The number of lines to display from the end of the daemon's log file.

NumMinutes

The number of minutes that daemons should be disabled for. If omitted, this defaults to 60.

Var=Value

The name of the configuration setting to be changed and its value.

Option=Value

The daemon option to be set along with its value.

RETURN CODES

Refer to [Appendix E, "SYMCLI Return Codes,"](#) for a complete list of return codes.

EXAMPLES

To list all daemons that have been installed, along with an indication of which are currently running, enter:

```
stord daemon list
```

To list all daemons that are currently running, along with status information on each, enter:

```
stord daemon -running -verbose list
```

To start the `stororad` daemon and wait up to 5 seconds for it to come up, enter:

```
stord daemon -wait 5 start stororad
```

To start the `stororad` daemon with a specific instance qualifier. The daemon will have an actual name of `stororad80`.

```
stord daemon -inst 80 start stororad
```

To start two instances of the `stororad` daemon named `stororad90` and `stororad100`, enter:

```
stord daemon -inst 90,100 start stororad
```

To shut down the `stororad` daemon started above, enter:

```
stord daemon shutdown stororad
```

To shut down the 80 instance of the `stororad` daemon started above, enter:

```
stord daemon shutdown stororad80
```

To shut down all running daemons, and wait up to 5 seconds for them to actually terminate, enter:

```
stord daemon -wait 5 shutdown all
```

To display a status message for the `stororad` daemon, enter:

```
stord daemon show stororad
```

To display the last 100 lines from the `stororad` daemon's log file, enter:

```
stord daemon showlog stororad -lines 100
```

To set the `gns_remote_mirror` option for the GNS daemon, enter:

```
stord daemon setoption storgnsd -name gns_remote_mirror=enable
```

storevntd

The `storevntd` daemon acts as the clearing house for Solutions Enabler events on a host.

- ◆ In most cases, events are first delivered by a producer the Event Daemon ... and from there are forwarded to any client applications that have registered an interest in them.
- ◆ In Client/Server mode, events are forwarded from the Event Daemon on the remote (server) host to the one on the local (client) host ... and from there to client applications.
- ◆ The Event Daemon itself generates (by polling in some cases) events related to Symmetrix and CLARiiON storage arrays.
- ◆ The Event Daemon can also be optionally configured to monitor certain events and automatically log them using one or more of the following mechanisms.
 - a. SNMP traps to an SNMP management application
 - b. a local log file
 - c. Syslog (UNIX) or the Windows Event Log

As described below, an options setting can be made to cause a watchdog mechanism to monitor `storevntd` - and automatically restart it if it crashes.

Only authorized users are permitted control the `storevntd` daemon.

OPTIONS

The `stordaeomon` command can be used to start, stop and monitor the `storevntd` daemon. Refer to [“stordaeomon” on page 319](#) for details.

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\Program Files\EMC\SYMAPI\config
```

Some of the more commonly used options are the following.

```
storevntd:symm_poll_interval = nn
```

How often to poll Symmetrix arrays for events that need to be delivered. This defaults to 60 seconds.

```
storevntd:autorestart = enable|disable
```

Whether to use a watchdog mechanism to automatically restart `storevntd` if it crashes. The default setting is `enable`.

```
storevntd:log_event_targets = ...
```

```
storevntd:log_symmetrix_events = ...
```

Whether to automatically log events and, if so, where.

Refer to the `README.daemon_options` file that is installed.

DIAGNOSTICS

By default, diagnostic messages are written to the log files `storevntd.log0` and `storevntd.log1`, located in the following directory:

```
UNIX:      /var/symapi/log
Windows:   c:\Program Files\EMC\SYMAPI\log
```

storgnsd

GNS is an optional feature. If enabled, it provides a global, distributed repository for DG and CG group definitions. Changes made to a group from one host are automatically visible to other hosts on which GNS is enabled.

GNS stores group definitions on Symmetrix arrays. Specifically, a group's definition is distributed across the arrays for which it contains devices.

The `storgnsd` daemon runs on each host for which GNS is enabled - and is responsible for providing GNS group semantics to other Solutions Enabler components on that host.

Typically, GNS use is enabled via the `SYMAPI_USE_GNS` option within the options file:

```
SYMAPI_USE_GNS      = ENABLE | DISABLE
```

The `ENABLE` setting enables GNS for all applications running on the host that are using the default SYMAPI database file. By default, GNS use is disabled on a host.

If GNS is being used to maintain Consistency Groups within PowerPath or the RDF daemon, the use of this watchdog - along with the automatic start of `storgnsd` at system boot time - is important to ensure that `storgnsd` is always running.

Only authorized users are permitted to use GNS or control the `storgnsd` daemon.

OPTIONS

The `stordaeomon` command can be used to start, stop and monitor the `storgnsd` daemon. Refer to [“stordaeomon” on page 319](#) for details.

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

Some of the more commonly used options are the following.

```
storgnsd:autorestart = enable|disable
```

Specifies whether to use a watchdog mechanism to automatically restart `storgnsd` if it crashes. The default setting is `enable`.

```
storgnsd:gns_device_poll_interval = nn
```

Specifies how often `storgnsd` polls for group changes made from other hosts. The smaller this value is, the more quickly a host will recognize group changes made from a other hosts.

```
storgnsd:gns_ppath_poll_interval = nn
```

Specifies how often `storgnsd` checks whether PowerPath or the RDF daemon need to be updated to reflect changes made to CGs stored within GNS.

```
storgnsd:gns_remote_mirror = enable|disable
```

Specifies whether `storgnsd` should automatically mirror RDF1 and RDF2 type DG and CG group definitions for use on remote (SRDF) Symmetrix arrays.

Limitations include:

- REGULAR type groups are not mirrored.
- Mirrors will not be created if the remote Symmetrix array is also directly attached to the local host.
- For CG groups, BCV type devices are not mirrored. The default setting is `disable`.

```
storgnsd:gns_rmtarr_update_interval = nn
```

If `gns_enb_remote_mirror` is set to enable, how often `storgnsd` attempts to propagate DG group changes over to remote (SRDF) Symmetrix arrays.

```
storgnsd:gns_shadow_file = enable|disable|needed
```

Specifies whether `storgnsd` should maintain backup copies of GNS data for attached Symmetrix arrays. Refer to the discussion under **BACKUP SHADOW FILES** below.

If set to enable, backups are maintained for all local Symmetrix arrays. If set to needed, backups are only maintained for Symmetrix arrays with Enginuity versions lower than 5x71. The default setting is disable.

```
storgnsd:gns_init_remote_syms = enable|disable
```

If enabled (the default), GNS will initialize the GNS group repository on remote Symmetrix arrays while remotely mirroring groups. If disabled, a GNS daemon directly connected to such remote arrays has to perform the initialization when it encounters the array. The default setting is enable.

This option should be disabled if (a) remote mirroring is enabled (`gns_remote_mirror`), (b) GNS daemons will be actively running on both sides of the SRDF link, (c) groups are being modified on both the local and remote Symmetrix arrays and (d) GNS backup/restore is enabled (`gns_shadow_file`). Failing to disable this option in this scenario may result in data loss due to interaction between the backup/restore and remote mirroring mechanisms.

Refer to the `README.daemon_options` file for additional options, and default values used by `storgnsd`.

BACKUP SHADOW FILES

As previously mentioned, the `gns_shadow_file` option can be set to cause a GNS daemon to automatically maintain backups of GNS data from Symmetrix arrays. These files are written to the local disk as follows, where `<SID>` corresponds to a Symmetrix ID.

```
UNIX:      /var/symapi/gns/<SID>.shadow
Windows:  c:\\Program Files\\EMC\\SYMAPI\\gns\\<SID>.shadow
```

These files are overwritten each time a GNS daemon notices a change to group data on the Symmetrix array in question. GNS will automatically restore from them if it notices that the GNS repository on a Symmetrix array has been erased. Note that these backups will only be maintained for local arrays; not remote (SRDF) arrays.

It is recommended that this option be enabled on a subset of hosts running GNS daemons. Because of its effect on performance, it usually does not make sense to have more than 2-4 GNS daemons managing these backup copies.

As an alternative to the automatic mechanism, backups to and restores from shadow files can be manually triggered by invoking the `storgnsd` program as follows:

```
storgnsd backup -sid SID
```

Generates a GNS backup file for the specified Symmetrix array.

```
storgnsd backup
```

Generates a GNS backup file for all locally attached Symmetrix arrays.

```
storgnsd restore -sid SID [-noprompt]
```

Restores GNS data to the specified Symmetrix array from a backup file previously created.

Since this operation is destructive in nature, a positive confirmation is required before it will proceed. The `-noprompt` argument will, if present, cause this confirmation step to be skipped.

- NOTES**
- ◆ The `storgnsd` executable is located within the `daemons` directory in the Solutions Enabler installation area.
 - ◆ This manual mechanism will typically be most useful if the automatic mechanism is disabled, as it is by default.
If the automatic mechanism is enabled, it makes sense to regularly backup the files that it generates -- to ensure that they will be available if needed for a future manual restore. This is due to the fact that the automatic mechanism regularly overwrites these backup files.
 - ◆ These commands can be issued while the GNS daemon is already running normally. If so, a restore operation will be noticed by the daemon the next time it polls that Symmetrix array.

DIAGNOSTICS By default, diagnostic messages are written to the log files `storgnsd.log0` and `storgnsd.log1`, located in the following directory:

```
UNIX:      /var/symapi/log
Windows:   c:\\Program Files\\EMC\\SYMAPI\\log
```

The style and maximum size of GNS log files can be controlled via options in the `daemon_options` file. Refer to `README.daemon_options` for additional information.

GNS space utilization on each Symmetrix can be displayed with the following command:

```
stordaeomon action storgnsd -cmd list -freespace
```

Although very unlikely, it is possible for the GNS data on a Symmetrix to become corrupt if I/O errors occur in the middle of certain critical updates to it. While in such a state, GNS operations to that Symmetrix array will fail.

This can be recognized by the presence of **CORRUPT** errors in the previously mentioned log file, and will also be indicated by the output produced by the `-freespace` command. In such cases, a `fsck` like repair operation can be initiated via the following command. This can be performed while the GNS daemon is already running normally.

```
storgnsd repair -sid SID
```

Alternatively, a restore operation can be initiated as described above to recover from the damage.

In extreme circumstances, the following command can be used to fully re-initialize the GNS data area on a given Symmetrix array. This command should be used with extreme care.

```
storgnsd reset -sid SID
```

SECURITY NOTES Only privileged users are allowed to perform the administrative operations discussed above.

```
storgnsd backup
storgnsd restore
storgnsd reset
storgnsd repair
```

If User Authorization is enabled for a Symmetrix array, the user performing the command must be assigned a role of `Admin` or `StorageAdmin`. Refer to the `symauth` command in the *EMC Solutions Enabler Symmetrix CLI Command Reference*.

If User Authorization is not enabled for a Symmetrix array, the user must be the super-user (UNIX) or have Administrative privileges (Windows).

storifmxd

`storifmxd` is a new SRM API facility that significantly improves communication between applications and Informix Dynamic database servers. It runs as a UNIX daemon that forwards requests from the application's API function calls to the IBM Informix database server and returns the results back to the application. Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a symapi server that is local to the daemon. The application can not communicate directly with a daemon on another host.

- ARGUMENTS** The `stordaeomon` command can be used to start, stop and monitor the `storifmxd` daemon. Refer to “[stordaeomon](#)” on page 319 for details. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stordaeomon` command, the applications will use such a daemon.
- FILES** If the `-log` option is used on the `stordaeomon start` command, a log file will be created with the specified name and path. When starting the daemon without the `-log` option, it logs messages in a file located in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `INFORMIXSERVER` environment variable that is used to start the daemon. For example if an informix daemon is associated with the `INFORMIXSERVER ifmx73`, then the daemon named `storifmxdifmx73` will log to files named `storifmxdifmx73.log0` and `storifmxdifmx73.log1`.
- DIAGNOSTICS** The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.
- NOTES** If the daemon cannot be started, applications will use the old mechanism to communicate with IBM Informix Dynamic Server. If an application has already connected through the daemon and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()`, which work only with the daemon.
- It is necessary to set the `LD_LIBRARY_PATH`, `SHLIB_PATH` or `LIBPATH` environment variable to two IBM Informix Dynamic Server library directories (`$INFORMIXDIR/lib` and `$INFORMIXDIR/lib/esql`) when starting the daemon.
- It is not necessary to set the `INFORMIXDIR`, `ONCONFIG` or `INFORMIXSERVER` environment variables when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, these value will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by IBM Informix Dynamic Server's client connection code from the daemon's environment. The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`.
- The `$INFORMIXDIR/etc/sqlhosts` file should contain an entry for the Informix server that specifies TCP/IP (`onsoctcp`) as the communication protocol. Informix does not allow a single process to have multiple connections to a server using the shared memory (`onipcshm`) protocol.

Since the database daemon uses threads to support multiple connections, a second or subsequent connection request will fail. Currently, any daemon connection request that fails will be retried with the old mechanism so the application should continue running.

The daemon started automatically by the API `SymDbConnect()` is associated with the database instance specified by `INFORMIXDIR`, `INFORMIXSERVER` and `ONCONFIG` variables. Applications which have the same setting for `INFORMIXDIR`, `INFORMIXSERVER` and `ONCONFIG` are serviced by the daemon so started.

For Example: If the user has `INFORMIXDIR` set to `/db/informix/7.3`, `INFORMIXSERVER` set to `ifmx73` and `ONCONFIG` set to `onconfig.ifmx73`, then a daemon named `storifmxdiifmx73` is started. Applications that have the same settings for `INFORMIXDIR`, `INFORMIXSERVER` and `ONCONFIG` will use the daemon `storifmxdiifmx73`. Applications that have different settings for the environment variables will start a different daemon. The `INFORMIXDIR`, `INFORMIXSERVER` and `ONCONFIG` together determine the daemon that would service the application.

stororad

`stororad` is a new SRM API facility that significantly improves communication between applications and Oracle database servers. It runs as a UNIX daemon or Windows service that forwards requests from the application's API function calls to the Oracle database server and returns the results back to the application.

Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a SYMAPI server that is local to the daemon. The application can not communicate directly with a daemon on another host.

ARGUMENTS

The `stordaeomon` command can be used to start, stop and monitor the `stororad` daemon. Refer to [“stordaeomon” on page 319](#) for details. On Windows, the service control manager can also be used to start the `stororad` service. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stordaeomon` command, the applications will use such a daemon.

FILES

If the `-log` option is used on the `stordaeomon start` command, a log file will be created with the specified name and path. The daemon, when started without the `-log` option, logs messages in a file in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `ORACLE_SID` environment variable that is used to start the daemon. For example, if an Oracle daemon is associated with the `ORACLE_SID orcl8`, then the daemon named `stororadorcl8` will log to files named `stororadorcl8.log0` and `stororadorcl8.log1`.

DIAGNOSTICS

The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

NOTES

If the daemon cannot be started, applications will use the old mechanism to communicate with Oracle. If an application has already connected through the daemon and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()` which work only with the daemon.

For applications that need to connect to 64 bit oracle instances, the `storora64d` daemon will be used.

On the Windows platform, `stororad` will be run as a service. After the service is installed, it will appear in the service list dialog box as `stororad` and can be accessed by clicking on the services icon in the control panel (Windows NT) or the administrative tools icon (Windows 2000). The system administrator can modify the startup options in the service list dialog box to start the daemon automatically at boot time.

It is not necessary to set the `ORACLE_HOME` and `ORACLE_SID` environment variables when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, the values will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by Oracle's client connection code from the daemon's environment.

The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`. The autostart mechanism requires all the applications to set the appropriate environment variables required to communicate to the database.

The daemon started automatically by the API `SymDbConnect()` is associated with the database instance specified by `ORACLE_HOME` and `ORACLE_SID`. Applications which have the same setting for `ORACLE_HOME` and `ORACLE_SID` are serviced by the daemon so started.

For example: If the user has `ORACLE_HOME` set to `/db/oracle/8.0.6` and `ORACLE_SID` set to `orcl8` then a daemon named `stororadorcl8` is started. Applications that have the same settings for `ORACLE_HOME` and `ORACLE_SID` will use the daemon `stororadorcl8`. Applications that have different settings for the environment variables will start a different daemon. The `ORACLE_HOME` and `ORACLE_SID` together determine the daemon that would service the application.

storrdfd

DESCRIPTION

The RDF daemon, `storrdfd`, is an optional feature that provides consistency for SRDF/A MSC and RDF-ECA composite groups (CGs) in multi-Symmetrix environments.

RDF consistency protection is enabled when an application enables a CG for MSC or RDF-ECA protection. When providing MSC consistency protection, the RDF daemon performs MSC cycle switching and cache recovery for all Symmetrix arrays participating in the RDF consistency-enabled CG. When providing RDF-ECA protection the RDF daemon monitors ECA trip events and propagates any ECA trips to all devices on all Symmetrix arrays participating in the RDF consistency-enabled CG.

The `storrdfd` daemon runs on each host for which RDF consistency is required. If GNS is enabled the RDF daemon relies on GNS to propagate CG definitions to all pertinent hosts. If GNS is not enabled, the user must explicitly create the exact same CG definitions on each participating host. Refer to [“storgnsd” on page 325](#) for details on GNS usage.

The watchdog daemon is required by the RDF daemon to automatically restart it if it crashes.

ARGUMENTS

The `stordaeomon` command can be used to start, stop and monitor the `storrdfd` daemon. Refer to [“stordaeomon” on page 319](#) for details.

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\Program Files\EMC\SYMAPI\config
```

Some of the more commonly used options are the following:

```
storrdfd:logfile_size = nn
```

The maximum size (in KB) that the RDF daemon's log file is permitted to grow to before wrapping. Refer to the notes under **DIAGNOSTICS** below.

Refer to the `README.daemon_options` file for additional options - along with default values that `storrdfd` uses.

DIAGNOSTICS

Diagnostic messages are written to the log files `storrdfd.log0` and `storrdfd.log1`, located in the following directory:

```
UNIX:      /var/symapi/log
Windows:   c:\Program Files\EMC\SYMAPI\log
```

storsqld

`storsqld` is a new SRM API facility that significantly improves communication between applications and Microsoft SQL Server database servers. It runs as a Windows service that forwards requests from the application's API function calls to the Microsoft SQL Server database server and returns the results back to the application. Applications will use the service if it is running. The service is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The service only supports local client connections so the application must either run on the same host or run on a different host and connect to a SYMAPI server that is local to the service. The application can not communicate directly with a service on another host.

ARGUMENTS

The `stordaeomon` command can be used to start, stop and monitor the `storsqld` service. Refer to [“stordaeomon” on page 319](#) for details. In addition, the service control manager can also be used to start the `storsqld` service. The default behavior is to start the service automatically from the `SymDbConnect()` API, however if the user starts the service using the `stordaeomon` command, the applications will use such a service.

FILES

If the `-log` option is used on the `stordaeomon start` command, a log file will be created with the specified name and path. The daemon when started without the `-log` option logs messages in a file which resides in the directory `C:\Program Files\Emc\symapi\log`. The log filename is constructed using the service name. The `storsqld` service will log to files named `storsqld.log0` and `storsqld.log1`.

DIAGNOSTICS

The service log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

NOTES

If the service cannot be started, applications will use the old mechanism to communicate with Microsoft SQL Server. If an application has already connected via the service and the service is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the service is started, the application will automatically switch to using the service.

`storsqld` runs as a service. After the service is installed, it will appear in the service list dialog box as EMC `storsqld` and can be accessed by clicking on the services icon in the control panel (Windows NT) or the administrative tools icon (Windows 2000). The system administrator should modify the startup options in the service list dialog box to start the service automatically at boot time.

The database connection is maintained by a thread in the service until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`.

storsrmd

`storsrmd` is a new SRM API facility that allows non-root or non-administrator to do the SRM operations. The `storsrmd64` daemon is for 64-bit Operating System.

One of the primary benefits of the SRM daemon is that SRM applications no longer have to execute as a root or administrator user.

The SRM daemon only performs the operations on behalf of local users who are authorized to use it.

If users are permitted to do certain SRM control operations, the following line need to be added to `daemon_users`:

```
smith      storsrmd      <control operation>
```

There are a list of SRM control operations in the `daemon_users` file. There are currently 16 control operations for SRM daemons.

To use certain operations, non-root user also need to have operating system-level permission, for example:

To only permit root user access:

```
-rwx----- root  other  /usr/vxfs/root.bin
```

To permit user smith and root access:

```
-rwx----- smith  symapi  /usr/vxfs/smithroot.bin
```

To permit all users access:

```
-rwxrwxrwx root  other  /usr/vxfs/allusers.bin
```

(Assume `-rwxrwxrwx` for `/usr` and `/usr/vxfs`.)

It is important that the authorization files (`daemon_users`) be adequately protected so that they can only be modified by privileged users.

The SRM daemon currently is only supported on AIX, SOLARIS and HP-UX.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a SYMAPI server that is local to the daemon. The application can not communicate directly with a daemon on another host.

OPTIONS

The `stord daemon` command can be used to start, stop and monitor the `storsrmd` daemon. Refer to [“stord daemon” on page 319](#) for details.

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

DIAGNOSTICS

The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

Diagnostic messages are written to the log file `storsrmd-yyyymmdd.log` if the `logfile_type` option is set to `dated`, or to the log files `storsrmd.log0` and `storsrmd.log1`.

Log files are located in the following directory:

UNIX: `/var/symapi/log`

Windows: `c:\Program Files\EMC\SYMAPI\log`

NOTES For a 64 bit application, it will automatically use 64 bit SRM daemon (`storsrmd64`). User may also use `stordaeomon` to start the 64 bit SRM daemon.

storsrvd

The `storsrvd` daemon replaces `symapisrv` as the provider of SYMAPI services to remote clients. `storsrvd` listens for SYMAPI sessions from remote clients and also responds to management requests from authorized users of the `stordaemon` command on the same host.

LOGGING

The `storsrvd` daemon uses the common logging infrastructure of all Solutions Enabler daemons. You can find log files under:

```
UNIX:      /var/symapi/log
Windows:   c:\Program Files\EMC\SYMAPI\log
```

The `storsrvd` log files by default operate as a pair of files which alternate, switching from one to the other as the size reaches an installation chosen limit. You will see: `storsrvd.log0` and `storsrvd.log1` by default. If you choose to use dated logs, `storsrvd` will write to a single file per day, switching on first write to the log after midnight. In this case you will see one or more files of this form:

```
storsrvd-yyyymmdd.log
```

See the `daemon_options` file `log_filetype` option for more information on using dated logs.

Logging volume is controlled using two options:

The `-log_level` option controls inclusion of log messages based on severity: debug, info, warning, error, critical, `log_filter` controls the inclusion of log messages based on category. The categories used by `storsrvd` are:

SERVER: high level events related to general server operation

SESSION: show events that track SYMAPI session arrival and termination.

APIREQ: show events that track SYMAPI API request arrival and termination. This setting can cause a high volume of log output.

CONTROLS: show events that relate to execution of management commands.

TCPIP: show network events.

For more information on logging volume controls, visit the `daemon_options` file. See also the description of the `log_show_category` option below.

All log messages issued by the core `storsrvd` logic are use a message identifier. You will see `ANRnnnnX` which clearly identifies messages issued by `storsrvd` and distinguishes them from common daemon log messages. In the message identifier, `nnnn` is a decimal number, and `X` corresponds corresponding to the severities listed above in the `log_level` item. The `storsrvd` log messages are documented in the Solutions Enabler Installation Guide; there you may find for each message a description of the circumstances under which the message is issued, and what action must be taken, if any is necessary.

AUTHORIZATION

SYMAPI Sessions - NETHOST FILE

An optional file that lists trusted hosts and users can be placed in the Solutions Enabler configuration directory described above on the host where `storsrvd` runs. You create the file `nethost` in:

```
UNIX:      /var/symapi/config
Windows:   c:\Program Files\EMC\SYMAPI\config
```

The server uses the `nethost` file to authorize incoming client connections from applications that are executing remote SYMAPI functions. If this file exists, then only nodes and users entered in the file will be allowed to connect to the server to execute remote API functions. If this file does not exist, then all SYMAPI clients are allowed to connect to the SYMAPI server.

The valid formats of an entry are as follows:

```
node          user-1[, ...,user-n]
address       user-1[, ...,user-n]
*             user-1[, ...,user-n]
node          *
address       *
*             *
```

(where * means wildcard for any host or any user)

Note: For readability and maintainability when specifying a long list of users, the node or address can be repeated with additional user names listed.

CONTROL Sessions - daemon_users Designated users can interact with the `storsrvd` daemon using the `stordaeon` command. All control commands are authorized in one of the following ways:

- ◆ Privileged users (root on UNIX, in the Administrator's group on Windows) are implicitly authorized to use `stordaeon` to manage `storsrvd`.
- ◆ Otherwise, users listed in the `daemon_users` authorization file are permitted to manage `storsrvd`.

This file is located in the Solutions Enabler configuration directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

Each user listed in `daemon_users` may be authorized for one or more daemons. For complete instructions on the use of `daemon_users` authorization, visit the file as described in the previous paragraph.

It is important that the `daemon_users` authorization file be adequately protected - such that it can only be changed by privileged users.

ACTIONS

The `stordaeon` command can be used to start, stop and monitor the `storsrvd` daemon. Refer to [“stordaeon” on page 319](#) for details. `storsrvd` will respond to the base commands supported by all daemons through `stordaeon`, and supports a set of extended commands using the `stordaeon action` command.

```
stordaeon action storsrvd -cmd reload
```

Tells `storsrvd` to re-read the `storsrvd` section for changed options (see also `stordaeon setvar`).

```
stordaeon action storsrvd -cmd list -sessions
```

Tells `storsrvd` to display a list of currently active SYMAPI sessions.

```
stordaeon action storsrvd -cmd show -sessions [-num nnn]
```

Tells `storsrvd` to display the details for a specific session (if `-num nnn` is specified) or for all active SYMAPI sessions.

OPTIONS

A number of configuration options can be set in the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\\Program Files\\EMC\\SYMAPI\\config
```

`storsrvd` will support all the common daemon options for logging, auto-restart, and debugging data. In addition, the options specific to `storsrvd` are shown below:

```
storsrvd:port = nnnn
```

Specifies a positive decimal number less than 65536, to indicate which TCP/IP port `storsrvd` will listen for remote client connections. The default is 2707.

```
storsrvd:security_level = NONSECURE | ANY | SECURE
```

Specifies the desired security level to apply to remote connections. The default depends on the platform. For interoperability information refer to EMC E-Lab Interoperability Navigator at: <http://elabnavigator.EMC.com>.

```
storsrvd:log_show_category = enable | disable
```

Enables or disables the display of the category used for each `storsrvd` numbered log message. The default value is `disable`.

COMPATIBILITY

The `symapisrv` command is retained to provide compatibility for start and stop functions that exist in scripted procedures. You may continue to use `symapisrv` for at least two major releases following Solutions Enabler 6.3.0. EMC recommends using the `stordaeomon` command to start, manage, and stop `storsrvd`. The transition releases offer an opportunity to migrate your scripts to use `stordaeomon` to manage `storsrvd`.

`storsrvd` accepts SYMAPI sessions from all qualified and authorized remote clients in the same fashion as `symapisrv` has in past releases. Client processes will encounter no change in session behavior when connecting to `storsrvd` instead of `symapisrv`.

storstopd

The `storstopd` daemon is an optional feature and is used to collect raw performance counters for a Symmetrix, directors, devices, disks, ports, LRU, and RDF/A. These counters are collected according to criteria defined in the `daemon_options` file, and stored in a `ttp` formatted ASCII file stored in the following location:

```
UNIX:      /var/symapi/stp
Windows:   c:\Program Files\EMC\SYMAPI\stp
```

As described below, an options setting can be set which causes a watchdog mechanism to monitor `storstopd` - and automatically restart it if it crashes.

Once running, the user (an administrator) can communicate with the `storstopd` daemon using `stordaeomon`, refer to “[stordaeomon](#)” on page 319.

The `storstopd` daemon is the Solutions Enabler performance statistics collector which provides both real-time (events) collection capabilities as well as historical (`ttp`) statistics collection. Like all Solutions Enabler daemons, the `storstopd` daemon is manipulated using the `stordaeomon` command line utility.

Daemon Options

The `storstopd` daemon has many options, which can be modified using the `stordaeomon setoption` command.

```
stordaeomon setoption storstopd -name option_name=option_value
```

Options that are specific to the operation of the daemon itself include:

Option	Default Value	
<code>start_collect</code>	Disabled	
<code>use_inmemorydb</code>	Disabled	
<code>allow_realtime</code>	Enabled	
<code>allow_historical</code>	Enabled	
<code>allow_revolving</code>	Enabled	

Real-time Collector

The real-time (event) collector supports clients such as the SMC QoS monitor by collecting specific performance statics for system-level metrics, cache partition metrics, and device group metrics, and posting the data as events which are transported by the event daemon to all clients which are registered for those types of events. Currently, only the QoS monitor has this capability.

When the `storstopd` daemon is started, the real-time collector starts up immediately, unless the `allow_realtime` option is disabled. It checks to see if any clients are registered to receive performance event notifications. If not, it sleeps, awaking periodically and checking for registrations. If there are clients registered, it will poll the Symmetrix array for only the performance metrics that have register clients (system, cache partition, and/or device groups) and post the appropriate performance events, then sleeps until the next iteration. The default iteration is 120 seconds which can be modified using the `real_collect_interval` option.

Options that are specific to the operation of the real-time collector include:

Option	Default Value	
real_collect_interval	120 seconds	

ttp collector

The `ttp` collector provides two levels of performance collection. A historical collection which collects performance statistics over days and typically runs at longer collection intervals, and a revolving collection which runs over hours and typically runs at smaller collection intervals. The `ttp` collector can run either or both of these collections at the same time. By default, when the `storstopd` daemon is started, it is started in wait mode and will not begin collection until it receives the `collect` action command, as follows:

```
stordaeon action storstopd -cmd collect
```

This behavior can be overridden by enabling the `start_collect` option, which tells the `storstopd` daemon to begin a collection using the current option settings as soon as it starts.

```
stordaeon setoption storstopd -name start_collect=enable
```

There are `ttp` collector options that effect both historical collections and revolving collections, as well as options specific to a historical collection and specific to a revolving collection.

Options that are specific to the operation of the `ttp` collection include:

ttp collection option	Default value	
use_compression	Enabled	
preserve_ttp	Enabled	
audit_log	Disabled	
ttp_location	<platform specific>	
auto_archive	Enabled	
retention_policy	Enabled	
disk_space_threshold	80%	
sys_metrics	Enabled	
dev_metrics	Enabled	
dir_metrics	Enabled	
disk_metrics	Enabled	
port_metrics	Enabled	
lru_metrics	Disabled	
rdfa_metrics	Enabled	
ors_metrics	Enabled	
dgtot_metrics	Enabled	
dgdet_metrics	Enabled	
cpt_metrics	Enabled	
symids	<ID>	
dev_groups	<DgName1, DgName2, ...>	

Historical collection

The historical collection, enabled by default, typically runs over days and can be disabled by setting the `allow_historical` option to disable, as follows:

```
stordaeon setoption storstopd -name allow_historical=disable
```

Options that are specific to the operation of the daemon itself include:

Historical option	Default Value	
hist_collect_interval	900 seconds	
hist_archive_interval	24 hours	
hist_archive_time	00:00	
hist_delay_start_time		
hist_delay_stop_time		
hist_retention_days	7 days	

Revolving collection

The revolving collection, enabled by default, typically runs over days and can be disabled by setting the `allow_revolving` option to disable, as follows:

```
stordaeon setoption storstopd -name allow_revolving=disable
```

Options that are specific to the operation of the daemon itself include:

Revolving option	Default Value	
revl_collect_interval	300 seconds	
revl_archive_interval	2 hours	
revl_retention_hours	4 hours	

ACTIONS

The `storstopd` daemon starts in a wait mode. Action commands, invoked using the `stordaeon action` command, are used to control the `storstopd` collections, as follows:

```
stordaeon action storstopd -cmd collect
```

Tells `storstopd` to start a new collection based on the current defined options.

```
stordaeon action storstopd -cmd stop
```

Tells `storstopd` to stop all collections currently running.

```
stordaeon action storstopd -cmd archive
```

Tells `storstopd` to close all open (running) collection files, open new collection files, and continue collecting.

DAEMON OPTIONS

The `stordaeon` command can be used to start, stop, install and show the `storstopd` daemon. Refer to [“stordaeon” on page 319](#) for details.

There are a number of configuration options which can be set using `stordaeon setoption` command or editing the `daemon_options` file located in the following directory:

```
UNIX:      /var/symapi/config
Windows:   c:\Program Files\EMC\SYMAPI\config
```

The following options are used to control `storstopd` behavior and collections.

```
storstopd:autorestart = enable|disable
```

Indicates whether to use a watchdog mechanism to automatically restart `storstopd` if it crashes. The default setting is `enable`.

```
storstopd:start_collect = enable|disable
```

When enabled, tells `storstopd` to launch a collection using all default options when it starts rather than starting in wait mode. The default setting is `disable`.

```
storstopd:use_inmemorydb = enable|disable
```

When disabled, tells `storstopd` to use the local database instead of the default in memory database. The default setting is `enable`.

```
storstopd:allow_realtime = enable|disable
```

Tells `storstopd` to allow real-time client collections. When disabled, real-time collections will not run. The default setting is `enable`.

```
storstopd:allow_historical = enable|disable
```

Tells `storstopd` to allow historical collections. When disabled historical collections will not run. The default setting is `enable`.

```
storstopd:allow_revolving = enable|disable
```

Tells `storstopd` allow revolving client collections. When disabled, revolving collections will not run. The default setting is `enable`.

REAL-TIME OPTIONS

```
storstopd:real_collect_interval = nn
```

Specifies a number of seconds, used to define the frequency `storstopd` collects real-time statistics used for monitor clients such as the QoS monitor. A minimum of 60 seconds is allowed. The default setting is 120 seconds.

TTP OPTIONS:

```
storstopd:audit_log = enable|disable
```

When enabled, tells `storstopd` to dump the Solutions Enabler audit log, using specific STP filtration, for each TTP file collected, (both historical and revolving), using the TTP collection start and stop times as an additional filter. The default setting is `disable`.

```
storstopd:retention_policy = enable|disable
```

When enabled, tells `storstopd` to invoke the current retention policy. If disabled, all retention options will be ignored, as will the `disk_space_threshold` option. The default setting is `enable`.

```
storstopd:disk_space_threshold = nn
```

Specifies a percentage threshold to prevent the `storstopd` daemon from over utilizing disk space for its collection and audit log (.xml) files. If total used disk space reaches the threshold, `storstopd` will increase the aggressiveness of its retention policy automatically. If it continues to reach the space threshold, it will stop all collections. The default setting is 80%.

```
storstopd:ttp_location = <full path location>
```

Indicates a full path specification where storstopd will output all its TTP files. The default setting is:

```
Unix:      /var/symapi/stp
Windows:   c:\Program Files\EMC\SYMAPI\stp
```

```
storstopd:auto_archive = enable|disable
```

Tells storstopd to auto-archive output at hist_archive_time, hist_archive_interval, or revl_archive_interval. The default setting is enable.

```
storstopd:use_compression = enable|disable
```

When enabled, tells storstopd to use data compression for its output files. The default setting is enable.

```
storstopd:preserve_ttp = enable|disable
```

Tells storstopd to preserve all collected ttp files rather than deleting them, after they have been converted to btp files. Currently non-windows converted btp files do not contain configuration data. Once this has been resolved the default setting will be changed to disable. The default setting is enable.

```
storstopd:sys_metrics = enable|disable
```

When enabled, tells storstopd to collect system-level counters. The default setting is enable.

```
storstopd:dev_metrics = enable|disable
```

When enabled, tells storstopd to collect device-level counters. The default setting is enable.

```
storstopd:dir_metrics = enable|disable
```

When enabled, tells storstopd to collect director-level counters. The default setting is enable.

```
storstopd:disk_metrics = enable|disable
```

When enabled, tells storstopd to collect disk-level counters. The default setting is enable.

```
storstopd:port_metrics = enable|disable
```

When enabled, tells storstopd to collect port-level counters. The default setting is enable.

```
storstopd:lru_metrics = enable|disable
```

When enabled, tells storstopd to collect LRU-level counters. LRU counters will be ignored on units with 5772 or greater. The default setting is disabled.

```
storstopd:rdfa_metrics = enable|disable
```

When enabled, tells storstopd to collect RDF/A-level counters. The default setting is enable.

```
storstopd:ors_metrics = enable|disable
```

When enabled, tells storstopd to collect Open Replicator-level counters. The default setting is enable.

```
storstopd:dgtot_metrics = enable|disable
```

When enabled, tells storstopd to collect device group summary-level counters. The default setting is disable.

```
storstopd:dgdet_metrics = enable|disable
```

When enabled, tells storstopd to collect device group detail-level counters. The default setting is disable.

```
storstopd:cpt_metrics = enable|disable
```

When enabled, tells storstopd to collect cache partition statistics, summary, and detail-level counters. The default setting is enable.

```
storstopd:dev_groups = symid number(s)
```

Specifies a set of specific device groups that storstopd should collect device group statistics. If not present, storstopd will collect for all local device groups found.

```
storstopd:symids = symid number(s)
```

Specifies a set of Symmetrix arrays that storstopd should collect statistics for. If not present, storstopd will collect for all local Symmetrix IDs found.

HISTORICAL OPTIONS

```
storstopd:hist_collect_interval = nn
```

A number, in seconds, used to define the frequency storstopd collects historical statistics. A minimum of 60 seconds is allowed, but cannot be less than that of the realtime collection. The default setting is 900 seconds.

```
storstopd:hist_archive_time = 00:00
```

Sets the time of day (HH:MM) for storstopd to auto archive it's historical collection file(s). The auto_archive option must be enabled. The default setting is 00:00 (midnight).

```
storstopd:hist_archive_interval = 0
```

Tells storstopd to archive historical collection every HH hours. A setting of 12 will tell storstopd to archive every 12 hours. The auto_archive option must be enabled. The hist_archive_time option will be ignored. The default setting is 0 (None).

```
storstopd:hist_retention_days = n
```

Tells storstopd to retain collected historical files (.http, .btp, .xml) for n number of days. The default setting is 7 days.

```
storstopd:hist_delay_start_time = "mm/dd/yyyy hh:mm"
```

Tells storstopd to delay the historical collection until "mm/dd/yyyy hh:mm" time. The default setting is none.

```
storstopd:hist_delay_stop_time = "mm/dd/yyyy hh:mm"
```

Tells storstopd to end a historical collection at "mm/dd/yyyy hh:mm" time. The default setting is none.

REVOLVING OPTIONS

```
storstopd:revl_collect_interval = nn
```

Specifies a number, in seconds, used to define the frequency storstopd collects revolving statistics. A minimum of 60 seconds is allowed, but cannot be less than that of the realtime collection interval and must be less than the historical collection interval. The default setting is 300 seconds.


```
storstopd:revl_archive_interval = 0
```

Tells `storstopd` to archive its revolving collection every HH hours. A setting of 2 will tell `storstopd` to archive every 2 hours. The `auto_archive` option must be enabled. The default setting is 2 (None).

```
storstopd:revl_retention_hours = n
```

Tells `storstopd` to retain collected revolving files (.`ttp`, .`btp`, .`xm1`) for *n* number of hours. The default setting is 2 days.

DIAGNOSTICS

By default, diagnostic messages are written to the log files `storstopd.log0` and `storstopd.log1`, located in the following directory:

```
Unix:      /var/symapi/log
Windows:   c:\\Program Files\\EMC\\SYMAPI\\log
```

The style and maximum size of `storstopd` log files can be controlled using options in the `daemon_options` file. Refer to the `daemon_options.README` file for additional information.

storsybs11d

`storsybs11d` is a new SRM API facility that significantly improves communication between applications and Sybase Adaptive Server database servers. It runs as a UNIX daemon that forwards requests from the application's API function calls to the Sybase Adaptive Server database server and returns the results back to the application. Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a SYMAPI server that is local to the daemon. The application can not communicate directly with a daemon on another host.

- ARGUMENTS** The `stord daemon` command can be used to start, stop and monitor the `storsybs11d` daemon. Refer to “[stord daemon](#)” on page 319 for details. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stord daemon` command, the applications will use such a daemon.
- FILES** If the `-log` option is used on the `stord daemon start` command, a log file will be created with the specified name and path. The daemon when started without the `-log` option logs messages in a file which resides in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `DSQUERY` environment variable that is used to start the daemon. For example if an Sybase daemon is associated with the `DSQUERY syb119`, then the daemon named `storsybs11dsyb119` will log to files named `storsybs11dsyb119.log0` and `storsybs11dsyb119.log1`.
- DIAGNOSTICS** The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging, the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.
- NOTES** If the daemon cannot be started, applications will use the old mechanism to communicate with Sybase. If an application has already connected using the daemon, and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()` which work only with the daemon.
- The `storsybs11d` daemon can only connect to Sybase ASE 11.9 servers. It can not connect to Sybase ASE 12.0 or 12.5 servers.
- It is necessary to set the `LD_LIBRARY_PATH` environment variable to the Sybase Adaptive Server library directory when starting the daemon. It is not necessary to set the `SYBASE` or `DSQUERY` environment variables when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, these values will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by Sybase Adaptive Server's client connection code from the daemon's environment. The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`. The autostart mechanism requires all the applications to set the appropriate environment variables required to communicate to the database.
- The daemon started automatically by the API `SymDbConnect()` is associated with the database instance specified by `SYBASE`, `DSQUERY`, `SYBASE_ASE` and `SYBASE_OCS`.

Applications which have the same setting for the environment variables mentioned above are serviced by the daemon so started. For Example: If the user has SYBASE set to `/db/sybase/11.9` and DSQUERY set to `syb119` then a daemon named `storsybs11dsyb119` is started. Applications that have the same settings for SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS will use the daemon `storsybs11dsyb119`.

Applications that have different settings for the environment variables will start a different daemon. The variables SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS together determine the daemon that would service the application.

storsybs12.5d

`storsybs12.5d` is a new SRM API facility that significantly improves communication between applications and Sybase Adaptive Server database servers. It runs as a UNIX daemon that forwards requests from the application's API function calls to the Sybase Adaptive Server database server and returns the results back to the application. Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a `symapi` server that is local to the daemon. The application can not communicate directly with a daemon on another host.

ARGUMENTS

The `stordaeon` command can be used to start, stop and monitor the `storsybs12.5d` daemon. Refer to [“stordaeon” on page 319](#) for details. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stordaeon` command, the applications will use such a daemon.

FILES

If the `-log` option is used on the `stordaeon start` command, a log file will be created with the specified name and path. The daemon when started without the `-log` option logs messages in a file which resides in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `DSQUERY` environment variable that is used to start the daemon. For example if an sybase daemon is associated with the `DSQUERY syb125`, then the daemon named `storsybs12.5dsyb125` will log to files named `storsybs12.5dsyb125.log0` and `storsybs12.5dsyb125.log1`.

DIAGNOSTICS

The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

NOTES

If the daemon cannot be started, applications will use the old mechanism to communicate with Sybase. If an application has already connected via the daemon and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()` which work only with the daemon.

The `storsybs12.5d` daemon can only connect to Sybase ASE 12.0 servers. It can not connect to Sybase ASE 11.9 or 12.5 servers.

For applications that need to connect to 64 bit sybase instances, the `storsybs12.5_64d` daemon will be used.

It is necessary to set the `LD_LIBRARY_PATH` environment variable to the Sybase Adaptive Server library directory when starting the daemon. It is not necessary to set the `SYBASE` or `DSQUERY` environment variables when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, these values will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by Sybase Adaptive Server's client connection code from the daemon's environment. The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`. The autostart mechanism requires all the applications to set the appropriate environment variables required to communicate to the database.

The daemon started automatically by the API SymDbConnect() is associated with the database instance specified by SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS.

Applications which have the same setting for the environment variables mentioned above are serviced by the daemon so started. For Example: If the user has SYBASE set to `/db/sybase/12.5` and DSQUERY set to `syb125` then a daemon named `storsybs12.5dsyb125` is started. Applications that have the same settings for SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS will use the daemon `storsybs12.5dsyb125`.

Applications that have different settings for the environment variables will start a different daemon. The variables SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS together determine the daemon that would service the application.

storsybs12d

`storsybs12d` is a new SRM API facility that significantly improves communication between applications and Sybase Adaptive Server database servers. It runs as a UNIX daemon that forwards requests from the application's API function calls to the Sybase Adaptive Server database server and returns the results back to the application. Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a SYMAPI server that is local to the daemon. The application can not communicate directly with a daemon on another host.

ARGUMENTS The `stord daemon` command can be used to start, stop and monitor the `storsybs12d` daemon. Refer to [“stord daemon” on page 319](#) for details. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stord daemon` command, the applications will use such a daemon.

FILES If the `-log` option is used on the `stord daemon` start command, a log file will be created with the specified name and path. The daemon when started without the `-log` option logs messages in a file which resides in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `DSQUERY` environment variable that is used to start the daemon. For example if an sybase daemon is associated with the `DSQUERY` `syb120`, then the daemon named `storsybs12dsyb120` will log to files named `storsybs12dsyb120.log0` and `storsybs12dsyb120.log1`.

DIAGNOSTICS The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

NOTES If the daemon cannot be started, applications will use the old mechanism to communicate with Sybase. If an application has already connected via the daemon and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()` which work only with the daemon.

The `storsybs12d` daemon can only connect to Sybase ASE 12.0 servers. It can not connect to Sybase ASE 11.9 or 12.5 servers.

It is necessary to set the `LD_LIBRARY_PATH` environment variable to the Sybase Adaptive Server library directory when starting the daemon. It is not necessary to set the `SYBASE` or `DSQUERY` environment variables when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, these values will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by Sybase Adaptive Server's client connection code from the daemon's environment. The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`. The autostart mechanism requires all the applications to set the appropriate environment variables required to communicate to the database.

The daemon started automatically by the API `SymDbConnect()` is associated with the database instance specified by `SYBASE`, `DSQUERY`, `SYBASE_ASE` and `SYBASE_OCS`.

Applications which have the same setting for the environment variables mentioned above are serviced by the daemon so started. For Example: If the user has SYBASE set to `/db/sybase/12.0` and DSQUERY set to `syb120` then a daemon named `storsybs12dsyb120` is started. Applications that have the same settings for SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS will use the daemon `storsybs12dsyb120`.

Applications that have different settings for the environment variables will start a different daemon. The variables SYBASE, DSQUERY, SYBASE_ASE and SYBASE_OCS together determine the daemon that would service the application.

storubdb

`storubdb` is a new SRM API facility that significantly improves communication between applications and IBM DB2/UDB database servers. It runs as a UNIX daemon or Windows service that forwards requests from the application's API function calls to the IBM DB2/UDB database server and returns the results back to the application. Applications will use the daemon if it is running. The daemon is started automatically when an application issues the `SymDbConnect()` call to connect to a database instance.

The daemon only supports local client connections so the application must either run on the same host or run on a different host and connect to a symapi server that is local to the daemon. The application can not communicate directly with a daemon on another host.

ARGUMENTS

The `stordaeomon` command can be used to start, stop and monitor the `storubdb` daemon. Refer to “[stordaeomon](#)” on page 319 for details. On Windows, the service control manager can also be used to start the `storubdb` service. The default behavior is to start the daemon automatically from the `SymDbConnect()` API, however if the user starts the daemon using the `stordaeomon` command, the applications will use such a daemon.

FILES

If the `-log` option is used on the `stordaeomon` start command, a log file will be created with the specified name and path. The daemon when started without the `-log` option logs messages in a file which resides in the directory `/var/symapi/log`. The filename is constructed using the daemon name and the `DB2INSTANCE` environment variable that is used to start the daemon. For example if an DB2/UDB daemon is associated with the `DB2INSTANCE db2v7in1`, then the daemon named `storubddb2v7in1` will log to files named `storubddb2v7in1.log0` and `storubddb2v7in1.log1`.

DIAGNOSTICS

The daemon log file may contain information that may be helpful in diagnosing problems. To enable additional logging the daemon configuration file can be used and the variables `debug` and `pdsdebug` may be set to appropriate values depending on the extent of logging required. Additionally, the SYMAPI log file may also contain useful information for resolving problems.

NOTES

If the daemon cannot be started, applications will use the old mechanism to communicate with IBM DB2/UDB. If an application has already connected using the daemon, and the daemon is stopped, the application will continue to run using the old mechanism. If an application has already connected with the old mechanism and the daemon is started, the application will automatically switch to using the daemon. This behavior is true only when the applications have calls that work with the old mechanism and the daemon and does not apply to calls like `SymDbSqlExecute()` which work only with the daemon.

On the Windows platform, `stoudbd` will be run as a service. After the service is installed, it will appear in the service list dialog box as `storubd` and can be accessed by clicking on the services icon in the control panel (Windows NT) or the administrative tools icon (Windows 2000). The system administrator can modify the startup options in the service list dialog box to start the daemon automatically at boot time.

It is necessary to set the `LD_LIBRARY_PATH` environment variable to the IBM DB2/UDB library directory when starting the daemon. It is not necessary to set the `DB2INSTANCE` environment variable when starting the daemon. When the application calls `SymDbConnect()` or `StorDbConnect()`, this value will be: (1) retrieved from the application's environment, (2) forwarded with the connection request to the daemon, (3) set by the daemon in its own environment, and (4) retrieved by IBM DB2/UDB's client connection code from the daemon's environment. The database connection is maintained by a thread in the daemon until the application calls `SymDbDisconnect()` or `StorDbDisconnect()`. The autostart mechanism

requires all the applications to set the appropriate environment variables required to communicate to the database.

The daemon started automatically by the API SymDbConnect() is associated with the database instance specified by DB2INSTANCE. Applications which have the same setting for DB2INSTANCE are serviced by the daemon so started.

For Example: If the user has DB2INSTANCE set to `db2v7in1` then a daemon named `storudbdb2v7in1` is started.

Applications that have the same settings for DB2INSTANCE will use the daemon `storudbdb2v7in1`. Applications that have different settings for the environment variables will start a different daemon. The DB2INSTANCE variable determines the daemon that would service the application.

storwatchd

The `storwatchd` daemon is used to monitor the core Solutions Enabler daemons (`storapid`, `storrdfd`, `storgnsd`, `storevntd`) and automatically restart them if they crash.

This watchdog mechanism is enabled by default. Detailed instructions on how to disable it can be found in the installed `README.daemon_options` file.

The `storwatchd` daemon is only used on UNIX. On Windows, this functionality is provided by the Service Control Manager instead.

Normally, users should have no reason to interact directly with `storwatchd`. It is automatically started when its services are first required -- for example, when a daemon starts that has been configured to make use of it.

Only authorized users are permitted to control (explicitly shutdown) the `storwatchd` daemon.

ARGUMENTS

Users should normally never need to interact directly with `storwatchd`.

The `stordaeomon` command can be used to start, stop and monitor the `storwatchd` daemon. Refer to [“stordaeomon” on page 319](#) for details.

DIAGNOSTICS

Diagnostic messages are written to the log files `storwatchd.log0` and `storwatchd.log1`, located in the following directory:

```
/var/symapi/log/
```

This appendix describes the events reported for the SYMCLI environment.

- ◆ [Reported events](#) 356

Reported events

The following table details the Symmetrix events reported via the Solutions Enabler SYMCLI, their event code, severity, and string:

Table 15 **Reported events**

Event code	Severity	Event string
12_VOLTS_ON	Warning	One of the Symmetrix subsystems is running in the abnormal 12-Volts mode
AC_LINE_INTERRUPTED	Warning	A Symmetrix power subsystem AC line interruption was detected
ACCESS_TO_NR_DEVICE	Warning	Access was attempted to a Not Ready device
ALARM_SIGNAL	Warning	An alarm signal was set but no alarm was found
ALARM_SIGNAL_POWER	Warning	An alarm signal was set indicating a power subsystem error
ALL_DEVICES_MIGRATED	Informational	All Symmetrix migration devices have completed the data migration
ALL_RDF_LINKS_DOWN	Warning	No RDF links in an RDF group are operational
ALL_RDF_LINKS_NOW_UP	Informational	All RDF links in an RDF group are now operational after an 'All Links Down' event
BATTERY_FAILED_TEST	Warning	Automatic battery tests detected failures
BUS_PROBLEM	Informational	Bus Arbiter problem: primary arbiter has experienced a problem
CANT_QUERY_MII_DIR	Warning	The Service Processor could not query a director
CANT_READ_ENVIR_SENSOR	Warning	The Service Processor failed to read an environmental sensor
COMM_BOARD_MISMATCH	Error	The Symmetrix communication board software data has a mismatch
DAE_PSA_M_FAN_FAULT	Error	Environmental Error: Power Supply A multiple Fan fault
DAE_PSA_S_FAN_FAULT	Error	Environmental Error: Power Supply A single Fan fault
DAE_PSA_FAULTED	Error	Environmental Error: Power Supply A faulted
DAE_PSA_SHUTDOWN	Error	Environmental Error: Power Supply A shutdown
DAE_PSB_M_FAN_FAULT	Error	Environmental Error: Power Supply B multiple Fan fault
DAE_PSB_S_FAN_FAULT	Error	Environmental Error: Power Supply B single Fan fault
DAE_PSB_FAULTED	Error	Environmental Error: Power Supply B faulted
DAE_PSB_SHUTDOWN	Error	Environmental Error: Power Supply B shutdown
DAE_LCC_A_TEMP_HIGH	Error	Environmental Error: Link Card Controller A temperature high
DAE_LCC_B_TEMP_HIGH	Error	Environmental Error: Link Card Controller B temperature high
DAE_SPS_INTRN_FAULT	Error	Environmental Error: Supplemental Power Supply internal fault
DAE_SPS_BAT_ENDLINE	Error	Environmental Error: Supplemental Power Supply battery end of line
DAE_SPS_LOW_VOLTAGE	Error	Environmental Error: Supplemental Power Supply low input AC Voltage
DB_CHECKSUM_TRIGGER	Informational	A Database Double Checksum detection event was triggered
DEVICE_RESYNC_STARTED	Informational	A Symmetrix device resynchronization process has started

Table 15 Reported events (continued)

Event code	Severity	Event string
DIAG_TRACE_TRIG	Informational	A Symmetrix diagnostic event-trace was triggered
DIAG_TRACE_TRIG_REMOTE	Informational	A diagnostic event-trace was triggered for a Symmetrix remotely-attached via RDF links
DIRECTOR_DEAD	Fatal	A Symmetrix Director is not responding
DISABLED_MEMORY_BANK	Warning	A Symmetrix Director reported 'Disabled Memory Bank' to a host
DISK_ADAPTER_DEAD	Fatal	A Symmetrix Disk Director is not responding
ENABLED_ENVIR_TESTING	Informational	An event was detected to enable environmental testing in diagnosis mode
ENVIR_READING_OUT_OF_LIMIT	Warning	The Service Processor found environmental readings to be out of limits
EXCESS_TEMP_DETECTED	Warning	The Service Processor detected excessive temperature
FC_OPTICAL_MOD_ERROR	Warning	A Fibre Channel optical module has experienced a problem
GEN_CHECKSUM_TRIGGER	Informational	A Generic Double Checksum detection event was triggered.
HIGH_CHARGE_MISSING	Warning	The Symmetrix battery system is not fully charged
HIGH_TEMP_DETECTED	Warning	The Service Processor detected high temperature
INVALID_ENVIR_BITS	Warning	A validity problem was detected during an environmental test
LATCHED_ALARMS	Warning	A Symmetrix power subsystem discovered latched alarms
M1_RESYNC_WITH_M2	Informational	An M1 mirror of a Symmetrix Device is resynchronizing with the M2 mirror
M2_RESYNC_WITH_M1	Informational	An M2 mirror of a Symmetrix Device is resynchronizing with the M1 mirror
MEM_DISABLE_INVOKED	Informational	One or more memory banks were disabled due to cache errors
MIRROR_NR	Warning	A device has a mirror that is Not Ready
MIRROR_WD	Warning	A device has a mirror that is Write Disabled
NO_COMM_TO_MII_DIR	Warning	The Service Processor could not communicate to a director
OLD_BOARD_MISMATCH	Error	The Symmetrix communication board old information does not match current information
ONE_RDF_LINK_DOWN	Warning	A single RDF link in an RDF group is not operational
ONE_RDF_LINK_NOW_UP	Warning	A single RDF link in an RDF group is now operational after a 'Single Link Down' event
PHONEHOME_TRIGGER	Informational	A certain event triggered a Call Home for service
POWER_ON_TIME_FAILED_TEST	Error	The Symmetrix environment tests found inconsistencies in Power-on-Time
POWER_ZONE_5_HOURS_BEFORE_SHUTDOWN	Error	Power zone 5 hours before shutdown, onw of the power zones is down. 5 hours before Vault shutdown
POWER_ZONE_COUNTDOWN_STARTED	Error	Power zone count down started. One of the power zones is down, count down (20 hours) for Vault-Shutdown is started
POWER_ZONE_DOWN_FAILED	Error	Power zone down failed

Table 15 Reported events (continued)

Event code	Severity	Event string
POWER_ZONE_ILLEGAL_STATUS	Error	Power zone down illegal status, found file with old information
POWER_ZONE_WAIT_TIME_CHANGED_ON_GUI	Error	Power zone down - wait time changed on the GUI
RDF_CG_TRIGGER	Informational	An RDF CG trip event was triggered
RDF_ERROR	Error	The RDF subsystem has experienced an error
RDF_SIM_MESSAGE	Informational	The RDF subsystem initiated a SIM message to a Symmetrix remotely-attached via RDF links
RDF2_DEVICE_NR	Informational	One of the RDF2 devices was found to be Not Ready
RDFA_CONSISTENT_DEACTIVATE_ISSUED	Warning	SRDF/A session transition from Asynchronous to Synchronous mode requested
RDFA_CONSISTENT_DEACTIVATE_ISSUED_FROM_HOST	Warning	SRDF/A session transition from Asynchronous to Synchronous mode requested (host software initiated)
RDFA_DEACTIVATE_ISSUED	Warning	SRDF/A session transition out of Asynchronous mode requested
RDFA_DEACTIVATE_ISSUED_FROM_HOST	Warning	SRDF/A session transition out of Asynchronous mode requested (host software initiated)
RDFA_DROP_ISSUED	Warning	SRDF/A session drop requested
RDFA_DROP_ISSUED_FROM_HOST	Warning	SRDF/A session drop requested (host software initiated)
RDFA_PENDING_DROP_ISSUED	Warning	SRDF/A session drop at cycle boundary requested
RDFA_PENDING_DROP_ISSUED_FROM_HOST	Warning	SRDF/A session drop at cycle boundary requested (host software initiated)
RDFA_SESS_DROP_DEV_NR_CG	Error	SRDF/A Session dropped, device not ready through consistency group.
RDFA_SESS_DROP_DEV_NR_OFF	Error	SRDF/A Session dropped, device not ready. Tolerance mode is off.
RDFA_SESS_DROP_NO_RDF_LNK	Error	SRDF/A Session dropped, no RDF links operational.
RDFA_SESS_DROP_TIMEOUT_HA	Error	SRDF/A Session dropped, time out on an HA.
RDFA_SESS_DROP_TIMEOUT_MSC	Error	SRDF/A Session dropped, time out in MSC mode.
RDFA_SESS_DROP_TIMEOUT_RA	Error	SRDF/A Session dropped, time out on an RA.
RDFA_SESS_DROP_WPL_DSBL	Error	SRDF/A Session dropped, write pending limit reached. Host throttling disabled.
RDFA_SESS_DROP_WPL_ENBL	Error	SRDF/A Session dropped, write pending limit reached. Host throttling enabled.
SAVEDEVS_FULL	Error	The SAVE device pool for TimeFinder/Snap sessions is full
SAVEDEVS_NEAR_FULL	Warning	The SAVE device pool for TimeFinder/Snap sessions is 90% full
SENSE_CABLE_MISSING	Warning	A Symmetrix power subsystem Environment sense cable is missing
SMOKE_DETECT_ALERT	Warning	The Service Processor detected a smoke detector alert
SMOKE_DETECT_MALFUNCTION	Warning	The Service Processor detected a malfunction in the smoke detector
SP_COMM_TO_MII_DIR	Informational	The Service Processor is communicating via a local director

Table 15 Reported events (continued)

Event code	Severity	Event string
SP_CONNECT_TIME_NOT_FOUND	Error	The Symmetrix has no records of the last Service Processor connection time
SP_CONNECT_VIA_SERIAL_LINE	Informational	The Service Processor is currently communicating via a serial line
SP_DISK_FULL	Warning	The Service Processor disk is full
SP_EXCESS_MEMORY_USAGE	Warning	The Service Processor software detected excessive memory usage
SP_NOT_RESPONDING	Warning	The Symmetrix Service Processor is not communicating with the Symmetrix
SP_PHONEHOME_FAIL	Warning	The Symmetrix Service Processor could not complete a Call Home for service
SP_PHONEHOME_SUCCESS	Informational	The Symmetrix Service Processor completed a Call Home for service
SP_REBOOT_SUCCESS	Informational	The Service Processor has successfully rebooted
SPARE_INVOKED	Informational	A Hot Spare was invoked against a Symmetrix disk
SPARE_INVOKED_REMOTE	Informational	A Hot Spare was invoked against the disk of the R2 mirror in Symmetrix remotely-attached via RDF links
SRDFA_ACTIVE	Informational	SRDF/A is now active
SRDFA_INACTIVE	Warning	SRDF/A is now inactive
SYMREMOTE_CONNECTED	Informational	A SymmRemote session is currently connected to the Service Processor
SYMREMOTE_DISCONNECTED	Informational	A SymmRemote session to the Service Processor was disconnected
SYMREMOTE_REJECTED	Informational	A SymmRemote session to the Service Processor was denied access
TEMPERATURE_PROBLEMS	Warning	The Symmetrix is experiencing temperature problems
THERMAL_DET_FAILED_TEST	Error	The Symmetrix thermal tests detected a failure
THERMAL_EVENT	Error	A thermal event was detected in the Symmetrix
TIMEOUT_R2_WP_LIMIT	Error	Timeout writing to an R2 device. Maximum writes pending is reached.
TOO_MANY_SUSPHALT_CHAINS	Informational	Too many suspend/halt chains switching to Adaptive Copy Write Pending Mode
UNABLE_TO_SET_REGISTER	Warning	A Symmetrix communication subsystem was unable to set a shared register
UNRECOGNIZED_EPO_CARD	Warning	The Service Processor has detected a failed or unrecognized communication card

This chapter describes the SYMCLI base component commands that support the core operations required in the management of a storage enterprise. The commands appear in alphabetical order:

- ◆ [Return code handling for Windows and UNIX 362](#)
- ◆ [Return code handling for OpenVMS 368](#)

Return code handling for Windows and UNIX

Table 16 lists possible status or error codes that can be returned by the various SYMCLI commands on a Windows or UNIX platform (for example, in a UNIX C shell, returned using `echo $status`).

Table 16 Return code handling for Windows and UNIX

Code	Code symbol and description	Returnable by
0	CLI_C_SUCCESS CLI call completed successfully.	All
1	CLI_C_FAIL CLI call failed.	All
2	CLI_C_DB_FILE_IS_LOCKED Another process has an exclusive lock on the Host database file.	symbcv, symcfg, symdev, symgate, symdg, symld, symsnap, symmir, symcfg, symclone, symrdf, symlabel, symrcopy, symcg, symstar
3	CLI_C_SYM_IS_LOCKED Another process has an exclusive lock on the Symmetrix.	symrdf
4	CLI_C_NOT_ALL_SYNCHRONIZED NOT all of the mirrored pairs are in the 'Synchronized' state.	symmir, symrdf
5	CLI_C_NONE_SYNCHRONIZED NONE of the mirrored pairs are in the 'Synchronized' state.	symmir, symrdf
6	CLI_C_NOT_ALL_UPDATED NOT all of the mirrored pairs are in the 'Updated' state.	symrdf
7	CLI_C_NONE_UPDATED NONE of the mirrored pairs are in the 'Updated' state.	symrdf
8	CLI_C_NOT_ALL_PINGED NOT all of the remote Symmetrix units can be pinged.	symrdf
9	CLI_C_NONE_PINGED NONE of the remote Symmetrix units can be pinged.	symrdf
10	CLI_C_NOT_ALL_SYNCHED NOT all of the mirrored pairs are in the 'Synchronized' state.	symmir
11	CLI_C_NONE_SYNCHED NONE of the mirrored pairs are in the 'Synchronized' state.	symmir
12	CLI_C_NOT_ALL_RESTORED NOT all of the pairs are in the 'Restored' state.	symmir, symsnap, symclone
13	CLI_C_NONE_RESTORED NONE of the pairs are in the 'Restored' state.	symmir, symsnap, symclone
14	CLI_C_NOT_ALL_VALID NOT all of the mirrored pairs are in a valid state.	symrdf
15	CLI_C_NONE_VALID NONE of the mirrored pairs are in a valid state.	symrdf

Table 16 Return code handling for Windows and UNIX (continued)

Code	Code symbol and description	Returnable by
16	CLI_C_SYM_NOT_ALL_LOCKED NOT all of the specified Symmetrix units have an exclusive Symmetrix lock.	symcfg
17	CLI_C_SYM_NONE_LOCKED NONE of the specified Symmetrix units have an exclusive Symmetrix lock.	symcfg
18	CLI_C_ALREADY_IN_STATE The Device(s) is (are) already in the desired state or mode.	symld, symmir, symrdf, symsnap, symclone, symrcopy, symcg
19	CLI_C_GK_IS_LOCKED All GateKeeper devices to the Symmetrix unit are currently locked.	symbcv, symcfg, symdev, symdg, symgate, symld, sympd, symstat, symmir, symcfg, symrdf, symdrv, symsnap, symlabel, symclone, symrcopy, symcg, symstar
20	CLI_C_WP_TRACKS_IN_CACHE Operation cannot proceed because the target device has Write Pending I/O in the cache.	symmir
21	CLI_C_NEED_MERGE_TO_RESUME Operation cannot proceed without first performing a Merge of the RDF Track Tables.	symrdf
22	CLI_C_NEED_FORCE_TO_PROCEED Operation cannot proceed in the current state except if you specify a force flag.	symmir, symrdf, symcfg, symsnap, symclone
23	CLI_C_NEED_SYMFORCE_TO_PROCEED Operation cannot proceed in the current state except if you specify a symforce flag.	symmir, symsnap, symclone
24	CLI_C_NOT_IN_SYNC The Symmetrix configuration and the database file are NOT in sync.	symcfg
25	CLI_C_NOT_ALL_SPLIT NOT all of the mirrored pairs are in the 'Split' state.	symmir, symrdf, symclone
26	CLI_C_NONE_SPLIT NONE of the mirrored pairs are in the 'Split' state.	symmir, symrdf, symclone
27	CLI_C_NOT_ALL_SYNCINPROG NOT all of the mirrored pairs are in the 'SyncInProg' state.	symmir, symrdf
28	CLI_C_NONE_SYNCINPROG NONE of the mirrored pairs are in the 'SyncInProg' state.	symmir, symrdf
29	CLI_C_NOT_ALL_RESTINPROG NOT all of the pairs are in the 'RestInProg' state.	symmir, symsnap, symclone
30	CLI_C_NONE_RESTINPROG NONE of the pairs are in the 'RestInProg' state.	symmir, symsnap, symclone
31	CLI_C_NOT_ALL_SUSPENDED NOT all of the mirrored pairs are in the 'Suspended' state.	symrdf, symclone

Table 16 Return code handling for Windows and UNIX (continued)

Code	Code symbol and description	Returnable by
32	CLI_C_NONE_SUSPENDED NONE of the mirrored pairs are in the 'Suspended' state.	symrdf
33	CLI_C_NOT_ALL_FAILED_OVER NOT all of the mirrored pairs are in the 'Failed Over' state.	symrdf
34	CLI_C_NONE_FAILED_OVER NONE of the mirrored pairs are in the 'Failed Over' state.	symrdf
35	CLI_C_NOT_ALL_UPDATEINPROG NOT all of the mirrored pairs are in the 'R1 UpdInProg' state.	symrdf
36	CLI_C_NONE_UPDATEINPROG NONE of the mirrored pairs are in the 'R1 UpdInProg' state.	symrdf
37	CLI_C_NOT_ALL_PARTITIONED NOT all of the mirrored pairs are in the 'Partitioned' state.	symrdf
38	CLI_C_NONE_PARTITIONED NONE of the mirrored pairs are in the 'Partitioned' state.	symrdf
39	CLI_C_NOT_ALL_ENABLED NOT all of the mirrored pairs are in the 'Enabled' consistency state.	symrdf
40	CLI_C_NONE_ENABLED NONE of the mirrored pairs are in the 'Enabled' consistency state.	symrdf
41	CLI_C_NOT_ALL_SYNCHRONIZED_AND_ENABLED NOT all of the mirrored pairs are in the 'Synchronized' rdf state and the 'Enabled' consistency state.	symrdf
42	CLI_C_NONE_SYNCHRONIZED_AND_ENABLED NONE of the mirrored pairs are in the 'Synchronized' rdf state and in the 'Enabled' consistency state.	symrdf
43	CLI_C_NOT_ALL_SUSP_AND_ENABLED NOT all of the mirrored pairs are in the 'Suspended' rdf state and 'Enabled' consistency state.	symrdf
44	CLI_C_NONE_SUSP_AND_ENABLED NONE of the mirrored pairs are in the 'Suspended' rdf state and the 'Enabled' consistency state.	symrdf
45	CLI_C_NOT_ALL_SUSP_AND_OFFLINE NOT all of the mirrored pairs are in the 'Suspended' rdf state and 'Offline' link suspend state.	symrdf
46	CLI_C_NONE_SUSP_AND_OFFLINE NONE of the mirrored pairs are in the 'Suspended' rdf state and the 'Offline' link suspend state.	symrdf
47	CLI_C_WONT_REVERSE_SPLIT Performing this operation at this time will not allow you to perform the next BCV split as a reverse split.	symmir
48	CLI_C_CONFIG_LOCKED Access to the configuration server is locked.	symconfigure symacl

Table 16 Return code handling for Windows and UNIX (continued)

Code	Code symbol and description	Returnable by
49	CLI_C_DEVS_ARE_LOCKED One or more devices are locked.	symmir, symsnap, aymclone, symrdf, symclone, symrcopy, symdev, symcg
50	CLI_C_MUST_SPLIT_PROTECT If a device was restored with the protect option, it must be split with the protect option.	symmir
51	CLI_C_PAIED_WITH_A_DRV The function can not be performed since the STD device is already paired with a DRV device.	symmir
52	CLI_C_PAIED_WITH_A_SPARE NOT all of the Snap pairs are in the 'Copy in progress' state.	symmir
53	CLI_C_NOT_ALL_COPYINPROG NOT all of the pairs are in the 'CopyInProgress' state.	symclone, symrcopy
54	CLI_C_NONE_COPYINPROG NONE of the pairs are in the 'CopyInProgress' state.	symclone, symrcopy
55	CLI_C_NOT_ALL_COPIED NOT all of the pairs are in the 'Copied' state.	symsnap, symclone, symrcopy
56	CLI_C_NONE_COPIED NONE of the pairs are in the 'Copied' state.	symsnap, symclone, symrcopy
57	CLI_C_NOT_ALL_COPYONACCESS NOT all of the pairs are in the 'CopyonAccess' state.	symclone, symrcopy
58	CLI_C_NONE_COPYONACCESS NONE of the pairs are in the 'CopyonAccess' state.	symclone, symrcopy
59	CLI_C_CANT_RESTORE_PROTECT The protected restore operation can not be completed because there are write pendings or the BCV mirrors are not synchronized	symsnap
60	CLI_C_NOT_ALL_CREATED NOT all of the pairs are in the 'Created' state.	symsnap, symclone, symrcopy
61	CLI_C_NONE_CREATED NONE of the pairs are in the 'Created' state.	symsnap, symclone, symrcopy
62	CLI_C_NOT_ALL_READY NOT all of the BCVs local mirrors are in the 'Ready' state.	symmir
63	CLI_C_NONE_READY NONE of the BCVs local mirrors are in the 'Ready' state.	symmir
64	CLI_C_STD_BKGRND_SPLIT_IN_PROG The operation cannot proceed because the STD Device is splitting in the Background	symmir
65	CLI_C_SPLIT_IN_PROG The operation cannot proceed because the pair is splitting	symmir
66	CLI_C_NOT_ALL_COPYONWRITE NOT all of the pairs are in the 'CopyOnWrite' state.	symsnap, symrcopy

Table 16 Return code handling for Windows and UNIX (continued)

Code	Code symbol and description	Returnable by
67	CLI_C_NONE_COPYONWRITE NONE of the pairs are in the 'CopyOnWrite' state.	symsnap, symrcopy
68	CLI_C_NOT_ALL_RECREATED Not all devices are in the 'Recreated' state.	symclone, symrcopy
69	CLI_C_NONE_RECREATED No devices are in the 'Recreated' state.	symclone, symrcopy
70	CLI_C_NOT_ALL_CONSISTENT NOT all of the mirrored pairs are in the 'Consistent' state.	symrdf
71	CLI_C_NONE_CONSISTENT NONE of the mirrored pairs are in the 'Consistent' state.	symrdf
72	CLI_C_MAX_SESSIONS_EXCEEDED The maximum number of sessions has been exceeded for the specified device.	symrdf
73	CLI_C_NOT_ALL_PRECOPY Not all source devices are in the 'Precopy' state.	symclone
74	CLI_C_NONE_PRECOPY No source devices are in the 'Precopy' state.	symclone
75	CLI_C_NOT_ALL_PRECOPY_CYCLED Not all source devices have completed one precopy cycle.	symclone
76	CLI_C_NONE_PRECOPY_CYCLED No source devices have completed one precopy cycle.	symclone
77	CLI_C_CONSISTENCY_TIMEOUT The operation failed because of a Consistency window timeout.	symmir, symsnap, symclone, symrcopy
78	CLI_C_NOT_ALL_FAILED NOT all of the pairs are in the 'Failed' state.	symsnap, symclone, symrcopy
79	CLI_C_NONE_FAILED NONE of the pairs are in the 'Failed' state.	symsnap, symclone, symrcopy
80	CLI_C_CG_NOT_CONSISTENT CG is NOT RDF-consistent.	symcg, symrdf
81	CLI_C_NOT_ALL_CREATEINPROG NOT all of the pairs are in the 'CreateInProg' state.	symrcopy
82	CLI_C_NONE_CREATEINPROG None of the pairs are in the 'CreateInProg' state.	symrcopy
83	CLI_C_NOT_ALL_RECREATEINPROG NOT all of the pairs are in the 'RecreateInProg' state.	symrcopy
84	CLI_C_NONE_RECREATEINPROG None of the pairs are in the 'RecreateInProg' state.	symrcopy
85	CLI_C_NOT_ALL_TERMININPROG NOT all of the pairs are in the 'TerminateInProg' state.	symrcopy
86	CLI_C_NONE_TERMININPROG None of the pairs are in the 'TerminateInProg' state.	symrcopy

Table 16 Return code handling for Windows and UNIX (continued)

Code	Code symbol and description	Returnable by
87	CLI_C_NOT_ALL_VERIFYINPROG NOT all of the pairs are in the 'VerifyInProg' state.	symrcopy
88	CLI_C_NONE_VERIFYINPROG None of the pairs are in the 'VerifyInProg' state.	symrcopy
89	CLI_C_NOT_ALL_VERIFIED NOT all of the pairs are in the requested states	symrcopy, symrdf, symsnap, symclone, symmir
90	CLI_C_NONE_VERIFIED NONE of the pairs are in the requested states <u>Note: This message is returned when multiple states are verified at once.</u>	symrcopy, symrdf, symsnap, symclone, symmir
91	CLI_C_RDFG_TRANSMIT_IDLE RDF group is operating in SRDF/A Transmit Idle.	symrdf

Return code handling for OpenVMS

A set of return codes for the various conditions possible with each SYMCLI command are provided for UNIX and Windows platforms. However, for the OpenVMS platforms, discernible return codes are not yet available and, therefore, require interpolation or special processing of the returned hexadecimal value (resulting from a \$STATUS query).

This is because the format of the OpenVMS return value also includes a severity level field in the three least significant bits (00-02). The return code is described in the next field (03-15). [Table 17](#) describes the set of possible return hex values and their associated meaning with SYMCLI on OpenVMS.

Table 17 OpenVMS return code interpolation table

Returned hex value ^a	SYMCLI return code	OpenVMS severity level	SYMCLI name
%X1FFF0001	00	1 (S)	SUCCESS
%X1FFF000C	01	4 (F)	FAIL
%X1FFF0012	02	2 (E)	DB_FILE_IS_LOCKED
%X1FFF001A	03	2 (E)	SYM_IS_LOCKED
%X1FFF0023	04	3 (I)	NOT_ALL_SYNCHRONIZED
%X1FFF002B	05	3 (I)	NONE_SYNCHRONIZED
%X1FFF0033	06	3 (I)	NOT_ALL_UPDATED
%X1FFF003B	07	3 (I)	NONE_UPDATED
%X1FFF0043	08	3 (I)	NOT_ALL_PINGED
%X1FFF004B	09	3 (I)	NONE_PINGED
%X1FFF0053	10	3 (I)	NOT_ALL_SYNCHED
%X1FFF005B	11	3 (I)	NONE_SYNCHED
%X1FFF0063	12	3 (I)	NOT_ALL_RESTORED
%X1FFF006B	13	3 (I)	NONE_RESTORED
%X1FFF0073	14	3 (I)	NOT_ALL_VALID
%X1FFF007B	15	3 (I)	NONE_VALID
%X1FFF0083	16	3 (I)	SYM_NOT_ALL_LOCKED
%X1FFF008B	17	3 (I)	SYM_NONE_LOCKED
%X1FFF0093	18	3 (I)	ALREADY_IN_STATE
%X1FFF009A	19	2 (E)	GK_IS_LOCKED
%X1FFF00A2	20	2 (E)	WP_TRACKS_IN_CACHE
%X1FFF00AA	21	2 (E)	NEED_MERGE_TO_RESUME
%X1FFF00B2	22	2 (E)	NEED_FORCE_TO_PROCEED

Table 17 OpenVMS return code interpolation table (continued)

Returned hex value ^a	SYMCLI return code	OpenVMS severity level	SYMCLI name
%X1FFF00BA	23	2 (E)	NEED_SYMFORCE_TO_PROCEED
%X1FFF00C3	24	3 (I)	NOT_IN_SYNC
%X1FFF00CB	25	3 (I)	NOT_ALL_SPLIT
%X1FFF00D3	26	3 (I)	NONE_SPLIT
%X1FFF00DB	27	3 (I)	NOT_ALL_SYNCINPROG
%X1FFF00E3	28	3 (I)	NONE_SYNCINPROG
%X1FFF00EB	29	3 (I)	NOT_ALL_RESTINPROG
%X1FFF00F3	30	3 (I)	NONE_RESTINPROG
%X1FFF00FB	31	3 (I)	NOT_ALL_SUSPENDED
%X1FFF0103	32	3 (I)	NONE_SUSPENDED
%X1FFF010B	33	3 (I)	NOT_ALL_FAILED_OVER
%X1FFF0113	34	3 (I)	NONE_FAILED_OVER
%X1FFF011B	35	3 (I)	NOT_ALL_UPDATEINPROG
%X1FFF0123	36	3 (I)	NONE_UPDATEINPROG
%X1FFF012B	37	3 (I)	NOT_ALL_PARTITIONED
%X1FFF0133	38	3 (I)	NONE_PARTITIONED
%X1FFF013B	39	3 (I)	NOT_ALL_ENABLED
%X1FFF0143	40	3 (I)	NONE_ENABLED
%X1FFF014B	41	3 (I)	NOT_ALL_SYNCHRONIZED_AND_ENABLED
%X1FFF0153	42	3 (I)	NONE_SYNCHRONIZED_AND_ENABLED
%X1FFF015B	43	3 (I)	NOT_ALL_SUSP_AND_ENABLED
%X1FFF0163	44	3 (I)	NONE_SUSP_AND_ENABLED
%X1FFF016B	45	3 (I)	NOT_ALL_SUSP_AND_OFFLINE
%X1FFF0173	46	3 (I)	NONE_SUSP_AND_OFFLINE
%X1FFF017A	47	2 (E)	WONT_REVERSE_SPLIT
%X1FFF0182	48	2 (E)	CONFIG_LOCKED
%X1FFF018A	49	2 (E)	DEVS_ARE_LOCKED
%X1FFF0192	50	2 (E)	CLI_C_MUST_SPLIT_PROTECT
%X1FFF019A	51	2 (E)	CLI_C_PAIRED_WITH_A_DRV
%X1FFF01A2	52	2 (E)	CLI_C_PAIRED_WITH_A_SPARE
%X1FFF01AB	53	3 (I)	CLI_C_NOT_ALL_COPYINPROG
%X1FFF01B3	54	3 (I)	CLI_C_NONE_COPYINPROG

Table 17 OpenVMS return code interpolation table (continued)

Returned hex value ^a	SYMCLI return code	OpenVMS severity level	SYMCLI name
%X1FFF01BB	55	3 (I)	CLI_C_NOT_ALL_COPIED
%X1FFF01C3	56	3 (I)	CLI_C_NONE_COPIED
%X1FFF01CB	57	3 (I)	CLI_C_NOT_ALL_COPYONACCESS
%X1FFF01D3	58	3 (I)	CLI_C_NONE_COPYONACCESS
%X1FFF01DA	59	2 (E)	CLI_C_CANT_RESTORE_PROTECT
%X1FFF01E3	60	3 (I)	CLI_C_NOT_ALL_CREATED
%X1FFF01EB	61	3 (I)	CLI_C_NONE_CREATED
%X1FFF01F3	62	3 (I)	CLI_C_NOT_ALL_READY
%X1FFF01FB	63	3 (I)	CLI_C_NONE_READY
%X1FFF0202	64	2 (E)	CLI_C_SYM_IS_LOCKED
%X1FFF020A	65	2 (E)	CLI_C_SPLIT_IN_PROG
%X1FFF0213	66	3 (I)	CLI_C_NOT_ALL_COPYONWRITE
%X1FFF021B	67	3 (I)	CLI_C_NONE_COPYONWRITE
%X1FFF0223	68	3 (I)	Reserved for future use.
%X1FFF022B	69	3 (I)	Reserved for future use.
%X1FFF0233	70	3 (I)	CLI_C_NOT_ALL_CONSISTENT
%X1FFF023B	71	3 (I)	CLI_C_NONE_CONSISTENT
%X1FFF0242	72	2 (E)	CLI_C_MAX_SESSIONS_EXCEEDED
%X1FFF024B	73	3(I)	CLI_C_NOT_ALL_PRECOPY
%X1FFF0253	74	3(I)	CLI_C_NONE_PRECOPY
%X1FFF025B	75	3(I)	CLI_C_NOT_ALL_PRECOPY_CYCLED
%X1FFF0263	76	3(I)	CLI_C_NONE_PRECOPY_CYCLED
%X1FFF026A	77	2(E)	CLI_C_CONSISTENCY_TIMEOUT
%X1FFF0273	78	3(I)	CLI_C_NOT_ALL_FAILED
%X1FFF027B	79	3(I)	CLI_C_NONE_FAILED
%X1FFF0283	80	3(I)	CLI_C_CG_NOT_CONSISTENT
%X1FFF028B	81	3(I)	CLI_C_NOT_ALL_CREATEINPROG
%X1FFF0293	82	3(I)	CLI_C_NONE_CREATEINPROG
%X1FFF029B	83	3(I)	CLI_C_NOT_ALL_RECREATEINPROG
%X1FFF02A3	84	3(I)	CLI_C_NONE_RECREATEINPROG
%X1FFF02AB	85	3(I)	CLI_C_NOT_ALL_TERMINPROG
%X1FFF02B3	86	3(I)	CLI_C_NONE_TERMINPROG

Table 17 OpenVMS return code interpolation table (continued)

Returned hex value ^a	SYMCLI return code	OpenVMS severity level	SYMCLI name
%X1FFF02BB	87	3(I)	CLI_C_NOT_ALL_VERIFYINPROG
%X1FFF02C3	88	3(I)	CLI_C_NONE_VERIFYINPROG
%X1FFF02CB	89	3(I)	CLI_C_NOT_ALL_VERIFIED
%X1FFF02D3	90	3(I)	CLI_C_NONE_VERIFIED
%X1FFF02DA	91	2(E)	CLI_C_RDFG_TRANSMIT_IDLE

- a. For OpenVMS, use `write sys$output $status` to view a return code. The following special DCL program can automatically convert these OpenVMS values to the proper SYMCLI return codes:

```
[SAMPLE-DCL]
$ ! Example: Convert SYMCLI return codes.
$ !
$ a = ( %x0000ffff .and. 'p1) ! Mask off bits 16-31.
$ a = ( a/8 )                 ! Shift 3-15 right.
$ write sys$output 'a         ! Print return code
$                               ! without severity
$                               ! level.
$ !
```

For example, an OpenVMS status of %X1FFF002B converts to a return code of 5, which maps to NONE_SYNCHRONIZED.

This glossary contains terms related to disk storage subsystems. Many of these terms are used in this manual.

A

- Access Control** Access Control is a Symmetrix-based control mechanism to restrict certain hosts and user groups access to certain storage objects such as devices and device pools.
- ACE** Access Control Entry (ACE) is a defined entry object in an access control list (ACL) that defines a given user group, its rights, and specifies the owning devices or device pool they can access.
- ACL** Access Control List (ACL) is list of defined ACE entry objects that comprise the list and associate to a given user group.
- Alternate Track** A track designated to contain data in place of a defective primary track. See also *Primary Track*.
- Actuator** A set of access arms and their attached read/write heads, which move as an independent component within a head and disk assembly (HDA).
- Adapter** Card that provides the physical interface between the director and disk devices (SCSI adapter), director and parallel channels (Bus & Tag adapter), director and serial channels (Serial adapter).
- Authorization** Authorization management is a Symmetrix access control extension to assign user roles and restrict specified users access to a given Symmetrix array.
- Automated Replication** SRDF/Automated Replication (SRDF/AR) performs automated consistent replication of data from standard devices and from RDF1 BCV devices over SRDF links to the remote RDF pair.
- Asynchronous SRDF** SRDF/Asynchronous (SRDF/A) mode for RDF devices provides a dependent-write consistent copy on the target R2 device, which is only slightly behind the currency of the source R1 device. SRDF/A session data is transferred to the remote symmetrix array in predefined time cycles or delta sets, which minimizes the redundancy of same-track changes being transferred over the link.

B

- Business Continuance** The TimeFinder and SRDF components of Solutions Enabler extends the basic SYMCLI command set to include business continuance control solutions that maintain mirror images of data at the device level in Symmetrix arrays located locally and in physically separate sites.

Both TimeFinder and SRDF operations provide a recovery solution for component site failures between locally and remotely located storage devices.

BCV Device A Business Continuance Volume (BCV) is Symmetrix storage device that holds a mirror copy of the primary data on the Standard device. A BCV Device contains a copy of data from a standard Symmetrix device that is online for regular I/O operation from its host(s). The Standard device and its assigned and mirroring BCV device are known as a BCV pair.

BCV Pair The Standard device and its assigned and mirroring BCV device are known as a BCV pair.

C

Cache Random access electronic storage used to retain frequently used data for faster access by the channel. A memory area on a director where the backend storage process interfaces with the target disk storage.

Cache Slot Unit of cache equivalent to one track.

CHAP Challenge Handshake Authentication (CHAP) allows the management of credential name and a CHAP secret entries per user access assignment in iSCSI environments.

Channel Director The component in the Symmetrix subsystem that interfaces between the host channels and data storage. It transfers data between the channel and cache.

Change Tracker The Change Tracker command operation measures changes to data on a Symmetrix volume or group of volumes.

Checksum The SYMCLI Double Checksum operation provides a method to help minimize the impact of I/O errors on database consistency, during I/O transfers between hosts and Symmetrix storage devices. Applicable to Relational Database Management Systems (RDBMS or Oracle) to test data for any corruption picked up along the I/O path from the host.

Clone TimeFinder/Clone operations allow you to create point-in-time copies of a source (prime or backup) device on multiple target devices.

Controller ID Controller identification number of the director the disks are channeled to for EREP usage. There is only one controller ID for Symmetrix.

Composite Group A composite group (CG) is a user-defined group of device members that can span multiple Symmetrix arrays and RDF groups.

Concurrent RDF A Concurrent RDF operation and configuration is a single R1 device that concurrently is being remotely mirrored to two target R2 devices or sites. Provides flexible and instant disaster recovery as you have two identical remote copies available at any point in time.

Consistency Group A consistency group (CG), known as SRDF/CG is a composite group comprised of RDF devices (RDF1 or RDF2), which has been enabled for remote database consistency. These RDF consistency groups operate in unison to preserve the integrity and dependent-write consistency of a database distributed across multiple arrays.

Count-Key-Data (CKD) A data recording, IBM format employing self-defining record formats in which each record is represented by a count area that identifies the record and specifies its format, an optional key area that may be used to identify the data area contents, and a data area that contains the user data for the record. CKD can also refer to a set of channel commands that are accepted by a device that employs the CKD recording format.

CKD Device A CKD device is a device type and emulation common to IBM mainframe systems.

D

DASD Direct access storage device.

Data Availability Access to any and all user data by the application.

Delayed Fast Write There is no room in cache for the data presented by the write operation.

DSE Delta Set Extension (DSE) reduces the possibility of I/O spillover in heavy SRDF/A cycle transactions between sites. When many SRDF/A groups run in parallel in the same Symmetrix array, complex I/O profiles and potential interruptions in link availability and bandwidth, make the task of calculating adequate cache requirements difficult. The SRDF/A Delta Set Extension (SRDF/A DSE) feature extends the cache space available for SRDF/A session cycles by off-loading some or all of its cycle data from cache to pre-configured disk storage, or device pools.

Device Group A Device Group is a user-defined group of user-selected storage devices that are within a single Symmetrix array. For command-line efficiency, a single command can target the group of devices with blanket control operations that comprise the group. If they are not part of an RDF environment, the group type should be created as REGULAR. See also *RDF Device Group*.

Device Name There are three types of Solutions Enabler naming conventions for Symmetrix devices:

- ◆ Physical Device Name (PdevName) that is directly visible by the host, such as `/dev/dsk/c2t0d2s2`
- ◆ Symmetrix Device name (SymDevname) that relates to the Symmetrix system hexadecimal scheme, such as `002C`
- ◆ Logical Device Name (LdevName), such as `DEV001` and `BCV001`, etc.

Device Number The value that logically identifies a disk device in a string. See also *LUN*.

Destage Destage is the backend process of off-loading director cache data and writing it to disk for safe storage.

Diagnostics System level tests or firmware designed to inspect, detect, and correct failing components. These tests are comprehensive and self-invoking.

Director The component in the Symmetrix subsystem that allows Symmetrix to transfer data between the host channels and disk devices. See also *Disk Director*.

Discovery Discovery is a command operation that scans all SCSI buses, collects information about all the arrays and devices found, and rebuilds the SYMAPI database with the collected device information and parameters from all local and remotely-attached devices.

Disk Director The component in the Symmetrix subsystem that interfaces between cache and the disk devices.

DMSP Statistics The Dynamic Mirroring Service Policy (DMSP) statistics lists service policy and attributes for a specified device.

DRV Device A Dynamic Reallocation Volume (DRV) device is a non-user-addressable logical volume used by the Symmetrix Optimizer to temporarily hold storage data, while executing a

reconfiguration on logical volume granularity. Data is available and protected during a volume swap required in the reconfiguration process.

Dual-Initiator A Symmetrix feature that automatically creates a backup data path to the disk devices serviced directly by a disk director, if that disk director or the disk management hardware for those devices fails.

Dynamic Cache Partitioning A QoS feature, dynamic cache partitioning allows the Administrator the means to dynamically control the cache area size, servicing a given device group I/O, by defining flexible partitions through cache memory.

Dynamic RDF Group RDF groups define a collective data transfer and communication path associating and linking the device of two separate Symmetrix arrays. It allows for the dynamic creation of RDF groups with specified devices (on demand) while the Symmetrix array continues in safe operation.

Dynamic Sparing A Symmetrix feature that automatically transfers data from a failing disk device to an available spare disk device without affecting data availability. This feature supports all non-mirrored devices in the Symmetrix subsystem.

E

ECA Engenuity Consistency Assist (ECA) provides consistent split operations across multiple, heterogeneous hosts. Used in TimeFinder and SRDF/AR split operations for consistent and restartable copy of a database management system.

EREP program The program EREP that formats and prepares reports from the data contained in the Error Recording Data Set (ERDS).

ESCON Enterprise Systems Connection.

ESCON Director Device that provides a dynamic switching function and extended link path lengths (with XDF capability) when attaching an ESCON channel to a Symmetrix serial channel interface.

F

FBA A fixed block architecture (FBA) is the typical device emulation type for device I/O protocol. See also CKD.

Fast Write In Symmetrix, a write operation at cache speed that does not require immediate transfer of data to disk. The data is written directly to cache and is available for later destaging.

Field Replaceable Unit (FRU) A component that is replaced or added by service personnel as a single entity.

Frame Data packet format in an ESCON environment.

G

Gatekeeper All commands in the form of SYMCLI from a host must be sent to the Symmetrix Engenuity operating system via a gatekeeper device. One of the disk storage devices, otherwise part of the storage capability, becomes designated as the Gatekeeper to handle all command I/O (communication) between host and the Symmetrix system.

Gigabyte (GB) 10⁹ bytes

GNS Group Name Service (GNS) provides a common repository to store and maintain SYMAPI device group and composite group definitions across multiple Symmetrix arrays that are visible to all locally-attached hosts. A GNS daemon running in each host communicate with and share naming data in the common GNS repository.

H

Head and Disk Assembly (HDA) A field replaceable unit in the Symmetrix subsystem containing the disk and actuator.

Home Address (HA) The first field on a CKD track that identifies the track and defines its operational status. The mainframe home address is written after the index point on each track.

HBA Host Bus Adapter (HBA) card in the host computer I/O subsystem that interfaces to SAN fibre channel networks, etc.

Held Device A Held device is *Not Ready* to the host as TimeFinder/Snap operations are performing a critical action, during a snap copy session.

Hyper-Volume Extension The ability to define more than one logical volume on a single physical disk device making use of its full formatted capacity. These logical volumes are user-selectable in size. The minimum volume size is one cylinder and the maximum size depends on the disk device capacity and the emulation mode selected.

I

Identifier (ID) A sequence of bits or characters that identifies a program, device, controller, or system.

IML Initial microcode program loading.

Index Marker Indicates the physical beginning and end of a track.

Index Point The reference point on a disk surface that determines the start of a track.

INLINES An EMC-provided host-based Cache Reporter utility for viewing short and long term cache statistics at the system console.

I/O Device An addressable input/output unit, such as a disk device.

iSCSI iSCSI or Internet SCSI (Small Computer System Interface) is an Internet Protocol (IP)-based storage networking standard for linking data storage facilities, developed by the Internet Engineering Task Force (IETF). By carrying SCSI commands over IP networks, iSCSI is used to facilitate data transfers over intranets and to manage storage over long distances.

iSCSI Adapter An Internet Small Computer System Interface adapter that has the device-connection qualities of a SCSI bus, but an adapter to an IP network where the Internet Protocol handles the encapsulation of SCSI commands transferred into the Storage Area Networks (SANs).

K

Kilobyte (K) 1024 bytes.

L

Least Recently Used Algorithm (LRU) A QoS operative for older Engenuity versions before 5x72. It is an algorithm used to identify and make available the cache space by removing the least recently used data.

Locks	There are two SYMAPI lock mechanisms. A Symmetrix External Lock (SEL) is an exclusive lock on the Symmetrix array for performing major configuration changes. A Device External Lock (DEL) prevents other control operations (like locking pairs for Open Replicator, SRDF and TimeFinder) from being performed on devices being modified by a configuration change session.
Logical Volume	Logical volume architecture defined by a Logical Volume Manager (LVM) is a means for organizing physical disk storage for optimal use by a given host application. In the area of Storage Resource Management (SRM), logical volumes and groups, map to portions of a physical disk or to their extents.
Long Miss	Requested data is not in cache and is not in the process of being fetched.
Longitude Redundancy Code (LRC)	Exclusive OR (XOR) of the accumulated bytes in the data record.
LUN	A logical unit number (LUN) is a unique identifier used on a SCSI bus that enables it to differentiate between up to eight separate storage devices (each of which is a logical unit). See also, <i>Device Number</i> .
M	
Media	The disk surface on which data is stored.
Megabyte (MB)	10 ⁶ bytes.
Metadevice and Metamember	Metadevices allow for the designation of individual devices to be concatenated together, creating larger storage devices. When the Metahead (first device in the member chain) is addressed with a command, the Enginuity process determines which metadevice is the target for the command execution. Metadevice addressing, by striping, divides each Metamember device into a series of stripes, then addresses a stripe from each device before finally advancing to the next stripe on the first device. The striping of data across multiple drives effectively creates definable cylinder stripes.
Metahead	The Metahead is the first device in the chain of metadevices or metamembers and is the initial target as it is a responsible gatekeeper for receiving incoming commands.
Mirroring	The Symmetrix maintains two identical copies of a designated volume on separate disks. Each volume automatically updates during a write operation. If one disk device fails, Symmetrix automatically uses the other disk device.
Mirrored Pair	A logical volume with all data recorded twice, once on each of two different physical devices.
Multi-Hop SRDF	An SRDF multi-hop topology allows you to daisy-chain three Symmetrix sites where a third site is providing business continuance backup to the remote RDF site. In a multi-hop scheme, the last site in the chain is two hops (SRDF links) away from the local or primary site.
P	
Partitioned Data Set (PDS) Assist	An IBM feature for 3990 Model 6 and Model 3 with Extended Platform units. PDS Assist improves performance on large, heavily-used partitioned data sets by modifying the directory search process.

Physical ID Physical identification number of the Symmetrix director for EREP usage. This value automatically increments by one for each director installed in Symmetrix. This number must be unique in the mainframe system. It should be an even number. This number is referred to as the SCU_ID.

Primary Track The original track on which data is stored. See also *Alternate Track*.

Promotion The process of moving data from a track on the disk device to cache slot.

Q

QoS Quality of Service (QoS) is a Symmetrix management area that provides the Administrator performance tuning tools to optimize the storage system's dynamic I/O handling paths. QoS features allow you to adjust data transfer rates and caching parameters to meet your current storage environment.

R

RA Group See *RDF Device Group*.

RAID RAID (redundant array of independent disks; originally redundant array of inexpensive disks) is a way of storing the same data in different places (thus, redundantly) on multiple hard disks. By placing data on multiple disks, I/O (input/output) operations can overlap in a balanced way, improving performance. A RAID appears to the operating system to be a single logical hard disk. RAID employs the technique of disk striping, which involves partitioning each drive's storage space into units ranging from a sector (512 bytes) up to several megabytes. The stripes of all the disks are interleaved and addressed in order.

RDF Device Group An RDF device group is a user-defined device group comprised of RDF devices that are within a single Symmetrix array. At device group creation, there are two type of RDF groups: RDF1 (RDF source device) and RDF2 (RDF target device). RDF device groups are also known as RA groups in the Solutions Enabler mechanisms.

Read Hit Data requested by the read operation is in cache.

Read Miss Data requested by the read operation is not in cache.

Record Zero The first record after the home address.

S

SAVE Device A Save device is a device member of a SAVE pool. There are two types of Save device pools: Snap pools and SRDF/A DSE pools.

Scrubbing The process of reading, checking the error correction bits, and writing corrected data back to the source.

SCSI Adapter SCSI adapter is an SA-type front-end director card in the Symmetrix subsystem that provides the physical interface to the Symmetrix cache.

SCSI Device A Small Computer System Interface (SCSI) device that plugs into a SCSI bus subsystem common in most host systems. See also *iSCSI*.

SCU_ID For 3880 storage control emulations, this value uniquely identifies the storage director without respect to its selection address. It identifies to the host system, via the EREP, the director detecting the failing subsystem component. This value automatically increments by

one for each director installed. The SCU_ID must be a unique number in the host system. It should be an even number and start on a zero boundary.

Short Miss Requested data is not in cache, but is in the process of being fetched.

SNAP TimeFinder/SNAP operations provide instant snap device copies, using virtual devices (VDEVs). See also *VDEV Devices*.

SSID For IBM 3990 storage control emulations, this value identifies the physical components of a logical DASD subsystem. The SSID must be a unique number in the host system. It should be an even number and start on a zero boundary.

Staging The process of writing data from a disk device to cache for a read operation. Destaging is the backend process of off-loading or reading director cache data and writing it to disk for storage.

Standard Device The TimeFinder designation of the storage device that holds the primary operations data in a Business Continuity environment. The Standard device and its assigned and mirroring BCV device are known as a BCV pair.

Storage Control Unit The component in the Symmetrix subsystem that connects Symmetrix to the host channels. It performs channel commands and communicates with the disk directors and cache. See also SCU_ID.

String A series of connected disk devices sharing the same disk director.

Striped Devices See *Metadevice*.

SRDF/Star SRDF/Star is a data protection and failure recovery solution that covers three geographically dispersed data centers in a triangular topology. The primary site, via SRDF links, uses concurrent RDF capability to mirror the same production data synchronously to one remote site and asynchronously to another remote site for a total regional business continuity solution.

SYMAPI Configuration Database A SYMAPI configuration database file, stored in the host system, contains the physical configuration information of SCSI devices and Symmetrix parameters that define the entire storage complex.

V

VCMDB A database for the Device Masking disciplines that holds all masking and access records for the given Symmetrix array.

VCM Device Through Device Masking command operations, a VCM device is a selected device that has been masked so that it is visible only to a certain host so that it is an un-shared resource.

VDEV Device A Virtual (VDEV) device is a storage target area that holds a Snap copy of the data from a Standard or BCV device. This virtual storage area target may be either a designated logical device or a partitioned area of cache that supports TimeFinder/Snap operations.

Volume A general term referring to a storage device. In the Symmetrix subsystem, a volume corresponds to single disk device.

Vault Device Devices used for data vaulting on Symmetrix DMX-3 arrays. When a significant drop in Symmetrix power is sensed and the system begins to switch to battery backup, Power Vault quickly destages all I/O data residing in director cache memory to vault devices. This

permanently captures the transient data to disk storage for future recovery, at such time full power returns.

W

Write Hit There is room in cache for the data presented by the write operation.

WWN The World Wide Name (WWN) is a 64-bit address used in fibre channel networks for unique global identification. AWWN defines the alias or nickname for a given WWN.

Write Miss There is no room in cache for the data presented by the write operation.

