

**EMC Solutions Enabler
Symmetrix Change Tracker CLI**
Version 6.0

PRODUCT GUIDE

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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 the 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.

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This manual provides both guide and reference information for command-line users and script programmers. The manual describes how to perform Change Tracker operations on your storage environment using the SYMCLI commands of the EMC Solutions Enabler software.

The following defines the structure of this manual:

Chapter 1, *Overview*, provides an introduction to the Change Tracker utility and the `symchg` SYMCLI command.

Chapter 2, *Monitoring Data Objects with Change Tracker*, describes how to monitor data objects within your storage environment using the `symchg` SYMCLI command.

Related Documentation

Other Symmetrix publications of related interest are:

- ◆ *EMC Solutions Enabler Symmetrix CLI Command Reference*
- ◆ *EMC Solutions Enabler Installation Guide*, EMC Corporation
- ◆ *EMC Solutions Enabler Symmetrix Base Management CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix SRDF Family CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix TimeFinder Family CLI Product Guide*
- ◆ *EMC Solutions Enabler Symmetrix Device Masking CLI Product Guide*
- ◆ *EMC Solutions Enabler Support Matrix*
- ◆ *EMC Host Connectivity Guides*

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

This manual uses the following type style conventions in this guide:

bold text	Boldface text provides extra emphasis and emphasizes warnings, and specifies window names and menu items in text.
<i>italic text</i>	<i>Italic text and characters emphasizes new terms, identifies variables in a software syntax (non-literal notation), identifies unique word usage, and applies emphasis in examples and in references to book titles and sections.</i>
fixed space courier font	A fixed space font identifies files and path names, and is used in command line entries, displayed text, or program listings.

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This chapter provides an introduction to the Change Tracker SYMCLI command (`symchg`).

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- ◆ Change Tracker Command Summary 1-4

Introduction to Change Tracker

The EMC® Solutions Enabler Change Tracker software is used to measure changes to data on a Symmetrix volume or group of volumes. The Change Tracker command (`symchg`) is used on FBA devices to mark selected areas of Symmetrix disk storage so that Symmetrix logical volume occupying those areas can be monitored for change.

Note: The `symchg` command is part of the EMC Solutions Enabler (SYMCLI) command library. For a detailed introduction to the Solutions Enabler, SYMCLI, and the Symmetrix array, refer to the *EMC Solutions Enabler Symmetrix Base Management CLI Product Guide*.

Change Tracker uses DeltaMark bitmap technology (formerly called the Symmetrix Differential Data Facility) to identify logical blocks that have been changed on a Symmetrix FBA device. Before change tracking can begin, a DeltaMark session must be created using the `symchg create` command. The `symchg mark` command is then used to perform a timestamp and mark the selected area of disk storage occupied by a data object using a DeltaMark bitmap.

This allows a marked area to be examined at a later time to view changes to the stored object. The tracked changes can also be saved to a log file for later analysis. Change Tracker data is often used to analyze and design TimeFinder and Symmetrix Remote Data Facility (SRDF) configurations. For more information on using Change Tracker for SRDF capacity planning, refer to the following white paper: *Using SYMCLI to Measure Volume Changes with Change Tracker*.

The Symmetrix system stores information about track changes internally, and makes this information available to applications through a DeltaMark bitmap vector or table. Each DeltaMark bitmap contains a bit for every track on the monitored volume. When a write to the volume alters a track of information, the bitmap is updated to reflect that the track has been changed. (Subsequent changes to that same track have no effect on the bitmap.) Figure 1 illustrates a DeltaMark bitmap table.

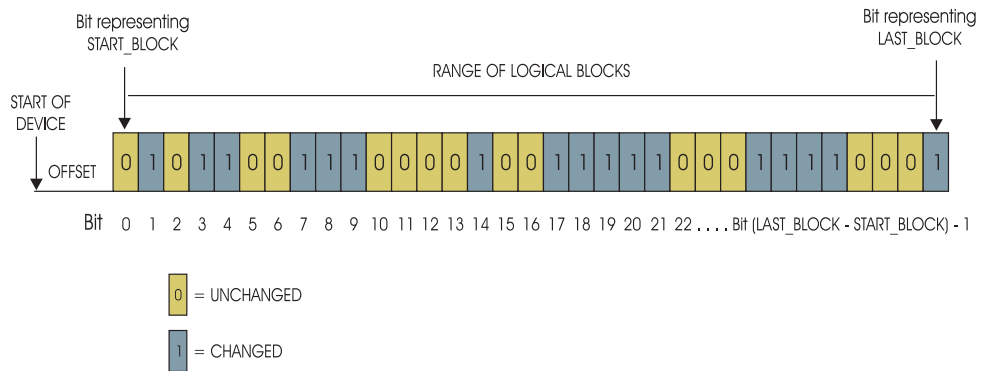


Figure 1-1 A DeltaMark Bitmap Table

Change Tracker Command Summary

The Change Tracker command (`symchg`) allows you to monitor selected Symmetrix disk storage objects using DeltaMark (SDDF) bitmap technology to track changes and generate reports for later analysis. Symmetrix objects that can be monitored include individual devices, standard or BCV devices listed in a device group or composite group, and devices listed in a device file.

Table 1-1 summarizes the SYMCLI `symchg` commands you can use to create a Symmetrix Change Tracker (DeltaMark) session, mark areas to be monitored, remove or delete a session, and generate a report.

Table 1-1 Change Tracker Command Summary

Command	Argument	Displays
symchg	create	Creates a DeltaMark session for the disk device containing the disk storage object to be monitored.
	delete	Unmarks the disk storage object and deletes the DeltaMark session.
	list	Lists all disk storage objects that are currently marked or all devices that have a DeltaMark session created.
	mark	Marks disk storage objects as unchanged so that new changes can be tracked. Requires that a DeltaMark session first be created.
	remove	Unmarks the disk storage object while retaining the DeltaMark session.
	report	Generates a report on the amount of change for the specified object in a given log file. Reports can be generated for device groups, composite groups, and device files.
	view	Displays the amount and rate of change for marked disk storage objects or shows if a DeltaMark session exists for a specified disk storage object.

For information about performing Change Tracker control operations, refer to Chapter 2. For details about the `symchg` command syntax and other SYMCLI commands, refer to *EMC Solutions Enabler Symmetrix CLI Command Reference*.

Monitoring Data Objects with Change Tracker

This chapter describes how to monitor Symmetrix data objects for change within your storage environment using the `symchg` SYMCLI command.

- ◆ Monitoring Data Objects for Changes2-2
- ◆ Generating Reports of Changes2-9

Monitoring Data Objects for Changes

To mark areas of Symmetrix® disk storage for change monitoring, you first create a DeltaMark session for the objects that you want to monitor. Creating a DeltaMark session creates DeltaMark bitmaps for the specified objects. Once a session has been established, the objects can be marked at any particular point in time, which resets the bitmaps for those objects (that is, marks all tracks as unchanged). Marking the objects is the starting point from which changes will be measured.

Monitoring the objects is accomplished by viewing the objects in a DeltaMark session. Viewing objects processes the bitmaps that correspond to the objects and displays the amount and rate of change. Viewing can be performed at discrete intervals of time and for a particular number of executions, and the bitmaps can also be reset after each sample. The display may be saved to a user-defined log file, where it is stored in a comma separated format, enabling the data to be imported into a spreadsheet for analysis. A summary report can be produced from the results in a log file, and the log file can be used to perform capacity planning by specifying particular variables and calculating other parameters.

The `symchg` command operates on Symmetrix disk storage objects by specifying a Symmetrix device name, a logical device name, a device group, a composite group, or a device file. Individual objects may be removed from a session without terminating that session (so other objects in the same session continue to be monitored), and a session can be deleted, terminating the monitoring of all objects included in that session.

Note: SYMCLI `symchg` only monitors FBA devices. CKD devices can be monitored using the mainframe change tracker utility.

Creating a DeltaMark Session

Before marking objects, you must create a DeltaMark session for the device(s) containing the objects by using the `symchg create` command.

The `symchg create` control operation can be performed on a single Symmetrix device (*SymDevName*), or by device group, composite group, or device text file:

```
symchg SymDevName create
symchg -g DgName create
symchg -cg CgName create
symchg -file FileName create
```

For example, to create a DeltaMark session for a single Symmetrix device (17C) on Symmetrix ID 000125600055, enter:

```
symchg create dev 17c -sid 55
```

To create a DeltaMark session for devices in the device group `ProdDB`, enter:

```
symchg -g ProdDB create
```

To create a DeltaMark session for devices listed in a device text file `dev_file_1`, enter:

```
symchg -file dev_file_1 create
```

You can mark and examine more than one object per session and you can specify a Symmetrix device name (*SymDevName*) or a logical device (*LdevName*) name within a device group or composite group for the session. You can specify the standard or BCV device (`-bcv`) of a device group or composite group.

Creating a Device Text File

You can create a DeltaMark session for devices listed in a device text file. The device file syntax contains a single column of devices specified by Symmetrix device name (*SymDevName*). Lines in the device file that begin with a pound symbol (#) will be ignored. The device filename (`-file FileName`) will be inserted into the command line for control operations. A sample of a device text file listing Symmetrix devices is shown in the following example.

Example of a Device Text File

```
# dev_file_1
# Symmetrix Device List for DeltaMark Session
#
00A
00B
00C
057
058
# End
```

Marking a Data Object

After creating a DeltaMark Session, you can mark the device storage objects for change monitoring using the `symchg mark` command. This allows objects to be marked from a particular point in time, with all tracks being marked as unchanged. Once marked, the objects can be monitored for changes.

The `symchg mark` control operation can be performed on a single Symmetrix device (*SymDevName*), or by device group, composite group, or device text file:

```
symchg SymDevName mark
symchg -g DgName mark
symchg -cg CgName mark
symchg -file FileName mark
```

Note: You must use the same convention for the `mark` command as was used with the `symchg create` command when the session was created. If the session was created using a device group, composite group, or device file, the devices must be managed using the same method.

When you mark an object, an entry is added or updated for the specified object in the `symchg` database. The `mark` command causes the DeltaMark bitmaps to be reset (no changes) for the devices of the specified object.

You can specify a Symmetrix device name (i.e. 00A) or a logical device name (i.e. DEV001) for the object to be marked. You can also mark the BCV devices (`-bcv` option) of a device group or composite group.

For example, to mark Symmetrix device (17C) on Symmetrix ID 000125600055, enter:

```
symchg mark dev 17c -sid 55
```

To mark BCV devices in the device group `ProdDB`, enter:

```
symchg -g ProdDB mark -bcv
```

For example, to mark devices listed in the device text file `dev_file_1`, enter:

```
symchg -file dev_file_1 mark
```

Listing Marked Objects

You can use the `symchg list` command to list disk storage objects that have been marked.

For example, to list all logical disk storage objects that are currently marked, enter:

```
symchg list
```

To list all disk devices for DeltaMark sessions that have been created, enter:

```
symchg list -session
```

To list all disk devices that are visible to the host for which DeltaMark sessions that have been created, enter:

```
symchg list -session dev
```

The following is an example of the `symchg list` command output for Symmetrix 000125600055.

```
symchg -sid 55 -session list
```

```
Symmetrix ID: 000125600055
```

CHANGE TRACKER		DELTAMARK		SESSIONS			
Device Name		Directors		Device			
-----		-----		-----			
Physical	Sym	SA	:P DA :IT	Config	Attribute	Sts	Cap (MB)
-----		-----		-----			
/dev/rdsk/c3tl3d9s2	108	14A:1	02B:D3	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d10s2	109	14A:1	01A:C3	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d11s2	10A	14A:1	01B:D2	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d12s2	10B	14A:1	02A:C2	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d13s2	10C	14A:1	02B:D1	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d14s2	10D	14A:1	01B:D1	2-Way Mir	Grp'd	RW	4096
/dev/rdsk/c3tl3d15s2	10E	14A:1	02A:D1	2-Way Mir	Grp'd	RW	4096

Removing Marked Objects

You can unmark a disk storage object from the `symchg` database without terminating the DeltaMark session by using the `symchg remove` command.

The `symchg remove` control operation can be performed on a single Symmetrix device (*SymDevName*), or by device group, composite group, or device text file:

```
symchg SymDevName remove
symchg -g DgName remove
symchg -cg CgName remove
symchg -file FileName remove
```

Note: You must use the same convention for the `remove` command as was used with the `symchg create` command when the session was created. If the session was created using a device group, composite group, or device file, the devices must be managed using the same method.

The `remove` command causes the DeltaMark bitmaps to stop monitoring changes for the devices of the specified object, while maintaining the session.

You can specify a Symmetrix device name (i.e. 00A) or a logical device name (i.e. DEV001) for the object to be unmarked. You can also unmark the BCV devices (`-bcv` option) of a device group or composite group.

For example, to unmark Symmetrix device (17C) on Symmetrix ID 000125600055, enter:

```
symchg remove dev 17c -sid 55
```

To unmark BCV devices in the device group `ProdDB`, enter:

```
symchg -g ProdDB remove -bcv
```

To unmark devices listed in the device text file `dev_file_1`, enter:

```
symchg -file dev_file_1 remove
```

Deleting Marked Objects

You can unmark a disk storage object from the `symchg` database and delete (terminate) the DeltaMark session by using the `symchg delete` command.

The `symchg delete` control operation can be performed on a single Symmetrix device (*SymDevName*), or by device group, composite group, or device text file:

```
symchg SymDevName delete
symchg -g DgName delete
symchg -cg CgName delete
symchg -file FileName delete
```

Note: You must use the same convention for the `delete` command as was used with the `symchg create` command when the session was created. If the session was created using a device group, composite group, or device file, the devices must be managed using the same method.

The `delete` command causes the DeltaMark bitmaps to stop monitoring changes for the devices of the specified object and deletes the session.

You can specify a Symmetrix device name (i.e. 00A) or a logical device name (i.e. DEV001) for the object to be unmarked. You can also unmark the BCV devices (`-bcv` option) of a device group or composite group.

For example, to unmark Symmetrix device (17C) on Symmetrix ID 000125600055 and delete the session, enter:

```
symchg delete dev 17c -sid 55
```

To unmark BCV devices in the device group `ProdDB`, enter:

```
symchg -g ProdDB delete -bcv
```

To unmark devices listed in the device text file `dev_file_1`, enter:

```
symchg -file dev_file_1 delete
```

Viewing Marked Objects

You can process the DeltaMark bitmap corresponding to the disk storage object to display the amount and the rate of change by using the `symchg view` command. For example, to display the amount and the rate of change for Symmetrix device (17C) on Symmetrix ID 000125600055, enter:

```
symchg view dev 17c -sid 55
```

Note: You can verify the existence of a DeltaMark session for a specified object by including the `-session` option.

To display the amount and the rate of change for BCV devices in the device group `ProdDB`, enter:

```
symchg -g ProdDB view -bcv
```

To display the amount and the rate of change for devices listed in the device text file `dev_file_1`, enter:

```
symchg -file dev_file_1 view
```

Change information for marked objects in a device group, composite group, or listed in a device file can be saved to a separate log file. For example, to save change information to file `/tmp/logfile` for marked storage objects in device group `ProdDB`, enter:

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

The `-reset` option resets the DeltaMark bitmaps for each reporting interval and requires using the count (`-c`) or interval (`-i`) options. The reset after each measurement of changed tracks is called the *DELTA* collection method.

The *SUM* collection method calculates the cumulative number of changed tracks from the starting point of when the object was first marked. To collect changed tracks for both the *SUM* and *DELTA* collection methods at the same time, you can use the `-multi` option.

For example, to save change information to file `/tmp/logfile` for marked storage objects in device group `ProdDB` using both the *SUM* and *DELTA* collection methods, enter:

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

Note: At each specified interval, the log file will capture both the cumulative number of changed tracks and the number of changed tracks per interval.

Generating Reports of Changes

Change Tracker allows you to generate two kinds of reports — *SUM* and *DELTA*. Reports can be generated for devices in a device group, composite group, or devices listed in a device file.

SUM Reports

SUM reports track changes from the point-in-time the DeltaMark bitmap was marked at the beginning of change measurement. Subsequent writes to the same track are not monitored, because the bitmap is not reset after every measurement interval. For instance if the initial *mark* action occurred at 6 a.m. and change data was collected each hour for 12 hours, it would be possible to measure the tracks changed between 6 and 7 a.m., 6 and 8 a.m., 6 and 9 a.m. and so on. It would not be possible to measure the changes between 7 and 8, or 8 and 9 using the SUM report. The SUM reports lend themselves to refresh interval estimations for SRDF/AR installations.

Understanding the change measurement at various intervals, enables one to determine the amount of SRDF bandwidth required for different SRDF/AR refresh intervals. Refer to the log file entry below.

```
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 0 , 131070 , SUM
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d2s2 , 0 , 131070 , SUM
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d3s2 , 0 , 131070 , SUM
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d4s2 , 0 , 131070 , SUM
04/10/2004 06:05:45 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 59525 , 131070 , SUM
04/10/2004 06:05:45 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d2s2 , 0 , 131070 , SUM
04/10/2004 06:05:45 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d3s2 , 0 , 131070 , SUM
04/10/2004 06:05:45 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d4s2 , 0 , 131070 , SUM
04/10/2004 06:10:38 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 91946 , 131070 , SUM
04/10/2004 06:10:38 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d2s2 , 0 , 131070 , SUM
04/10/2004 06:10:38 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d3s2 , 0 , 131070 , SUM
04/10/2004 06:10:38 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d4s2 , 0 , 131070 , SUM
```

A	B	C	D	E	F	G	H	I
---	---	---	---	---	---	---	---	---

The fields in the log file entry are:

- A - Date and time that the sample was collected.
- B - Symmetrix ID.
- C - Type of entity (device group).
- D - Name of the device group.
- E - Symmetrix device name.
- F - Physical device name. If the device has not been host visible, this field would say *Not Visible*.
- G - Number of tracks changed since the group was marked.
- H - Total number of tracks on device.
- I - SUM indicates that the number in column G represents the cumulative tracks changed since the group was marked.

DELTA Reports

DELTA reports track changes that have occurred since the last measurement interval. The DeltaMark bitmap is reset after each measurement of changed tracks. Thus, an hourly report from 6 a.m. to 6 p.m. using the DELTA method would identify how many tracks changed during any given one hour period. This is useful for determining peak change rates for a given interval of data collection.

To assess the bandwidth requirements for an SRDF/AR implementation, you should first collect a SUM report to determine how often you would want to refresh the remote site. Once the determination of the refresh interval has been finalized (T hours), generate a DELTA report using T hours as the collection interval. This will result in identifying the peak number of changed tracks during any T hour interval. Refer to the log file entry below for an example of a DELTA report.

```
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 16 , 131070 , DELTA
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d1s2 , 8 , 131070 , DELTA
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d1s2 , 803 , 131070 , DELTA
04/10/2004 06:00:11 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d1s2 , 549 , 131070 , DELTA
04/10/2004 06:05:39 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 24 , 131070 , DELTA
04/10/2004 06:05:39 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d1s2 , 48 , 131070 , DELTA
04/10/2004 06:05:39 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d1s2 , 1085 , 131070 , DELTA
04/10/2004 06:05:39 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d1s2 , 809 , 131070 , DELTA
04/10/2004 06:10:21 , 000184600266 , DG , devgrp , 108 , /dev/rdisk/c3t13d1s2 , 25 , 131070 , DELTA
04/10/2004 06:10:21 , 000184600266 , DG , devgrp , 109 , /dev/rdisk/c3t13d1s2 , 13 , 131070 , DELTA
04/10/2004 06:10:21 , 000184600266 , DG , devgrp , 10A , /dev/rdisk/c3t13d1s2 , 561 , 131070 , DELTA
04/10/2004 06:10:21 , 000184600266 , DG , devgrp , 10B , /dev/rdisk/c3t13d1s2 , 541 , 131070 , DELTA
```

Viewing Reports

When viewing the changes for an object of a device group, 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 allows the data to be imported to a spreadsheet for analysis. The results in the log file can be examined with the following command:

```
symchg report -log LogFile -g DgName ...
```

Each report in a log file shows the amount of change for a specified object of a device group. For more information about the syntax of `symchg`, refer to the *EMC Solutions Enabler Symmetrix CLI Command Reference* manual.

Report Options

The following command line options are available for generating a report using the `symchg report` command:

Table 2-1 CLI Options for using `symchg report`

Option	Description
-backend	Displays information about the DA and backend disk address of marked devices.
-bcv	When used with the report command, generates a report for the BCV devices in the device group or composite group.
-log	When used with the report command, specifies the log file (<code>-log LogFile</code>) to read from.
-start	Defines the start point in the log file to begin processing data. Format is <code>mmddyyyy hh:mm</code> . Default is the beginning of the log file.
-stop	Defines the stop point in the log file to stop processing data. Format is <code>mmddyyyy hh:mm</code> . Default is the end of the log file.
-ra	Defines the number of RA directors to use when resynchronizing device pairs in the group.
-range	Specifies a range of Symmetrix device names (<i>SymDevName</i>) to generate the report for. Format is <i>StartDev:EndDev</i> .
-rate	Specifies the transfer rate to use when resynchronizing device pairs in the group. Format is in <i>Kb/second</i> .
-resync	Specifies the required time frame in minutes or hours and minutes for resynchronizing RDF device pairs in the group. Format is <i>mmmm</i> or <i>hh:mm</i> .

Example Procedure

The following is an example of typical steps to follow when you are saving change information to a user-defined log file and you are generating a report:

1. Create DeltaMark sessions for each standard device in a device group (such as `DATABASE_DG`), enter:

```
symchg create -g DATABASE_DG
```

2. Mark the devices within the device group (`DATABASE_DG`).

```
symchg mark -g DATABASE_DG
```

This will reset the DeltaMark change information to zero for each device in the device group.

3. Save the change information for the devices of the group (DATABASE_DG) to a log file (/tmp/change_data.log) by entering:

For SUM Reports:

```
symchg view -g DATABASE_DG -log /tmp/change_data.log \
-i 60 -c 100
```

For DELTA Reports:

```
symchg view -g DATABASE_DG -log /tmp/change_data.log \
-reset -i 60 -c 100
```

Note: In this example, there were 100 samples made at an interval of 60 seconds and the DeltaMark change information is reset after each sample.

For combined SUM and DELTA Reports:

```
symchg view -g DATABASE_DG -log /tmp/change_data.log \
-multi -i 60 -c 100
```

4. Produce a summary report of the changed track information for each device in the group (DATABASE_DG) by entering:

```
symchg report -g DATABASE_DG \
-log /tmp/change_data.log -v
```

The data in the log file is in a common-separated format, so you could also load it into a spreadsheet to view the data.

5. If you need to provide RDF capacity planning that determines how long it would take to resynchronize a device group (DATABASE_DG) with RA directors at a transfer rate of 1000 Kb/second, enter:

```
symchg report -g DATABASE_DG \
-log /tmp/change_data.log -rate 1000 -ra 2
```

6. If you need to view information for a device group (DATABASE_DG) on your screen showing the log entries, enter:

```
symchg view -g DATABASE_DG
```

7. List the objects that are marked and being monitored for change, enter:

```
symchg list
```

8. Verify a DeltaMark session has been created for a device group (DATABASE_DG) and that it is marked, enter:

```
symchg view -g DATABASE_DG -session
```

9. Remove the marked object (DATABASE_DG), enter:

```
symchg remove -g DATABASE_DG
```

This doesn't delete the DeltaMark sessions for the devices of the group. It simply records the object indicating it is no longer being monitored (from a host view point).

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