

IBM TotalStorage Productivity Center for Replication



Migration Tool User's Guide

Version 3 Release 1

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Note

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

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This edition applies to IBM TotalStorage Productivity Center for Replication 3.1 and to all subsequent releases and modifications until otherwise indicated in new editions.

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Migration tool overview

This topic provides an overview of the IBM® TotalStorage® Productivity Center for Replication migration tool.

About this edition: This edition of the *Migration Tool User's Guide* incorporates several changes, primarily to the installation steps. Changes are marked by revision bars (|) in the left margin.

The IBM TotalStorage Productivity Center for Replication migration tool helps users to convert their current copy-services configuration to the IBM TotalStorage Productivity Center for Replication solution. The migration tool facilitates the transition to this product. The migration tool is capable of migrating FlashCopy®, Metro Mirror, and Global Mirror sessions.

The migration tool is a standalone command-line interface (CLI) application that is not integrated as part of the IBM TotalStorage Productivity Center for Replication CLI. You can run it on Windows®, AIX®, and Linux®.

For input, the migration tool takes an indication of the type of migration being performed and one or more filenames as parameters, depending on the type of migration being performed.

A detailed description of the various input files can be found in the following documents:

- Global Mirror Utility installation information, provided with the GMU distribution package
- IBM TotalStorage DS8000 Command-line Interface User's Guide
- IBM TotalStorage Enterprise Storage Server® Command-Line Interfaces User's Guide

As output, the migration tool creates one or more IBM TotalStorage Productivity Center for Replication CLI command script files, a DS CLI script file for Global Mirror sessions, and an output log file. The migration tool can convert GMU configuration files, ESS CLI scripts, and DS CLI scripts to valid IBM TotalStorage Productivity Center for Replication CLI scripts.

Supported migrations

This topic provides details on the source applications that the IBM TotalStorage Productivity Center for Replication migration tool converts into CLI script files.

The migration tool converts the following applications to CLI script files:

- Global Mirror Utility (GMU)
- ESS command-line interface
- DS command-line interface

Global Mirror Utility (GMU)

The ESS Global Mirror Utility (GMU) is a standalone tool that provides a management layer for ESS Model 800, DS8000, and DS6000 Global Mirror two- or three-site Failover/Failback support.

The GMU input files are XML files. There are two types of files:

- Configuration
- Security

There can be multiple files of each type for a single configuration.

The security files contain the user names and passwords for accessing the copy services servers. The migration tool does not accept and parse security files; you must edit the output CLI file to add the appropriate user names to the **adddevice** commands. The configuration files contain the boxes, paths, session, and volume information. You must specify the configuration files to the migration tool when it is run.

Note: For 1750 (DS6000) or 2107 (DS8000) storage servers, you must ensure that the type and pom fields are correctly entered in the GMU configuration file for each server.

For migration of a Global Mirror session, a DS CLI script file is created to stop the running Global Mirror session. If you do not have the DS CLI installed on your system, but have access to an ESSNI server, you can use the `essmigratecli` utility (this is valid only for the ESS storage server). This utility can be used to run this DS CLI script file without an installed DS CLI. You should execute this script file before you issue the **Start** command to the migrated IBM TotalStorage Productivity Center for Replication session.

ESS command-line interface

The migration tool supports migration from ESS 800 CLI script files to IBM TotalStorage Productivity Center for Replication CLI script files.

Note: Not every command is converted to an IBM TotalStorage Productivity Center for Replication CLI command.

The migration tool accepts an ESS 800 CLI script file, parses the script file, and creates a single IBM TotalStorage Productivity Center for Replication CLI script file. However, the only ESS CLI commands that the migration tool supports are the **create snmp** and **rsExecuteTask** commands. These commands are parsed to create the equivalent IBM TotalStorage Productivity Center for Replication CLI commands, which are placed in the output CLI script file. All other ESS CLI commands are ignored.

To properly parse the **rsExecuteTask** command, the server on which you are running the migration tool must have the IBM ESS CLI installed, and must also be able to access the copy services server on which the tasks reside. The actual task on the server is investigated to determine how to migrate those commands to IBM TotalStorage Productivity Center for Replication CLI commands. If the server on which the migration tool is executed does not have access to the copy services server, the migration will not be successful.

For migration of a Global Mirror session, a DS CLI script file is created to stop the running Global Mirror session. Included with the migration tool download is an `essmigratecli` utility that can be used to run this DS CLI script file on an ESS 800. This script file should be executed before you issue the **Start** command to the migrated IBM TotalStorage Productivity Center for Replication session.

Only the following **esscli** commands are translated by the migration tool:

- create snmp
- rsExecuteTask

The following ESS 800 saved task types are translated for an **rsExecuteTask** command:

Note: These commands may not be translated on a one-to-one mapping to IBM TotalStorage Productivity Center for Replication CLI commands.

- PPRCEstablishPair
- FCEstablish
- PPRCEstablishPaths
- OpenCloseSession
- ManageSessionMember
- AsyncPPRCStartResume

DS command-line interface

The migration tool supports migration from DS CLI script files to IBM TotalStorage Productivity Center for Replication CLI script files.

The migration tool can accept a single DS CLI script file. It parses the script file and creates a single IBM TotalStorage Productivity Center for Replication CLI script file. The input script file should only contain commands that pertain to a single session. Note that not every command is converted to an IBM TotalStorage Productivity Center for Replication CLI command.

For migration of a Global Mirror session, a DS CLI script file is created to stop the running Global Mirror session. This script file should be executed before you issue the **Start** command to the migrated IBM TotalStorage Productivity Center for Replication session.

Only the following **dscli** commands are translated by the migration tool:

- chsession
- mkflash
- mkgmir
- mkpprc
- mkpprcpath
- mksession

Note: These commands may not be translated on a one-to-one mapping to IBM TotalStorage Productivity Center for Replication CLI commands.

Output files

This section describes the various output files produced by the migration tool.

IBM TotalStorage Productivity Center for Replication CLI script file

The migration tool creates one or more CLI script files. The script files contain all the IBM TotalStorage Productivity Center for Replication CLI commands necessary to create a configuration similar to the source configuration. The output file is generated in the specified working directory.

There might be cases where the information contained in the source configuration files is not sufficient to create a complete IBM TotalStorage

Productivity Center for Replication CLI command. In this case, the migration tool informs you that the output script file is not complete. You will need to edit the output script file and insert the appropriate information. Use the following command to execute the output script file: `csmdi -script <script_name>`, where `<script_name>` is a fully qualified path name to the script.

DS CLI script file

For migrations of Global Mirror sessions, the migration tool creates a DS CLI script file that aids in the transition of the running Global Mirror session. Before a Global Mirror session is taken over by IBM TotalStorage Productivity Center for Replication, you must remove the source volumes from the Global Mirror session, close the session on all LSSs, and stop the Global Mirror session. This script file contains the commands necessary to carry out these steps, enabling the IBM TotalStorage Productivity Center for Replication application to take over the session. This script runs after the IBM TotalStorage Productivity Center for Replication CLI script file is executed, and before the **Start** command is issued to the resulting session.

Log file

The migration tool also creates a text file containing informational and error messages pertaining to the migration carried out. The log file contains one entry for each directive from the input files that is skipped. It also contains one entry for each directive from the input files that the migration tool could not convert because of an error.

Migration tool prerequisites

A Java™ Runtime Environment of version 1.4.2 or higher must be installed on the server where the migration tool will be executed. The JAVA_HOME environment variable must be set to point to the installation directory of the 1.4.2 or higher JRE.

On Windows, you can verify or add this by clicking the **Environment Variables** button on the Advanced tab to the System Properties panels. You can reach the System Properties panels through the Control Panel window. On AIX and Linux, you can verify the presence of the JAVA_HOME variable using the **env** command. If you do not see the JAVA_HOME variable in the output of the **env** command, you can add it using the export command: `export JAVA_HOME=/opt/IBM/TPC-R/WAS/java`

Note: Ensure that this command points to the actual installation directory of the JRE on your specific server.

Installing the migration tool

To install the IBM TotalStorage Productivity Center for Replication migration tool, perform the following steps.

1. Install the tool with Windows, AIX, or Linux.

The installation package for the migration tool is distributed as a ZIP file for Windows and as a tar file for AIX and Linux.

Using Windows: Move the migration tool ZIP file to the desired installation directory and unzip the file using a standard Windows ZIP utility. This installs the CSM-Migration directory into the desired directory.

Using AIX or Linux: Move the migration tool tar file to the desired installation directory and untar the file using the tar command. This installs the CSM-Migration directory into the desired directory.

2. Edit the three Properties files located in the CSM-Migration\properties subdirectory:

csmmigrate.properties

If you plan to perform ESS 800 migrations, add this line to the `csmmigrate.properties` file: `esscli.install=C:/Program Files/IBM/IBM ESS CLI`. This line details the full path of the ESS CLI install directory in order for the migration tool to properly access the ESS 800 task repository on the copy services server. You must ensure that the line is changed to point to the ESS CLI installation directory on your machine.

Note: Even on a Windows platform, you must use the forward slash (/) for each separator.

log4j.properties

This properties file contains configuration information for the migration tool logging facility. You can edit entries in this file to change the method in which the migration tool logs information: `log4j.appender.dest2.File=c:/temp/CsmMigration.log` indicates the location of the log file generated by the migration tool. You must ensure that it points to a valid directory.

essmigratecli.properties

Edit this properties file when you convert Global Mirror sessions created using the ESSCLI, and want to automate the steps to terminate the session. For more information, see "Using the ESS Migration command-line interface" on page 11.

Using the migration tool

The topic describes how to use the IBM TotalStorage Productivity Center for Replication migration tool, and provides possible user scenarios.

Scenarios

The following scenarios briefly describe how you might use the migration tool.

FlashCopy scenario

Execute the migration tool by passing in the proper input file and matching migration type. The result is a single IBM TotalStorage Productivity Center for Replication CLI script. Run this script through the IBM TotalStorage Productivity Center for Replication CLI to create and prepare the IBM TotalStorage Productivity Center for Replication FlashCopy session. The session is then ready for you to issue a **Start** or **Flash** command.

Metro Mirror scenario

Execute the migration tool by passing in the proper input file and matching migration type. The result is a single IBM TotalStorage Productivity Center for Replication CLI script. Run this script through the IBM TotalStorage Productivity Center for Replication CLI to create and prepare the IBM TotalStorage Productivity Center for Replication Metro Mirror session. The session is then ready for you to issue a **Start** command.

Global Mirror scenario

Execute the migration tool by passing in the proper input file and matching migration type. The result is a single IBM TotalStorage Productivity Center for Replication CLI script. Run this script through the IBM TotalStorage Productivity Center for Replication CLI to create and prepare the IBM TotalStorage Productivity Center for Replication session. At this point the session is created, but the Global Mirror session is still running independently from IBM TotalStorage Productivity Center for Replication. You must remove all volumes from the Global Mirror session either manually or through the output DS CLI script, close the session on all LSSs, and terminate the running Global Mirror session; note, however, that you do not need to terminate the Global Copy or FlashCopy relationships. After you confirm that these steps have completed and the Global Mirror session has terminated, you can issue the **Start** command to the IBM TotalStorage Productivity Center for Replication session and the Global Mirror session will be started up again under IBM TotalStorage Productivity Center for Replication.

Command line parameters for Windows

In a Windows environment, from the CSM-Migration\bin directory, or with the CSM-Migration\bin directory in your path, enter the following command:
csmmigrate.bat -d <working directory> -f <input file> -t <type of migration> -o <output file> The parameters for that command are:

- d Specifies the full path to the working directory that contains the input file or files, and is used for the generated output file or files.
- f Specifies the input file.

- t Specifies the type of migration to perform. The options are "gmu," "dscli," and "esscli."
- o Specifies the name of the output file. This file is created in the same directory that you specified with the *-d* flag. Note that if a DS CLI script file is generated for a Global Mirror session, that file is created with the same name specified here, with ".dscli" appended to it.

Command line parameters for AIX

In an AIX environment, enter the following command: `./csmmigrate.sh -d <working directory> -f <input file> -t <type of migration> -o <output file>`.

Command line parameters for Linux

In a Linux environment, enter the following command: `./csmmigrate.sh -d <working directory> -f <input file> -t <type of migration> -o <output file>`.

After output file creation

After the output files are created, open each file and verify that the information for each command is complete. When the migration tool does not have enough information to fully implement a command, it fills in the missing information with XXXX. Any commands containing XXXX will not execute successfully if you run them without making modifications. You can also make other changes to the commands in the output files, such as changing the session names to be created.

If you want, you can make alterations to the commands in the output files. For example, you should change the names of the sessions to be created in IBM TotalStorage Productivity Center for Replication; after you create the session name in IBM TotalStorage Productivity Center for Replication, you will not be able to change the session name. To avoid this problem, replace all occurrences of the default session names with the desired name before you execute the output script file using the IBM TotalStorage Productivity Center for Replication CLI.

Note: The default session types for the newly created Global Mirror and Metro Mirror sessions are gmfofb and mmfofb, respectively. If you do not have the appropriate license, or if you want use a Metro Mirror or Global Mirror session without failover/failback capability, you must change it to gm or mm in these script files.

Using the ESS Migration command-line interface

This topic describes the ESS Migration command-line interface (CLI).

Included with the install package is the `essmigratecli` tool. Use this tool to execute the output DS CLI script file generated to terminate running Global Mirror sessions on ESS 800 boxes, when there is no DS HMC installed that allows the use of native DSCLI to control ESS 800 boxes.

To properly set up this tool, you must edit the `essmigratecli.properties` file in the `CSM-Migration\properties` directory. You must edit the following fields:

- `essni.address=x.xx.xxx.xxx`
- `essni.username=xxxxxxxx`
- `essni.password=xxxxxx`

|
| If you do not want to specify the `essni` password in the properties file, do not
| include this line in the properties file. You are then prompted for the password at
| the command line while the application is running.

To use the ESS Migration CLI in a Windows environment, run the following command: `essmigratecli.bat -script <filename>`.

To use the ESS Migration CLI tool in an AIX or Linux environment, run the following command: `essmigratecli.sh -script <filename>`

Example of the GMU configuration file after migration

This topic gives an example that shows the GMU configuration file before and after migration.

The contents of the file before migration are:

```
<asyncpprc>
  <boxes>
    <ess wwnn="5005076300C02D94" sequence="18596" type="2105">
      <lss num="0x000" ssid="0x9000"/>
    </ess>
    <ess wwnn="5005076300C0863d" sequence="18597" type="2105">
      <lss num="0x0" ssid="0x9000"/>
    </ess>
  </boxes>
  <pprcpaths>
    <path source="18596:0x000" target="18597:0x000">
      <said source="0024" target="0028"/>
    </path>
  </pprcpaths>
  <session id="4" cginterval="30" maxdraintime="240" maxcoordinterval="75">
    <master lss="18596:0x000"/>
  </session>
  <volumes>
    <relationship avol="18596:0x000:000-001" bvol="18597:0x000:000-001"
      cvol="18597:0x000:003-004"/>
    <relationship avol="18596:0x000:007-008" bvol="18597:0x000:007-008"
      cvol="18597:0x000:009-010"/>
  </volumes>
</asyncpprc>
```

The following lines show the contents of the GMU configuration file after migration to the CLI script file. Certain information must be added to the **adddevice** CLI commands for them to run successfully:

```
adddevice -devtype ess -ip XXX.XXX.XXX.XXX;XXX.XXX.XXX.XXX -username XXXXX
adddevice -devtype ess -ip XXX.XXX.XXX.XXX;XXX.XXX.XXX.XXX -username XXXXX
mkpath -src ESS:2105.18596:LSS:00.0024 -tgt ESS:2105.18597:LSS:00.0028
mkssess -cptype gmfofb -desc "Migrated Global Mirror Session" 4
chsess -maxdrain 240 -coordint 75 4
mkcpset -h1 ESS:2105.18596:VOL:0000 -h2
ESS:2105.18597:VOL:0000 -j2 ESS:2105.18597:VOL:0003 4
mkcpset -h1 ESS:2105.18596:VOL:0001 -h2
ESS:2105.18597:VOL:0001 -j2 ESS:2105.18597:VOL:0004 4
mkcpset -h1 ESS:2105.18596:VOL:0007 -h2 ESS:2105.18597:VOL:0007 -j2
ESS:2105.18597:VOL:0009 4
mkcpset -h1 ESS:2105.18596:VOL:0008 -h2
ESS:2105.18597:VOL:0008 -j2 ESS:2105.18597:VOL:000a 4
```

The following lines are the contents of the DSCLI file that was created, since this example is of migration of a Global Mirror session. You should run this script file through a DS CLI or the ESS Migrate CLI application:

```
|          chsession -dev IBM.2105-18596 -lss 00 -action remove -volume 0000 4
|          chsession -dev IBM.2105-18596 -lss 00 -action remove -volume 0001 4
|          chsession -dev IBM.2105-18596 -lss 00 -action remove -volume 0007 4
|          chsession -dev IBM.2105-18596 -lss 00 -action remove -volume 0008 4
|          rmsession -dev IBM.2105-18596 -lss 00 4
|          rmgmir -dev IBM.2105-18596 -lss 00 4
|
```

Limitations and known issues

This topic describes the limitations and known issues present in the migration tool.

Incorrect LSS placement

For some Global Mirror session migrations, the subordinate LSSs are not correctly placed in the output DS CLI script. It is important that you manually check and, if necessary, edit the commands to ensure that the running Global Mirror sessions are completely terminated before you issue the **Start** command to IBM TotalStorage Productivity Center for Replication. The command you need to edit is the **rmgmir** command. If there are subordinate LSSs in the current configuration that are not present in the **rmgmir** command, you should edit the command as follows: `rmgmir -lss 2105.18596/00 27 2105.18596/00:2105.18597/01`. The master:subordinate relationships are shown as Master:Subordinate; for example, 2105.18596/00:2105.18597/01. If multiple subordinates are present in the currently running Global Mirror session, simply add more Master:Subordinate clauses to the end of the command.

Redundant path command in GMU migration

In GMU migrations, there is typically a redundant **mkpath** command in the output script file. This is a result of the method in which Global Mirror control paths are specified in the GMU configuration file; you should simply delete one of the redundant **mkpath** commands from the file.

Master LSS not parsed in DS CLI Migration of Global Mirror Session

For DSCLI migrations of Global Mirror sessions, the master LSS is sometimes not handled correctly. As a result, the **rmsession** and **rmgmir** commands are not filled out completely: `rmsession -dev XXXXX -lss XX 01 rmgmir -dev XXXXX -lss XX 01`. You must place the valid device and LSS information into the command for the script to function properly.

Specifying multiple input files on the command line

Specifying multiple input files on the command line has not been fully tested and is restricted.

Troubleshooting

This topic describes how to troubleshoot the migration tool.

Runtime errors

Table 1. Runtime errors

Error	Meaning
You receive an error similar to the following: log4j:ERROR setFile(null,true) call failed java.io.FileNotFoundException: c:\temp\CsmMigration.log, indicating that the system cannot find the path specified.	The migration tool is trying to create the output log file in a directory that does not exist. To resolve this problem, edit the log4j.properties file to ensure that the log4j.appender.dest2.File setting corresponds to a valid directory location on your system.
You receive an error that begins similar to the following: 20 Jun 2006 10:39:25,562 ERROR: parse(): IOException caught java.io.IOException: CreateProcess:	The IBM ESS CLI must be installed on the server on which you are running the migration tool. If it is properly installed, ensure that the ESS CLI install directory is set correctly in the esscli.install setting in the csmmigrate.properties file. Also, ensure that you are using forward slashes (/) even on Windows platforms when you create this property entry.
You are running an ESS CLI migration and no errors are reported but your output file is empty.	The ESS CLI might not be installed correctly. This might occur when the INSTALL environment variable is not specified or is specified incorrectly. To verify proper ESS CLI installation, run the following command: esscli list task -s <Address of Copy Services server found with rsExecuteTask command>
You are performing a GMU migration with 1750 (DS6000) or 2107 (DS8000) storage servers that are being placed into the output files as 2105 (ESS) boxes.	Your GMU configuration file may not be filled out completely. For 1750 or 2107 storage servers, you must ensure that the type and pom fields are correctly entered in the GMU configuration file for each 1750 or 2107 server.

Installation errors

| The following error has been fixed in version 1.0.2 of the migration tool. If you
| receive this error while installing version 1.0.2 or later, you are attempting to install
| the migration tool incorrectly. Please refer to "Installing the migration tool" on
| page 7 for installation instructions.

Table 2. Installation errors

Error	Meaning
<p data-bbox="428 254 914 317">Installing IBM TotalStorage Productivity Center for Replication V3.1 Migration Tool...</p> <p data-bbox="428 338 914 453">C:\Program Files\IBM\Java142\jre\bin\jar is not recognized as an internal command, external command, operable program or batch file.</p> <p data-bbox="428 474 672 506">Installation Complete.</p>	<p data-bbox="927 254 1406 338">No jar.exe file is found in the JAVA_HOME directory. To resolve this problem, perform the following steps:</p> <ol data-bbox="927 348 1414 617" style="list-style-type: none"><li data-bbox="927 348 1414 495">1. Perform a manual installation of the migration tool and copy the csm-mt.jar file from the CSM-CD directory to the location in which you want to install the tool.<li data-bbox="927 506 1414 617">2. Use archiving software to extract the contents of the jar file. This creates the same directory structure that would be created by the migration tool installation.

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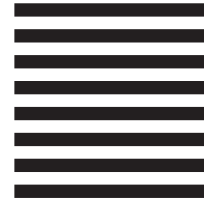
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