

# HP StorageWorks XP

## Tiered Storage Manager CLI Reference Guide



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HP StorageWorks XP Tiered Storage Manager CLI Reference Guide

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# About this guide

This guide provides information about:

- Installing HP StorageWorks Command View XP Advanced Edition Device Manager Server software.
- Installing Java™2 Java™ Runtime Environment (JRE).

## Intended audience

This guide is intended for customers and HP authorized service providers who are experienced with the following:

- Data processing and direct-access storage device subsystems.
- HP StorageWorks XP Series disk array(s).

## Prerequisites

Prerequisites for installing this product include:

- Reading through the user's guide.
- Meeting all the minimum installation requirements.
- Reviewing the `readme.txt` file on the CD for any last-minute announcements.

## Document conventions and symbols

Table 1 Document Conventions

Convention Element	Convention Element
Medium blue text: <a href="#">Figure 1</a>	Cross-reference links and e-mail addresses
Medium blue, underlined text ( <a href="http://www.hp.com">http://www.hp.com</a> )	Web site addresses
<b>Bold font</b>	<ul style="list-style-type: none"> <li>• Key names</li> <li>• Text typed into a GUI element, such as into a box</li> <li>• GUI elements that are clicked or selected, such as menu and list</li> </ul>
<i>italics font</i>	Text emphasis
Monospace font	<ul style="list-style-type: none"> <li>• File and directory names</li> <li>• System output</li> <li>• Code</li> <li>• Text typed at the command-line</li> </ul>
<i>Monospace, italic font</i>	<ul style="list-style-type: none"> <li>• Code variables</li> <li>• Command-line variables</li> </ul>
<b>Monospace, bold font</b>	Emphasis of file and directory names, system output, code, and text typed at the command-line



**CAUTION:** Indicates that failure to follow directions could result in damage to equipment or data.



**IMPORTANT:** Provides clarifying information or specific instructions.



**NOTE:** Provides additional information.



**TIP:** Provides helpful hints and shortcuts.

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- Applicable error messages
- Operating system type and revision level
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- After signing-up, you can quickly locate your products by selecting Business support and then Storage under Product Category.

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## Helpful web sites

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- <http://www.hp.com>
- <http://www.hp.com/go/storage>
- <http://www.hp.com/support/>



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# Revision history (start here)

## Revision tables

Table 2 Revisions

Date	Edition	Revision
November, 2005	First	Initial release

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# 1 Overview of HP StorageWorks XP Tiered Storage Manager

This chapter explains the software components of Tiered Storage Manager as well as volume migration using the Tiered Storage Manager CLI. The explanations on migration cover the overall procedures and commands that can be used at each step, volume filtering and filter conditions, creation of candidate migration plans, and creation and execution of migration tasks.

- [1-1 Tiered Storage Manager Software Components](#)
- [1-2 Volume Migration Using the Tiered Storage Manager CLI](#)

## 1-1 Tiered Storage Manager Software Components

The following software components are needed to use the Tiered Storage Manager CLI to perform volume migration.

- Device Manager server

The Device Manager server is a prerequisite program for the Tiered Storage Manager server.

Tiered Storage Manager obtains configuration information about storage subsystems as well as information about volumes (LDEVs) from the Device Manager server. Also, the user management functionality provided by Device Manager is used to perform system registration for the user groups and users that use Tiered Storage Manager.

- Tiered Storage Manager server (Management server)

The Tiered Storage Manager server (Management server) performs migration (relocation of volume data) within the domain control storage subsystem and the external storage subsystems that are connected to it, based on information received from the Management client.

To use the Tiered Storage Manager server, the Device Manager server must be installed on the same server.

- Tiered Storage Manager client (Management client)

The Tiered Storage Manager client (Management client) is used by system administrators, and storage administrators on the host side.

The Management client provides users with information needed to perform migration, as obtained from Tiered Storage Manager server, and relays migration requests from the user to the Management server.

The Management client consists of a CLI client and a Web client. The CLI client requires a Java execution environment.

For details on how to operate the Web client, please refer to the *HP StorageWorks XP Tiered Storage Manager User's Guide*.

## 1-2 Volume Migration Using the Tiered Storage Manager CLI

This section explains the overall flow of operations when using the Tiered Storage Manager CLI to perform volume migration. [Figure 1-1](#) illustrates the overall flow, and also lists the commands that can be used during each step of the operation.

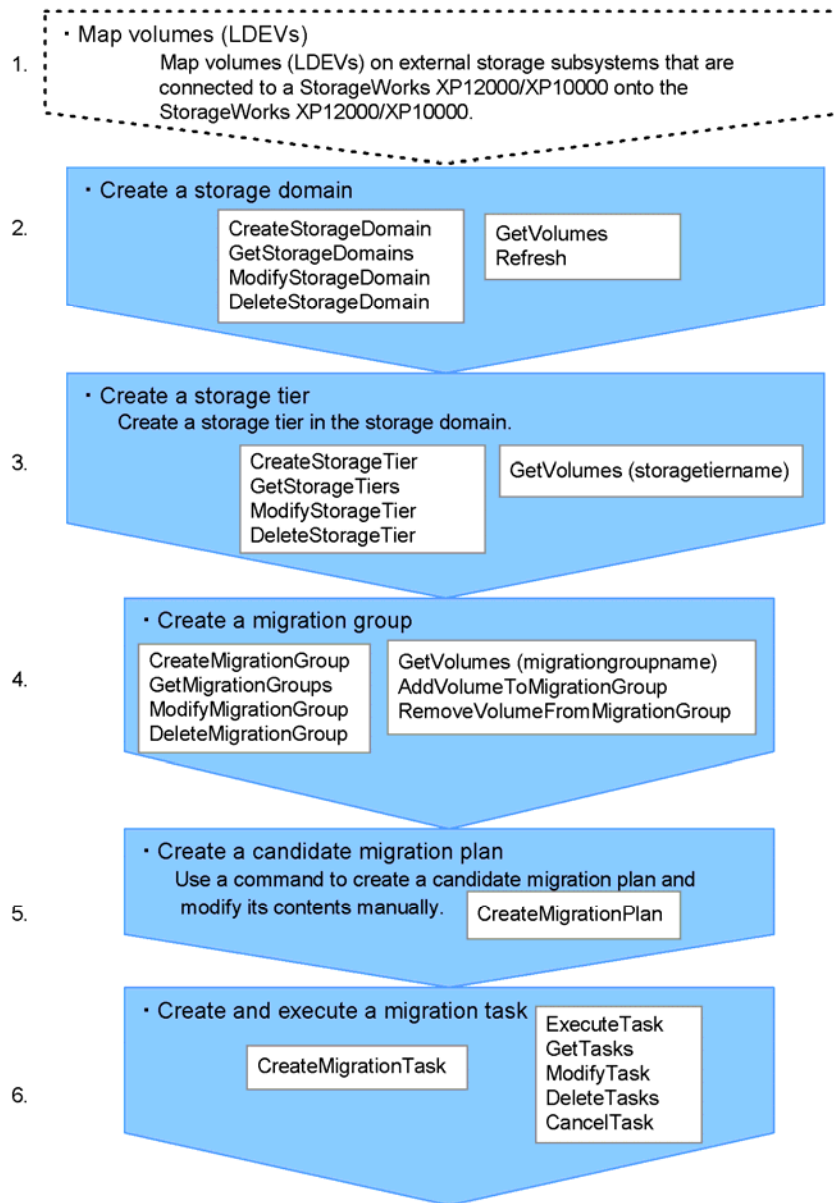


Figure 1-1 Flow of Migration Operations

1. Map volumes (LDEVs)

Use the External Storage XP from StorageWorks XP12000/XP10000 to map the volumes (LDEVs) on external storage subsystems to StorageWorks XP12000/XP10000. Mapping involves determining the *controller LDEV numbers on the domain control storage subsystem*, for volumes (LDEVs) on external storage subsystems. Mapping enables volumes on external storage subsystems to be handled in the same manner as those on StorageWorks XP12000/XP10000.

2. Create a storage domain

Use the `CreateStorageDomain` command to create a storage domain. Creating a storage domain involves registering, as a storage domain in Tiered Storage Manager, a domain control storage subsystem or a domain control storage subsystem to which external storage subsystems are connected.

Migration (relocation of volume data) can be performed within the storage area consisting of the domain control storage subsystem and the external storage subsystems that are connected to it.

3. Create a storage tier

Use the `CreateStorageTier` command to create a storage tier in the created storage domain. A storage tier is a collection of volumes that are migration target volume candidates. A storage tier is determined by the filter condition specified for the `filtercondition` parameter of the `CreateStorageTier` command.



**NOTE:** The storage tier must be created such that it contains a volume whose characteristics match those of the migration source volume.

4. Create a migration group

Use the `CreateMigrationGroup` command to create a migration group in a storage domain. A migration group is a collection of volumes on which application data is stored. Define a migration group to specify a collection of volumes to be migrated simultaneously.

5. Create a candidate migration plan

Use the `CreateMigrationPlan` command to create a candidate migration plan. A candidate migration plan is a text file that contains a pairing of a migration source volume and a migration target volume. A candidate volume that is chosen by Tiered Storage Manager is set in the migration target volume.

For details on how to create and edit candidate migration plans, see sections 1-2-3 and 1-2-4 .

6. Create and execute a migration task

Use the `CreateMigrationTask` command with a migration plan specified to create a migration task. Created migration tasks can be executed immediately or executed using the `ExecuteTask` command. This can be selected using the `execute` option of the `CreateMigrationTask` command.

For details on creating and executing migration tasks, see section 1-2-5 .

## 1-2-1 Storage Tier Filter Conditions

Storage tier filter conditions can be used for creating a storage tier, or for updating an existing storage tier. By specifying a storage subsystem or characteristics of volumes in a storage tier as filter conditions, you can select storage tiers that match the conditions.

Table 1-1 lists and describes the properties that can be specified for the `filtercondition` parameter of the `CreateStorageTier` command and the `newfiltercondition` parameter of the `ModifyStorageTier` command. The formats of the filter condition expressions that can be specified are:

- An expression consisting of a property name, operator, and value, for one property
- A logical expression consisting of several expressions connected by AND, for several properties
- A logical expression consisting of several expressions connected by OR, for several properties

Table 1-1 Properties That Can Be Specified for Storage Tier Filter Conditions

Property Name	Operators	Description
SubsystemDisplayModel	=, <>	The name used for displaying the model of the storage subsystem. This name is <code>displayArrayType</code> of Device Manager (not <code>arrayType</code> ). Example: StorageWorks XP1024
SubsystemSerialNumber	=, <>, startsWith, contains	The serial number of the storage subsystem.
SubsystemName	=, <>	The name of the storage subsystem.
ArrayGroup	=, <>, startsWith, contains	The name of the array group.
SubsystemVendor	=, <>	The name of the storage subsystem vendor.
Capacity	<, <=, =, <>, >, >=	The volume capacity.
RAIDLevel	=, <>	The RAID level.
EmulationType	=, <>	The emulation type.
DiskType	=, <>	The disk type.
SLPRNumber	=, <>	The SLPR number.
CLPRNumber	=, <>	The CLPR number.
ControllerArrayGroup	=, <>, startsWith, contains	The name of the controller array group.

The following shows an example of a filter condition expression for a storage tier:

```
filtercondition="RAIDLevel='RAID5 (3D+1P)' AND EmulationType='OPEN-8' "
```

## 1-2-2 Volume Search and Volume Filter Conditions

Volumes in a storage domain and storage tiers can be searched by their attributes. To search volumes, specify a volume filter condition expression.

Table 1-2 lists and describes the properties that can be specified for the `filtercondition` parameter of the `GetVolumes` command and the `CreateMigrationPlan` command. The formats of the filter condition expressions that can be specified are:

- An expression consisting of a property name, operator, and value, for one property
- A logical expression consisting of several expressions connected by AND, OR, NOT, or parentheses, for several properties

Table 1-2 Properties That Can Be Specified for Volume Filter Conditions

Property Name	Operators	Description
SubsystemDisplayModel	=, <>	The name used for displaying the model of the storage subsystem. This name is <code>displayArrayType</code> of Device Manager (not <code>arrayType</code> ). Example: StorageWorks XP1024
SubsystemSerialNumber	=, <>, startsWith, contains	The serial number of the storage subsystem.
SubsystemName	=, <>	The name of the storage subsystem.
SubsystemVendor	=, <>	The name of the storage subsystem vendor.
ControllerDeviceNumber	=	The controller LDEV number. Note that only a representative LDEV can be specified for a LUSE volume.
Host	=, <>, startsWith, contains	The host name.
ArrayGroup	=, <>, startsWith, contains	The name of the array group.
Capacity	<, <=, =, <>, >, >=	The volume capacity.
RAIDLevel	=, <>	The RAID level.
EmulationType	=, <>	The emulation type.
DiskType	=, <>	The disk type.
VolumeStatus	=	A string indicating whether or not the volume is being used.
VolumeLockStatus	=	A string indicating the lock status of the volume.
SLPRNumber	=, <>	The SLPR number.
CLPRNumber	=, <>	The CLPR number.
ControllerArrayGroup	=, <>, startsWith, contains	The name of the controller array group.

The following shows an example of a filter condition expression for a volume:

```
filtercondition="RAIDLevel='RAID5(3D+1P)' AND DiskType='FC'"
```

## 1-2-3 Creating a Candidate Migration Plan

Use the `CreateMigrationPlan` command to create a candidate migration plan.

Candidate migration plans are either output to the standard output in text format, or created in the redirect file specified by the `output` option. The following parameters must be specified for the `CreateMigrationPlan` command:

- The name of the storage domain
- The name of the migration source migration group
- The name of the migration target storage tier

For a migration target volume candidate for each migration group migration source volume, a volume of the same RAID level and same capacity as the migration source volume is chosen from the specified migration target storage tier.

When volume filter conditions are further specified by the `filtercondition` parameter, candidate migration target volumes are chosen from those that match the specified conditions. See [Table 1-2](#) for details about the properties of the `filtercondition` parameter that can be specified for creating a candidate migration plan.

[Table 1-3](#) lists the items specified for candidate migration plans created as information output for commands.

**Table 1-3 Candidate Migration Plan Items**

Type of Information	Item Name	Description
Overall plan information	<code>plan-type</code>	The plan type.
	<code>format-version</code>	The format version of the plan. This is information for compatibility between different format versions. This is indicated as a string of two decimal numbers, separated by a period (.), such as in 1.0.
	<code>storageDomainName</code>	The name of the storage domain.
	<code>migrationGroupName</code>	The name of the migration group.
	<code>targetStorageTierName</code>	The name of the migration target storage tier.
	<code>permitCrossSlprMigration</code> #	Indicates whether migration is permitted for transferring volume data between SLPRs. Yes: permitted. No: not permitted.
	<code>permitCrossClprMigration</code> #	Indicates whether migration is permitted for transferring volume data between CLPRs. Yes: permitted. No: not permitted.
Information for each pair of migration target volumes.	<code>pair</code>	Indicates the start of a description for a pair consisting of a migration source volume and a migration target volume.
	<code>sourceControllerDeviceNumber</code>	The migration source volume. The controller LDEV number is displayed.
	<code>targetControllerDeviceNumber</code>	The migration target volume. The controller LDEV number is displayed.

# This is set to No when the `CreateMigrationPlan` command creates a candidate migration plan.

[Figure 1-2](#) shows an example of a candidate migration plan.

```
#Example plan for migration
plan-type=Migration
format-version=1.0
storageDomainName=MegaTechXP12000-Primary
migrationGroupName=MG011
targetStorageTierName=MegaTech-HighCost
permitCrossSlprMigration=No
permitCrossClprMigration=No
pair
# LUSE=No
# LU=A3:A6
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
```

```

# CLPRNumber=0
# cacheMode=Disable
# IOSupressionMode=Disable
# sourceControllerDeviceNumber=3:A6
# targetControllerDeviceNumber=2:80

pair

# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# arrayGroupName=1-9-1
# sourceControllerDeviceNumber=3:A7
# targetControllerDeviceNumber=2:84

# Target candidates for source LDEV - 3:A7, 3:A6
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# arrayGroupName=1-10-1
# targetControllerDeviceNumber=2:80 * (3:A6)
# targetControllerDeviceNumber=2:84 * (3:A7)
# targetControllerDeviceNumber=2:85
# targetControllerDeviceNumber=2:86
# targetControllerDeviceNumber=2:87
# targetControllerDeviceNumber=2:89
# targetControllerDeviceNumber=2:8A
# targetControllerDeviceNumber=2:8C
# targetControllerDeviceNumber=2:8F
# targetControllerDeviceNumber=2:91
# targetControllerDeviceNumber=2:92
# targetControllerDeviceNumber=2:95
# targetControllerDeviceNumber=2:99
# targetControllerDeviceNumber=2:9E
# targetControllerDeviceNumber=2:9F
# targetControllerDeviceNumber=2:A0
# targetControllerDeviceNumber=2:A3
# targetControllerDeviceNumber=2:A4
# targetControllerDeviceNumber=2:A5

```

```
# targetControllerDeviceNumber=2:A6
# targetControllerDeviceNumber=2:A7
```

**Figure 1-2** Example Candidate Migration Plan

Even if migration target volume candidates cannot be selected for all migration source volumes, the specified candidate migration plan is created for those that can be selected.

A candidate for a migration target volume is selected from the logical partition (SLPR and CLPR) to which the migration source volume belongs. If a volume that can serve as a migration target volume is not found within the logical partition to which the migration source volume belongs, an empty string is output for the controller LDEV number of the migration target volume. In such a case, the command outputs the candidate migration plan and terminates with an error.

In candidate migration plans, comment lines (lines whose first column starts with a hash mark (#) ), like those described below, are generated automatically by Tiered Storage Manager:

- Comment lines for a pair that consists of a migration source volume and a migration target volume
 

The following information is displayed after the pair line (and before the lines that display the pair that consists of the migration source volume and migration target volume):

    - Information about attributes, capacity, and location for the migration source volume
      - The LUSE volume attribute (`LUSE`)
      - The LU device number (`LU`)
      - The emulation type (`emulationType`)
      - The CVS volume attribute (`CVS`)
      - The volume capacity (`capacityInKB`)
      - The SLPR number (`SLPRNumber`)
      - The CLPR number (`CLPRNumber`)
      - The cache mode (`cacheMode`)
      - The IO suppression mode (`IOSuppressionMode`)
    - Comment lines for a candidate migration target volume
 

Comment lines start with the `# Target candidates for source LDEV` line and the following information is output: The items to be output and their order might differ depending on the version installed on the server.

      - Controller logical device number for the corresponding migration source volume
 

This item is displayed in the `# Target candidates for LDEV` line. Multiple volume candidates are separated by commas and displayed if multiple candidates that can serve as migration target volumes exist.
      - Information about an attribute, capacity, and location for each migration target volume (candidate volume):
        - The emulation type (`emulationType`)
        - The CVS volume attribute (`CVS`)
        - The volume capacity (`capacityInKB`)
        - The name of model (`subsystem`)
        - The SLPR number (`SLPRNumber`)
        - The CLPR number (`CLPRNumber`)
        - The name of the array group where the LDEV exists (`arrayGroupName`)
        - The disk type (`diskType`)
        - The RAID level (`RAIDLevel`)
        - The cache mode (`cacheMode`)
        - The IO suppression mode (`IOSuppressionMode`)
- Controller logical device number for the corresponding migration target volume (candidate volume)
- If multiple migration target volumes (candidate volumes) exist, multiple lines are displayed for each volume. For the first candidate (the volume that is paired with the migration source volume after the pair line), an asterisk (\*) and controller logical device number for the migration source volume (in parentheses) are displayed following the controller logical device number.

All volumes other than the first candidate are chosen not only from the logical partition (SLPR and CLPR) to which the migration source volume belongs, but also from the other logical partitions (SLPRs and CLPRs).

Users can change the candidate volume easily by switching the first candidate migration target volume and one of the subsequent candidate volumes.



## 1-2-4 Editing a Migration Plan

A candidate migration plan created by the `CreateMigrationPlan` command can be used as-is for migration, or can be edited as text data by a user as needed.

The format for candidate migration plans is as follows:

- Each item consists of an item name, equal sign (=), and value, in that order. Note that only the item name is specified for `pair`.



**NOTE:** Item names are not case-sensitive (for example, `storagedomainname` and `STORAGEDOMAINNAME` are equivalent).



**NOTE:** Item values are case-sensitive (for example, `groupName_1` and `GroupName_1` are different values).

- Any space characters before or after the item name, equal sign (=), and value are disregarded.
- Specify one item per line. The specification for an item cannot continue over multiple lines.
- Lines in which the first non-space character is a hash mark (#) are treated as comments.

Specify item names as follows:

- Specify each item name in the order listed in [Table 1-3](#).
- Specify `plan-type`, `format-version`, `storageDomainName`, `migrationGroupName`, `targetStorageTierName`, `permitCrossSlprMigration`, and `permitCrossClprMigration` only once at the beginning of a migration plan.
- For each migration source volume belonging to the specified migration group, specify each of `pair`, `sourceControllerDeviceNumber`, and `targetControllerDeviceNumber`, once each and in that order.

Specify migration source volumes and migration target volumes as follows:

- Specify two controller LDEV numbers, one for the migration source volume and one for the migration target volume.
- For the migration source volume, specify a volume that belongs to the specified migration group.
- For the migration target volume, specify a volume that belongs to the specified storage tier.
- For migration source volumes that do not require migration, specify the same volume as the migration source volume for the migration target volume.

Note that different combinations of migration source volumes or migration target volumes cannot be specified redundantly.

## 1-2-5 Creating and Executing a Migration Task

When migration is performed based on a migration plan, a migration task must be created and then executed. Migration tasks can be created by executing the `CreateMigrationTask` command with a migration plan specified. A task ID is given to the created migration task.

There are two ways to execute a migration task:

- You can execute a migration task immediately by using the `CreateMigrationTask` command with the `execute` option specified.



**NOTE:** Migration tasks not immediately executed using the `CreateMigrationTask` command with the `execute` option specified, remain in `Standby` status.

- You can use the `ExecuteTask` command (including the migration task ID) to execute a migration task that is in `Standby` status.

Migration task execution requires that a request be made for task execution to the Tiered Storage Manager server. The actual task execution is performed asynchronously to the `CreateMigrationTask` command and `ExecuteTask` command.

### 1-2-5-1 Migration task status

Migration tasks can be in any of the following statuses. The `GetTasks` command can be used to obtain the status of a task.

- `Standby`: `Standby`

- `Active.WaitingMigration`: Waiting for migration to be performed
- `Active.Migrating`: Migration is being performed
- `Active.WaitingDataErasure`: Waiting for erasure to be performed
- `Active.DataErasing`: Erasure is being performed
- `Success`: Ended in success
- `Failure.MigrationFailure`: Ended in migration failure
- `Failure.DataErasureFailure`: Ended in erasure failure
- `Failure`: Ended with a failure other than those mentioned above
- `Cancel`: Ended by cancellation

### 1-2-5-2 Volume migration reserve

When the `CreateMigrationTask` is used to execute a migration task, a volume migration reserve is performed for the migration source volume and migration target volume specified in the migration plan.

A volume migration reserve is released either when the migration terminates normally or the migration task changes to a terminated status, or when the `Cancel` command is executed to cancel the migration task. Refresh processing releases the volume migration reserve when the migration task ends with a failure.

### 1-2-5-3 Swapping controller LDEV numbers for migration source volumes and migration target volumes

Once migration terminates normally, the controller LDEV number of the migration source volume and the controller LDEV number of the migration target volume are swapped.

### 1-2-5-4 Deleting (erasing) migration source volume data

If the `erasedata` parameter of the `CreateMigrationTask` command is set to either `Yes` or omitted, the migration source volume data is deleted when migration terminates normally.

## 2 Requirements and Installation

This chapter explains the system requirements for operating the Tiered Storage Manager CLI. This chapter also explains installation and setup of the Tiered Storage Manager CLI, which is required for setting an environment where CLI commands can be executed on a Management client.

- [2-1 Requirements for CLI Operations](#)
- [2-2 CLI Memory Requirements](#)
- [2-3 Tiered Storage Manager CLI Installation and Setup](#)
- [2-4 Tiered Storage Manager CLI Uninstallation and Unsetup](#)
- [2-5 Precautions Regarding Execution of the CLI Commands](#)

### 2-1 Requirements for CLI Operations

The system requirements for operating the Tiered Storage Manager CLI are:

- **Storage subsystems**  
 All storage subsystems to be managed by Tiered Storage Manager must be connected to a LAN, and be accessible by the Management server and Management client for Tiered Storage Manager. Also, external storage subsystems must be connected to the domain control storage subsystem, and the LDEVs within external storage subsystems must be mapped to the domain control storage subsystem.
- **Device Manager server**  
 Device Manager server must already be installed, set up, and fully ready for operation. For details, please refer to the *HP StorageWorks Command View XP Advanced Edition Device Manager Server Installation and Configuration Guide*.
- **Tiered Storage Manager server**  
 Tiered Storage Manager server must already be installed, set up, and fully ready for operation. For details, please refer to the *HP StorageWorks XP Tiered Storage Manager Server Installation and Configuration Guide*.
- **Platform for the Tiered Storage Manager CLI**  
 The platform used for the Tiered Storage Manager CLI must be running one of the following operating systems supported by Tiered Storage Manager 1.1 (01-10) for CLI:
  - Windows XP
  - Windows 2000 (Service Pack 3 or later)
  - Windows Server 2003 (32-bit version only)
  - Sun Solaris 8 (SPARC platform only)
  - Sun Solaris 9 (SPARC platform only)
  - HP-UX 11i V1.0
  - HP-UX 11i V2.0
- **Java execution environment**  
 The Tiered Storage Manager CLI requires Java Runtime Environment (JRE) version 1.4.2.  
  
 If the OS of the machine on which CLI is executed is Windows, the path in which `java.exe` is stored must be set in the `Path` environment variable.  
  
 If the OS of the machine on which CLI is executed is Solaris or HP-UX, the path in which `java` is stored must be set in the `PATH` environment variable.

For details about requirements for installing and setting up CLI on the client, see section [2-3-1](#).

### 2-2 CLI Memory Requirements

The maximum memory size for running CLI must be set appropriately when CLI is executed. The maximum amount of memory allocated is set using the `HTSM_CLI_MEM_SIZE` environment variable.

The default for `HTSM_CLI_MEM_SIZE` is set to 256M, meaning that 256 MB is reserved. The value specified here must be a multiple of 1,024 bytes that is at least 2 MB. Since this value is set using notation in bytes, add k or K to specify kilobytes, or m or M to specify megabytes.

For commands such as the `GetVolumes` command that can obtain a large amount of information depending on parameter settings, the amount of memory secured must suit the parameter settings. The maximum amount of memory required for executing the `GetVolumes` command is about 150 MB.

If the value set for `HTSM_CLI_MEM_SIZE` is not enough for the amount of memory needed during CLI execution, CLI will display the following error message, and then terminate:

```
Exception in thread "main" java.lang.OutOfMemoryError
<<no stack trace available>>
```

If this error occurs, increase the value of `HTSM_CLI_MEM_SIZE`, and run CLI again.

## 2-3 Tiered Storage Manager CLI Installation and Setup

To set up an environment for running CLI on the Management client, you must install CLI by copying its setup command from the Tiered Storage Manager server to the Management client, and then executing the setup command. Also, you must install the Java execution environment.

When CLI commands are executed on a Management server, there is no need to transfer the setup file or execute the setup command. When the server is installed, the CLI commands are also installed on the Management server. When the Tiered Storage Manager server is installed, the CLI setup files are ready to download from the Management server.

The name of the CLI setup file is:

- `TSM01-10-mm_Enn_WIN_CLI.zip` (Windows version)
- `TSM01-10-mm_Enn_SOL_CLI.tar.gz` (Solaris version)
- `TSM01-10-mm_Enn_HP_CLI.tar.gz` (HP-UX version)

*mm* indicates the number of revised versions. *nn* indicates the build number.

When the Tiered Storage Manager server is installed on a Management server, the CLI setup file is stored in the following location on the Management server:

`HP-StorageWorksXP-Tiered-Storage-Manager-Installation-directory\Dist`



**NOTE:** Operations described in this section, *Tiered Storage Manager CLI Installation and Setup*, are unnecessary for executing CLI commands on a Management server. When the server is installed, an environment where CLI commands can be executed is also created on the Management server.

### 2-3-1 Requirements for CLI Installation and Setup

The requirements for CLI installation and setup for a Management client are as follows:

- When the Management client is running on Windows:
  - Administrator login is required.
  - At least 100 MB of free space must exist on the disk on which the OS is installed.
  - The environment must allow `.zip` files to be decompressed.
- When the Management client is running on Solaris or HP-UX:
  - Administrator (`root`) login is required.
  - At least 100 MB of free space must exist on the disk to which `/opt` is allocated.

### 2-3-2 CLI Installation and Setup on a Windows System

To perform CLI installation and setup:

1. Log on to the Management client machine as a user who is a member of the Administrators group.
2. Use FTP or external media to transfer the setup file from the Management server machine of Tiered Storage Manager to the Management client machine. You can copy this file to any location.
3. Decompress the transferred setup file into the Windows system drive.

After decompression, files such as the batch file for setup, batch file for unsetup, batch file for running CLI, and properties files are decompressed and stored on the system drive:

```
system-drive\TieredStorageManager\0110\Setup\setup.bat
```

```
system-drive\TieredStorageManager\0110\Setup\unsetup.bat
```

```
system-drive\TieredStorageManager\0110\CLI\htsmcli.bat
system-drive\TieredStorageManager\0110\CLI\htsmcli.properties
system-drive\TieredStorageManager\0110\CLI\htsmclienv.properties
```



**NOTE:** The decompressed properties file `htsmcli.properties` is a sample file, and examples of property setting are contained in the file as comment lines.

4. Execute `setup.bat`, the batch file for setup.

This stores the common library for collecting trace information, sets the settings for the common library, and edits the batch file for running CLI. The common library is stored in the following directory:

```
system-drive\Program Files\Hitachi\HNTRLib2
```

- Java execution environment

The Tiered Storage Manager CLI requires Java Runtime Environment (JRE) version 1.4.2. To confirm that setup is complete:

1. From the Start menu, choose Settings, then Control Panel, and then System. The System Properties dialog box is displayed.
2. In the System Properties dialog box, choose the Advanced tab, and then click the Environment variables button. The Environment Variables dialog box is displayed.
3. Verify that the Path value in the System environment variables list box contains the path in which `java.exe` is stored. If it does not, add the appropriate path.

Once you have verified that setup is complete, edit the properties file as needed. Also, to use a previously backed up properties file, simply replace the existing one.



**NOTE:** The properties file `htsmcli.properties` can be stored in any desired location; however, the directory containing this file must be set in the environment variable `HTSM_CLI_HOME` in advance.

## 2-3-3 CLI Installation and Setup on a Solaris or HP-UX System

To perform CLI installation and setup:

1. Log on to the Management client machine as a user with administrator privileges (`root`).
2. Use FTP or external media to transfer the setup file from the Management server machine of Tiered Storage Manager to the Management client machine. You can copy this file to any location, such as `/tmp`.
3. Decompress the transferred setup file into the `/opt` directory.

After decompression, files such as the shell script for setup, shell script for unsetup, shell script for running CLI, and properties files are decompressed and stored on the `/opt` directory:

```
/opt/TieredStorageManager/0110/Setup/setup.sh
/opt/TieredStorageManager/0110/Setup/unsetup.sh
/opt/TieredStorageManager/0110/CLI/htsmcli
/opt/TieredStorageManager/0110/CLI/htsmcli.properties
/opt/TieredStorageManager/0110/CLI/htsmclienv.properties
```



**NOTE:** The decompressed properties file `htsmcli.properties` is a sample file, and examples of property settings are contained in the file as comment lines.

4. Execute `setup.sh`, the shell script for setup.

This stores the common library for collecting trace information and sets the settings for the common library. The common library is stored in the following directory:

```
/opt/Hitachi/HNTRLib2
```

- Java execution environment

The Tiered Storage Manager CLI requires Java Runtime Environment (JRE) version 1.4.2. To confirm that setup is complete:

1. Execute the `env` command to verify that the value set for the `PATH` system environment variable contains the path in which `java` is stored. If it does not, add the appropriate path to the system logon script (such as `/etc/profile`).

Once you have verified that setup is complete, edit the properties file as needed. Also, to use a previously backed up properties file, simply replace the existing one.



**NOTE:** The properties file `htsmcli.properties` can be stored in any desired location; however, the directory containing this file must be set in the environment variable `HTSM_CLI_HOME` in advance.

---

## 2-4 Tiered Storage Manager CLI Uninstallation and Unsetup

To perform unsetup of CLI, you must execute the batch file or shell script for unsetup. When unsetup of CLI is performed, the files for CLI are deleted and the common library for collecting trace information is uninstalled.

The batch file or shell script for unsetup is one of the files decompressed from the setup file during setup, and is located in the same directory as the batch file or shell script for setup.

When the Management client is running on Windows:

1. Back up the `htsmcli.properties` properties file.
2. Make sure that the two conditions below are met for the following directory:

```
system-drive\TieredStorageManager
```

- The current directory must not be in or under this directory.
- Directories or files in or under this directory must not be in use.

If these conditions are not met, directories might not be deleted, even if unsetup ends normally.

3. Execute the following batch file for unsetup:

```
system-drive\TieredStorageManager\0110\Setup\unsetup.bat
```

The common library for collecting trace information is uninstalled, and the files and directories decompressed from the setup file during setup are deleted.

When the Management client is running on Solaris or HP-UX:

1. Back up the `htsmcli.properties` properties file.
2. Execute the following shell script for unsetup:

```
/opt/TieredStorageManager/0110/Setup/unsetup.sh
```

The common library for collecting trace information is uninstalled, and the files and directories decompressed from the setup file during setup are deleted.

## 2-5 Precautions Regarding Execution of the CLI Commands

Note the following precautions regarding the execution of the CLI commands:

- Language on the CLI client

We recommend that the language on the CLI client should match that of the locale on the server. Some messages output by Tiered Storage Manager contain information, such as message text, in the form that it was received from Device Manager. The language of this text depends on the machine that runs the Device Manager server or the machine that runs the Tiered Storage Manager server.

- Symbols that have special meanings for the OS

Exercise caution when using symbols within a Tiered Storage Manager CLI command that have special meaning to the operating system (e.g., `<`, `>`, `&`, `!`). Enclose strings containing these symbols in double quotation marks (`"`) or single quotation marks (`'`), or use an escape character before each of these symbols so that they are not misinterpreted by the operating system.

- File names containing unusable characters

An unexpected result might occur if an unusable character is contained in the name of a file such as a redirect file. For example, in Windows, if a file name containing a colon is specified for a redirect destination or `output` option, the file is created with a file name consisting of the characters preceding the colon, but nothing is output to that file.

- Path to be set for the Windows environment variable `HTSM_CLI_HOME`

Note the following when setting the path for the Windows environment variable `HTSM_CLI_HOME`:

- Do not enclose the path in double quotation marks (`"`).
- Do not specify the symbol `\` at the end of the path.
- Do not specify the directory that exists directly under the drive.

- Umask for the `htsmcli` script for Solaris and HP-UX.

Umask 0 is used for the script `htsmcli`. Therefore, access permissions for the following files that `htsmcli` creates become `"-rw-rw-rw-"`:

- Trace log files created in `/opt/TieredStorageManager/0110/CLI/logs`.
- Files specified in the `output` option to which the standard output is to be redirected.

By using the desired umask, if you want to create a file to which the standard output is to be redirected, use the shell redirect functionality instead of the output option.

- Canceling a CLI command by pressing Ctrl + C or closing the window

When a CLI command is canceled by pressing Ctrl + C or closing the window, the user does not know the execution result. In such a case, execute a view command, such as `GetTasks`, to check the execution result. If necessary, re-execute the update command such as `DeleteTasks`.



# 3 Using the Tiered Storage Manager CLI

This chapter provides an overview of the Tiered Storage Manager CLI and describes the structure and syntax of CLI commands.

- 3-1 CLI Command Overview
- 3-2 Description of the CLI Command Elements
- 3-3 CLI Command Syntax
- 3-4 Miscellaneous Operational Information
- 3-5 Starting the Tiered Storage Manager CLI
- 3-6 Displaying CLI Help

## 3-1 CLI Command Overview

There are four categories of CLI commands:

- Storage domain management
- Storage tier management
- Migration group management
- Migration

Table 3-1 lists and describes the CLI commands by category.

Table 3-1 CLI Command Categories

Category	Command Name	Description
Storage domain management	CreateStorageDomain	Creates a new storage domain (by registering a domain control storage subsystem as a storage domain).
	DeleteStorageDomain	Deletes a registered storage domain.
	GetStorageDomains	Obtains information about storage domains.
	ModifyStorageDomain	Changes attributes for a storage domain. The following attributes can be changed: <ul style="list-style-type: none"><li>• Storage domain name</li><li>• Storage domain description</li></ul>
	GetVolumes	Obtains information about volumes within a storage domain.
	Refresh	Updates information about a storage domain. The refresh processing re-obtains subsystem information from Device Manager and registers it in the Tiered Storage Manager repository.
Storage tier management	CreateStorageTier	Creates a storage tier within a storage domain.
	DeleteStorageTier	Deletes a storage tier.
	GetStorageTiers	Obtains information about storage tiers in a storage domain.
	ModifyStorageTier	Changes attributes for a storage tier. The following attributes can be changed: <ul style="list-style-type: none"><li>• Storage tier name</li><li>• Filter condition for a storage tier</li><li>• Storage tier description</li></ul>
	GetVolumes (with storagetiername specified)	Obtains information about volumes within a storage tier.
Migration group management	CreateMigrationGroup	Creates a migration group within a storage domain.
	DeleteMigrationGroup	Deletes a migration group.
	GetMigrationGroups	Obtains information about migration groups in a storage domain.

Table 3-1 CLI Command Categories

Category	Command Name	Description
	ModifyMigrationGroup	Changes attributes for a migration group. The following attributes can be changed: <ul style="list-style-type: none"> <li>• Migration group name</li> <li>• Attribute indicating whether the migration group is subject to migration operations.</li> <li>• Migration group description</li> </ul>
	AddVolumeToMigrationGroup	Adds a volume to a migration group.
	RemoveVolumeFromMigrationGroup	Removes a volume from a migration group.
	GetVolumes (with migrationgroupname specified)	Obtains information about volumes in a migration group.
Migration	CreateMigrationPlan	Creates a migration plan.
	CreateMigrationTask	Creates, and optionally executes, a migration task.
	GetTasks	Obtains information about migration tasks.
	ModifyTask	Changes attributes for a migration task. The following attribute can be changed: <ul style="list-style-type: none"> <li>• Task description</li> </ul>
	ExecuteTask	Executes a migration task in standby status.
	CancelTask	Cancels (places in terminated status) a migration task in standby status.
	DeleteTasks	Deletes a terminated migration task.



**NOTE:** A detailed description of each command is provided in 4 .

## 3-2 Description of the CLI Command Elements

CLI commands can contain up to four elements. Table 3-2 lists and describes each element of the CLI command.

Table 3-2 Description of CLI Command Elements

Command Element	Description
<i>server-location</i>	Information indicating the location of the Tiered Storage Manager server on the network. Specify a value such as <code>rmi://myhost.mydomain:20352/HTSMServer</code> . Specify the host and port for the Tiered Storage Manager server in the following URL format: <code>rmi://[host][:port]/HTSMServer</code> <ul style="list-style-type: none"> <li>• host: Specify the host name or IP address for Tiered Storage Manager. If this is omitted, the local host is used.</li> <li>• port: Specify the port number where client requests are received, as specified during HP StorageWorks XP Tiered Storage Manager installation. If this is omitted, 20352 (the default for HP StorageWorks XP Tiered Storage Manager installation) is used.</li> </ul> You can omit the <i>server-location</i> when using the command line, by setting it in the properties file.
<i>command</i>	The name of a command requesting processing on the Tiered Storage Manager server, such as <code>CreateStorageDomain</code> or <code>CreateMigrationTask</code> . <ul style="list-style-type: none"> <li>• The command name is not case-sensitive. As such, <code>createstoragedomain</code> is the same as <code>CREATESTORAGEDOMAIN</code>.</li> </ul>

Table 3-2 Description of CLI Command Elements

Command Element	Description
<i>options</i>	<p>Options contain information for controlling the CLI operation. Use the general UNIX format when entering options. There are two kinds of such expressions: one-character expressions and one-word expressions. Insert one hyphen before one-character expressions, and two hyphens before one-word expressions. For example, a one-character expression should be specified like <code>-u</code>, and a one-word expression should be specified like <code>--username</code>.</p> <p>Some options require an argument to be specified after the option.</p> <ul style="list-style-type: none"> <li>Specify arguments as command line parameter strings. Arguments that contain space characters should be enclosed in quotation marks (such as in <code>--output "C:\My Documents\Redirect.txt"</code>), or whatever is appropriate for the command execution environment.</li> <li>Options are case-sensitive.</li> <li>Options can be specified in any order.</li> </ul>
<p><b>IMPORTANT:</b> Not all options are valid for all commands. Refer to the detailed command descriptions in 4 to determine which options are valid for each command.</p>	
<i>parameters</i>	<p>Parameters contain information passed to the server as part of a request. The parameters required depend on the command requested. Each parameter consists of a name and a value, such as in <code>name=value</code>.</p> <ul style="list-style-type: none"> <li>Specify parameters as command line parameter strings. Parameters that contain space characters should be enclosed in quotation marks (such as in <code>"filtercondition = capacity &lt; '1024GB'"</code>), or whatever is appropriate for the command execution environment.</li> <li>Names are not case-sensitive.</li> <li>Values are case-sensitive. As such, <code>xp</code> and <code>XP</code> are considered two different values.</li> <li>Parameters can be specified in any order.</li> <li>Parameters can be omitted from the command line if they are set in the properties file.</li> </ul>
<p><b>IMPORTANT:</b> Refer to Table 3-3 to determine the range of valid parameter values for each parameter.</p>	

### 3-3 CLI Command Syntax

Using the command line interface, you can initiate requests to the Tiered Storage Manager server and review responses from the server. CLI commands are executed from the command line. The syntax of Tiered Storage Manager CLI commands is:

```
htsmcli [server-location] command [options]... [parameters]...
```



**NOTE:** When commands are entered from the command line, shell escaping must be performed in accordance with the platform used.

#### 3-3-1 CLI Command Parameters

Command parameters are specified as a combination of a *name* and a *value*. Specify a parameter as follows, with the name of the parameter first, followed by an equal sign, and then the value of the parameter:

```
controllerserialnumber=14011
```

Parameters can be specified in any order. Specify parameters as a single command line parameter character string. Parameters that contain space characters should suit the command execution environment. For example, enclose such parameters in quotation marks as follows:

```
"filtercondition = capacity < '1024GB'"
```



**NOTE:** The parameter *name* is not case sensitive. The parameter *value* is case sensitive. For example, `xp` and `XP` are considered two different values.

Parameters can be set in the command line when the command is issued or the parameters can be set in the CLI properties file. Parameters that are set in the command line take precedence over parameters that were set in the properties file. For details about the Tiered Storage Manager CLIproperties file, see 5 .

**Table 3-3** Range of Valid Parameter Values

Parameter	Permissible Value or Range	Valid Characters and Parameter Restrictions	Size or Number of Characters
<p>name</p> <ul style="list-style-type: none"> <li>One of the following names provided in Tiered Storage Manager: <ul style="list-style-type: none"> <li>- storagedomainname</li> <li>- storagetiername</li> <li>- migrationgroupname</li> </ul> </li> </ul>	--	<p>A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (. ) At mark(@) Space character ( ) Non-ASCII characters</p> <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>An empty character string cannot be specified.</li> </ul>	<p>Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.</p>
description	--	No restrictions	Up to 500 bytes (when converted to UTF-8).
controllermodel	The value displayed for the <code>arrayType</code> attribute of the <code>StorageArray</code> object, in <code>GetStorageArray</code> for the Device Manager CLI.	<p>No restrictions on the types of characters exist, but note the following restriction:</p> <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>Space characters included within the string are not discriminated.</li> <li>The value is not case sensitive.</li> </ul>	Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
controllerserialnumber	The value displayed for the <code>serialNumber</code> attribute of the <code>StorageArray</code> object, in <code>GetStorageArray</code> for the Device Manager CLI.	<p>A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (. ) At mark (@) Space character ( ) Non-ASCII characters</p> <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>An empty character string cannot be specified.</li> </ul>	Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
controllername	The value displayed for the <code>name</code> attribute of the <code>StorageArray</code> object, in <code>GetStorageArray</code> for the Device Manager CLI.	<p>No restrictions on the types of characters exist, but note the following restriction:</p> <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> </ul>	Up to 256 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.

Table 3-3 Range of Valid Parameter Values

Parameter	Permissible Value or Range	Valid Characters and Parameter Restrictions	Size or Number of Characters
controllerdevicenumber	--	Two hexadecimal values less than 0x100, separated by a colon (:). Specify the first value as one or two characters, and second value as two characters. <ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>Space characters cannot be specified.</li> </ul>	--
canmigrate	Yes and No	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters.</li> </ul>	--
erasedata	Yes and No	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters</li> </ul>	--
id <ul style="list-style-type: none"> <li>The task ID.</li> </ul>	An ID created by CreateMigrationTask, this is the value displayed for the ID attribute of the MigrationTask object for CreateMigrationTask.	A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (.) At mark (@) Space character ( ) Non-ASCII characters <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>An empty character string cannot be specified.</li> </ul>	Up to 75 bytes, (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
status <ul style="list-style-type: none"> <li>The status of the task.</li> </ul>	Standby Active.WaitingMigration Active.Migrating Active.WaitingDataErasure Active.DataErasing Success Failure.MigrationFailure Failure.DataErasureFailure Cancel Active NotEnd Failure End	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters.</li> <li>A lower-level status can be specified by omitting Active. or Failure.</li> </ul>	--
datetype	Created Ended	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters</li> </ul>	--
daystobase	0 or a positive integer	0 or a positive integer <ul style="list-style-type: none"> <li>You cannot add the</li> </ul>	--

Table 3-3 Range of Valid Parameter Values

Parameter	Permissible Value or Range	Valid Characters and Parameter Restrictions	Size or Number of Characters
		symbol + to the value.	
direction	Before After Just	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters</li> </ul>	--
filtercondition	See Table 3-4.	See Table 3-4.	Up to 4,096 bytes (when converted to UTF-8).

### 3-3-2 Filter Condition Expressions

There are two types of filter condition expressions specified for the `filtercondition` parameter:

- Filter condition expressions for a storage tier (`storage_tier_filter_condition`). These are filter condition expressions specified for `CreateStorageTier` and `ModifyStorageTier`.
- Filter condition expressions for a volume (`volume_filter_condition`). These are filter condition expressions specified for `GetVolumes` and `CreateMigrationPlan`.

Figure 3-1 illustrates the syntax of these filter condition expressions, in Bachus Naur form (BNF):

```

storage_tier_filter_condition ::= and_search_condition | or_search_condition
and_search_condition ::= comparison_predicate | and_search_condition "AND"
and_search_condition | "(" and_search_condition ")"
or_search_condition ::= comparison_predicate | or_search_condition "OR"
or_search_condition | "(" or_search_condition ")"

volume_filter_condition ::= term | volume_filter_condition "OR"
volume_filter_condition
term ::= factor | term "AND" term
factor ::= test | "NOT" factor
test ::= comparison_predicate | "(" volume_filter_condition ")"

comparison_predicate ::= symbol comp_op literal
symbol ::= name
comp_op ::= "=" | "<>" | "<" | ">" | "<=" | ">=" | "startsWith" | "contains"
literal ::= string_literal | numeric_literal
numeric_literal ::= digit { digit }
digit ::= "0" | "1" | "2" | "3" | "4" | "5" | "6" | "7" | "8" | "9"

```

The maximum number of `comparison_predicate` that can be contained in one filter condition expression is 30.

Figure 3-1 Filter Condition Expressions in BNF



**NOTE:** Curly brackets ({} ) indicate 0 or more repetitions

If any of the following characters are included in `string_literal`, enclose `string_literal` in single quotation marks ('). For a single quotation mark (') used for enclosing a string, add a single quotation mark (') as an escape character (specify two single quotation marks sequentially).

Space character, parenthesis ( ), inequality sign <>, equal sign =, single quotation mark '

Unknown cannot be specified for `literal`. Note that the displayed `Unknown` might mean that either the value is unknown or the character string is `Unknown`.

The following is an example specification for `filtercondition`, for a filter condition for a storage tier:  
Property names are not case sensitive.

```
filtercondition="RAIDLevel='RAID5 (3D+1P)' AND DiskType='FC' "
```

Table 3-4 describes the values that can be specified in the properties for the filter condition expressions used for the `filtercondition` parameter.



**NOTE:** The term “*properties for the filter condition expressions*” refers to the `comparison_predicate` and `term` objects in the filter condition expressions shown in Figure 3-1.

Table 3-4 Range of Valid Property Values for Filter Condition Expressions

Property Name	Permissible Value or Range	Valid Characters and Character Restrictions	Size or Number of Characters
<code>SubsystemDisplayModel</code>	The value displayed for the <code>displayArrayType</code> attribute of the <code>StorageArray</code> object, in <code>GetStorageArray</code> for the Device Manager CLI. If the displayed model name is unknown, specify the product name.	No restrictions on the types of characters exist, but note the following restrictions: <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>Space characters included within the string are not discriminated.</li> <li>The value is not case sensitive.</li> </ul>	Up to 75 bytes (when converted to UTF-8) 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
<code>SubsystemSerialNumber</code>	The value displayed for the <code>serialNumber</code> attribute of the <code>StorageArray</code> object, in <code>GetStorageArray</code> for the Device Manager CLI. Part of the value can be specified by using <code>startsWith</code> or <code>contains</code>	A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (.) At mark (@) Space character ( ) Non-ASCII characters <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>An empty character string cannot be specified.</li> <li>If the operator is = or &lt;&gt;, the specified value cannot start or end with space characters.</li> <li>If the operator is <code>startsWith</code>, the specified value cannot start with space characters. Space characters at the end are included in the search string.</li> <li>If the operator is <code>contains</code>, space characters at the start or end are included in the search string.</li> </ul>	Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.

Table 3-4 Range of Valid Property Values for Filter Condition Expressions

Property Name	Permissible Value or Range	Valid Characters and Character Restrictions	Size or Number of Characters
SubsystemName	The value displayed for the name attribute of the StorageArray object, in GetStorageArray for the Device Manager CLI.	No restrictions on the types of characters exist, but note the following restriction: <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> </ul>	Up to 256 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
SubsystemVendor	The value displayed for the vendor attribute of the VolumeConnection object, in GetStorageArray for the Device Manager CLI. If the vendor name is unknown, specify Unknown.	No restrictions on the types of characters exist, but note the following restriction: <ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>Space characters cannot be used.</li> </ul>	Up to 75 bytes (when converted to UTF-8) 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
ControllerDeviceNumber	--	The values specifiable for controllerdevicenum in Table 3-3, separated by a comma (,) for an array, or by a hyphen (-) for a range. <ul style="list-style-type: none"> <li>Space characters at the start or end of controllerdevicenum in Table 3-3 are disregarded.</li> </ul>	The maximum number of elements separated by commas (,) is 100. <ul style="list-style-type: none"> <li>The range specified by a hyphen (-) is used as one element.</li> </ul>
Host	Part of the value can be specified by using startsWith or contains	No restrictions on the types of characters exist, but note the following restriction: <ul style="list-style-type: none"> <li>If the operator is = or &lt;&gt;, the specified value cannot start or end with space characters.</li> <li>If the operator is startsWith, the specified value cannot start with space characters. Space characters at the end are included in the search string.</li> <li>If the operator is contains, space characters at the start or end are included in the search string.</li> </ul>	Up to 256 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.



Table 3-4 Range of Valid Property Values for Filter Condition Expressions

Property Name	Permissible Value or Range	Valid Characters and Character Restrictions	Size or Number of Characters
ArrayGroup	The value displayed for the <code>displayName</code> attribute of the <code>ArrayGroup</code> object, in <code>GetStorageArray(subtarget=ArrayGroup)</code> for the Device Manager CLI. Part of the value can be specified by using <code>startsWith</code> or <code>contains</code>	A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (.) At mark (@) Space character ( ) Non-ASCII characters <ul style="list-style-type: none"> <li>An empty character string cannot be specified.</li> <li>If the operator is = or &lt;&gt;, commas (,) can be used to specify multiple <code>ArrayGroup</code> names. Space characters at the start or end of the <code>ArrayGroup</code> name are disregarded.</li> <li>If the operator is <code>startsWith</code>, or <code>contains</code>, multiple <code>ArrayGroup</code> names cannot be separated with commas (,).</li> <li>If the operator is <code>contains</code>, space characters at the start or end are included in the search string.</li> </ul>	The maximum number of elements separated by commas (,) is 100.
Capacity	--	Specify a positive integer, or a combination of a positive integer and a character string indicating the units. Such as 256, 500KB or 10MB. The units you can specify are KB, MB, GB, and TB. KB is assumed if omitted. # <ul style="list-style-type: none"> <li>This cannot contain space characters.</li> <li>You cannot add the symbol + to the value.</li> <li>The value is not case sensitive.</li> </ul>	--
RAIDLevel	The value displayed for the <code>raidType</code> attribute of the <code>LogicalUnit</code> object, in <code>GetStorageArray(subtarget=LogicalUnit)</code> for the Device Manager CLI.	No restrictions exist. Specify this in the <code>RAIDLevel</code> or <code>RAIDLevel(Drive Conf.)</code> format, such as the following: <i>RAIDLevel:</i> RAID5 or RAID0+1 <i>Drive Conf.:</i> 5D+1P <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>Space characters included within the string are not discriminated.</li> <li>The value is not case sensitive.</li> </ul>	Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.

Table 3-4 Range of Valid Property Values for Filter Condition Expressions

Property Name	Permissible Value or Range	Valid Characters and Character Restrictions	Size or Number of Characters
EmulationType	The value displayed for the <code>emulation</code> attribute of the <code>LogicalUnit</code> object, in <code>GetStorageArray(subtarget=LogicalUnit)</code> for the Device Manager CLI.	No restrictions exist. <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>Space characters included within the string are not discriminated.</li> <li>The value is not case sensitive.</li> </ul>	Up to 75 bytes (when converted to UTF-8). 1 ASCII character is 1 byte, other characters are from 1 to 3 bytes.
DiskType	FC AT ED	No restrictions exist. <ul style="list-style-type: none"> <li>The value cannot contain space characters.</li> <li>The value is not case sensitive.</li> </ul>	--
VolumeStatus	Used Free	<ul style="list-style-type: none"> <li>The value is not case sensitive.</li> <li>The value cannot contain space characters.</li> </ul>	--
VolumeLockStatus	Locked Unlocked	<ul style="list-style-type: none"> <li>The value cannot contain space characters.</li> <li>The value is not case sensitive.</li> </ul>	--
SLPRNumber CLPRNumber	An integer from 0 to 31.	0 or a positive integer. You cannot add the symbol + to the value.	--

**Table 3-4** Range of Valid Property Values for Filter Condition Expressions

Property Name	Permissible Value or Range	Valid Characters and Character Restrictions	Size or Number of Characters
ControllerArrayGroup	This value is displayed in the <code>displayName</code> attribute of the <code>ArrayGroup</code> object for the <code>GetStorageArray (subtarget=ArrayGroup)</code> in Device Manager CLI.	A to Z a to z 0 to 9 Hyphen (-) Underscore (_) Period (.) At mark (@) Space character ( ) Non-ASCII characters <ul style="list-style-type: none"> <li>The specified value cannot start or end with a space character.</li> <li>An empty character string cannot be specified.</li> <li>If the operator is = or &lt;&gt;, commas (,) can be used to specify multiple <code>ArrayGroup</code> names. Space characters at the start or end of the <code>ArrayGroup</code> name are disregarded.</li> <li>If the operator is <code>startsWith</code> or <code>contains</code>, multiple <code>ArrayGroup</code> names cannot be separated with commas (,).</li> <li>If the operator is <code>startsWith</code>, <code>contains</code>, multiple <code>ArrayGroup</code> names cannot be separated with commas (,).</li> <li>If the operator is <code>contains</code>, space characters at the start or end are included in the search string.</li> </ul>	The maximum number of elements separated by commas (,) is 100.

# In expressing a value for the Capacity property in output information of CLI commands, the highest-order unit, which may be different from the unit that the user specified, is used to express the value as an integer. For example, the value 10240 KB is displayed as 10 MB.

## 3-4 Miscellaneous Operational Information

This section contains information that you should be aware of before using the CLI.

### 3-4-1 Recommended/Maximum Values for Tiered Storage Manager Operations

Table 3-5 lists and describes the recommended values and the maximum permissible values for several Tiered Storage Manager operations.

**Table 3-5** Recommended/Maximum Values for Tiered Storage Manager Operations

Type of Operation	Description	Recommended Value	Maximum Value	Comment
Storage domain	The number of storage domains	1	5	

Table 3-5 Recommended/Maximum Values for Tiered Storage Manager Operations

Type of Operation	Description	Recommended Value	Maximum Value	Comment
Storage tier	The number of storage tiers within the storage domain	30 or less	100	
Migration group	The number of migration groups within the storage domain	1,000	5,000	
Volume	The number of volumes within the storage domain	Not applicable	16,384	
	The number of volumes within the migration group	64 or less	300	
Migration task	The number of unfinished tasks that can be registered in Tiered Storage Manager	Not applicable	100	
	The total number of volumes (within the storage domain) in the registered task	Not applicable	8192	
	The number of volumes where migration can be performed concurrently	8	64	
	The number of tasks that can be canceled concurrently	1	5	
	The number of volumes within the tasks that can be canceled concurrently	64 or less	300	
	The number of task logs for finished migration tasks that can be saved	1,000	5,000	
Server execution multiplexing	The number of users who can access the Tiered Storage Manager server concurrently	3 or less	5	#
Volume filter condition	The number of condition elements that can be combined by using AND or OR in one filter condition expression	Not applicable	30	#
	The number of elements that can be concurrently specified when a device number or array group is used for searching (the enumeration number of elements for <code>ControllerDeviceNumber</code> or <code>ArrayGroup</code> )	Not applicable	100	#

# If the specified value exceeds the maximum value, an error occurs.

### 3-4-2 Common Options (Username, Password, and Output)

The `username`, `password`, and `output` options are valid options for all commands. Table 3-6 describes these options in detail.

As an alternative to specifying the `server-location` and the common options (`username`, `password`, and `output`) for each command, the server location and common options can be omitted from the command line if you include this information in the `htsmcli.properties` file of CLI. The precedence between values specified on the command line and those specified in the properties file is as follows.

- First: the value specified on the command line
- Second: the value specified within the properties file



**IMPORTANT:** There are restrictions on characters that are usable in the `htsmcli.properties` file. When specifying values in this file, such as parameter values, take care not to use invalid characters.



**NOTE:** Usable and printable characters are restricted to ASCII characters, including `\u0020 - \u007E` (which are recognized as ASCII characters), when they are used for values of properties in the `htsmcli.properties` file.



**NOTE:** Values specified in the command line take precedence over those specified in the properties file. For details about the `htsmcli.properties` file, see 5.

**Table 3-6** Common Options for the Tiered Storage Manager CLI

Option	Option Argument	Description
-u or --username	<i>user-name</i>	Specify the user name used to log on to Tiered Storage Manager server. This is the same as the logon user name for Device Manager.
-p or --password	<i>password</i> or <i>@name-of-password-file</i>	Specify the password corresponding to the user name. You can either specify the password directly, or specify a file that contains the password. When specifying a file name for an argument, add @ before the file name. The string in the first line of the specified text file is assumed to be a password. For the file name, specify either an absolute path or a relative path from the directory from which the CLI command is executed.
-o or --output	<i>name-of-the-standard-output-redirect-file</i>	Specify the name of the redirect file to which the standard output is to be sent. Specify this to redirect the execution results of a CLI command to the specified file, instead of the console. For the file name, specify either an absolute path or a relative path from the directory from which the CLI command is executed.
<i>server-location</i>	<i>server-location</i>	Information indicating the location of the Tiered Storage Manager server on the network. Specify a value such as <code>rmi://myhost.mydomain:20352/HTSMserver</code> .  Specify the host and port for the Tiered Storage Manager server in the following URL format: <code>rmi://[host][:port]/HTSMserver</code> <ul style="list-style-type: none"> <li><i>host</i>: Specify the host name or IP address for HP StorageWorks XP Tiered Storage Manager. If this is omitted, the local host is used.</li> <li><i>port</i>: Specify the port number where client requests are received, as specified during HP StorageWorks XP Tiered Storage Manager installation. If this is omitted, 20352 (the default for HP StorageWorks XP Tiered Storage Manager installation) is used.</li> </ul> You can omit the <i>server-location</i> when using the command line, by setting it in the properties file.

### 3-4-3 Tiered Storage Manager Repository Information

Executing some CLI commands causes Tiered Storage Manager repository information such as related storage domains, storage tiers, migration groups, and migration tasks to be displayed. Executing other CLI commands causes the repository information to be updated but not displayed. Table 3-7 shows which CLI commands cause the repository information to be displayed, and which commands cause repository information to be updated.

**Table 3-7** Impact of CLI Commands on Repository Information

Category	Command Name	Repository Information Displayed	Repository Information Updated
Storage domain management	CreateStorageDomain	No	Yes
	DeleteStorageDomain	No	Yes
	GetStorageDomains	Yes	No
	ModifyStorageDomain	No	Yes
	GetVolumes	Yes	No

Table 3-7 Impact of CLI Commands on Repository Information

Category	Command Name	Repository Information Displayed	Repository Information Updated
	Refresh	No	Yes
Storage tier management	CreateStorageTier	No	Yes
	DeleteStorageTier	No	Yes
	GetStorageTiers	Yes	No
	ModifyStorageTier	No	Yes
	GetVolumes (with storagetiername specified)	Yes	No
Migration group management	CreateMigrationGroup	No	Yes
	DeleteMigrationGroup	No	Yes
	GetMigrationGroups	Yes	No
	ModifyMigrationGroup	No	Yes
	AddVolumeToMigrationGroup	No	Yes
	RemoveVolumeFromMigrationGroup	No	Yes
	GetVolumes (with migrationgroupname specified)	Yes	No
Migration	CreateMigrationPlan	Yes	No
	CreateMigrationTask	No	Yes
	GetTasks	Yes	No
	ModifyTask	No	Yes
	ExecuteTask	No	Yes
	CancelTask	No	Yes
	DeleteTasks	No	Yes

### 3-4-4 CLI Return Responses

When a Tiered Storage Manager CLI process terminates, the process returns a value (to standard output) to indicate whether the process terminated normally or whether an error condition was detected. The ranges of the return values are shown in Table 3-8. For detailed information about the messages returned for each command, refer to the detailed command descriptions in 4 .

Table 3-8 CLI Return Values

Return Value	Description
0 or a positive value	CLI has terminated normally.
A negative value	An error (such as a parameter error) was detected in the CLI process.

## 3-5 Starting the Tiered Storage Manager CLI

The CLI commands are provided as Java applications but can be run as batch files (script files) to facilitate processing.

The batch file (script file) `htsmcli` used for starting CLI commands is stored in the following directory:

```
system- drive\TieredStorageManager\0110\CLI (Windows)
/opt/TieredStorageManager/0110/CLI (Solaris and HP-UX)
```

To start a CLI command on a Management client, specify the file as described below from the command line:

When the OS is Windows:

```
system-drive\TieredStorageManager\0110\CLI\htsmcli arguments
```

When the OS is Solaris or HP-UX:

```
# ./htsmcli arguments
```

CLI commands can be executed from a Management server. The batch file `htsmcli` on the Management server is stored in the following directory:

```
HP-StorageWorks-XP-Tiered-Storage-Manager-Installation-directory\CLI
```

When CLI is run without any command line arguments specified, the CLI software version is displayed followed by a message describing how to obtain CLI Help.

```
Tiered Storage Manager CLI 1.1.0-00
```

```
FOR HELP, TYPE: "htsmcli help [command]"
```

### 3-5-1 Using CLI Commands in a Batch (Script) File

Note the following when CLI commands are executed from a batch (script) file that a user created by writing `htsmcli` in this file:

- To verify or check the execution results of the task:  
Reference the `status` and `refreshStatus` values in the command's output to check the execution result of migration tasks or refresh processing. The `htsmcli` return value indicates the execution result of `htsmcli`. Execution results of the tasks that were executed asynchronously with CLI commands cannot be checked by just referencing the `htsmcli` return value.

## 3-6 Displaying CLI Help

To display the basic CLI help information, start CLI with `help` specified, and no arguments.

In Windows:

```
system-drive\TieredStorageManager\0110\CLI\htsmcli help
```

In Solaris and HP-UX:

```
# ./htsmcli help
```

When CLI starts, the CLI software version is displayed along with the help topics shown below.

Sample CLI help information

```
Tiered Storage Manager CLI 1.1.0-00
```

```
USAGE: htsmcli [server-location] command[ option]...[ parameter]...
```

```
SPECIFYING SERVER-LOCATION:
```

```
rmi://[host] [:port]/HTSMServer
```

```
AVAILABLE COMMANDS:
```

```
CreateStorageDomain
```

```
DeleteStorageDomain
```

```
GetStorageDomains
```

```
ModifyStorageDomain
```

```
CreateStorageTier
```

```
DeleteStorageTier
```

```
.  
.
CancelTask
DeleteTasks
```

FOR HELP, TYPE: "htsmcli help [command]"

AVAILABLE OPTIONS:

-u {username} or --username {username} login name for HTSM Server

-p {password} or --password {password} login password for HTSM Server

-o {filename} or --output {filename} send output to the specified file,  
instead of the console

SPECIFYING PARAMETERS:

Specify parameters for a command using name/value pairs,

like: `controllerserialnumber=30051`. Use the command-specific help to see the parameters for a given command.

To display the help information for a particular command, type `help` at the CLI command line prompt followed by the command that you want help information about. For example, to display help information for the `CreateStorageDomain` command you would type `help CreateStorageDomain` at the CLI command line prompt.

The help information displayed includes details about the format of the command, available options, and the permissible range of parameters.

In Windows:

```
system-drive\TieredStorageManager\0110\CLI\htsmcli help command-name
```

In Solaris and HP-UX:

```
# ./htsmcli help command-name
```



## 4 Detailed Command Descriptions

This chapter contains a detailed description for each CLI command. Each command is presented in the following format:

- A description of the command
- An example of the command syntax including options
- A table containing a list and description of the available options
- A table containing a list and description of the command's parameters
- A table containing a list and description of the output that the command could potentially generate
- One or more examples showing command line input, and the resulting output

The commands are arranged by category:

- [4-1 Storage Domain Management Commands](#)
- [4-2 Storage Tier Management Commands](#)
- [4-3 Migration Group Management Commands](#)
- [4-4 Migration Commands](#)

### 4-1 Storage Domain Management Commands

This section includes a detailed description for each storage domain management command.



**NOTE:** The examples shown in this section assume that the user name, password, and location of the Tiered Storage Manager server have been set in the properties file.

#### 4-1-1 CreateStorageDomain

The `CreateStorageDomain` command can be used to register a domain control storage subsystem as a storage domain. Note that refresh processing (processing to obtain configuration information from Device Manager and register it in the Tiered Storage Manager repository) is performed asynchronously to execution of this command.

You can use either of the following methods to specify a domain control storage subsystem:

- A combination of model name and serial number
- The name of the storage subsystem set using Device Manager



**NOTE:** If the domain control storage subsystem cannot be uniquely specified using the name of the storage subsystem, use the model name and serial number instead.

When processing for the Tiered Storage Manager server to receive a refresh request fails after a storage domain has been registered, the error message `KATS50210-E` appears. In such a case, resolve the server failure, and then use the `Refresh` command to perform a refresh.

Command syntax

```
htsmcli server-location CreateStorageDomain
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  { controllerserialnumber=serial-number controllermodel=model-name |
controllerserialnumber=serial-number controllerdisplaymodel=display-model-name |
controllername=name-of-the-domain-control-storage-subsystem }
  name=storage-domain-name
  [ description=description-for-the-storage-domain ]
```

**Table 4-1** Options of the CreateStorageDomain Command

Option Name	Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the registered storage domain to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-2** Parameters of the CreateStorageDomain Command

Parameter Name	Optional or Required	Description
controllerserialnumber	Required Specify in combination with controllermodel or controllerdisplaymodel. You cannot specify this parameter together with controllername.	Specify the serial number for the domain control storage subsystem. The following values are obtained using the GetStorageArray command for Device Manager: <ul style="list-style-type: none"> <li>controllerserialnumber: value of serialNumber</li> <li>controllermodel: value of arrayType</li> </ul>
controllermodel	Required Specify in combination with controllerserialnumber. You cannot specify this parameter together with controllerdisplaymodel or controllername.	Specify the name of the domain controller model.
controllerdisplaymodel	Required Specify in combination with controllerserialnumber. You cannot specify this parameter together with controllermodel or controllername.	Specify the name used for displaying the domain controller model.
controllername	Required You cannot specify this parameter together with controllerserialnumber, controllermodel, or controllerdisplaymodel.	Specify the name of the domain control storage subsystem. This is the value for name, as obtained using the GetStorageArray command for Device Manager.
name	Required	Specify the name of the storage domain to be registered. The name should be unique within Tiered Storage Manager.
description	Optional	Specify a description for the storage domain. This is optional.

**Table 4-3** Items Output by the CreateStorageDomain Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the registered storage domain.	-d
	controllerSerialNumber	The serial number of the domain control storage subsystem.	-d
	controllerModel	The model name of the domain control storage subsystem.	-d
	controllerDisplayModel	The display model name of the domain control storage subsystem.	-d
	controllerName	The name of the domain control storage subsystem.	-d

**Table 4-3** Items Output by the CreateStorageDomain Command

Type of Information	Item Name	Description	Output by -d
	description	A description of the storage domain.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

**Example**

In this example, a StorageWorks XP12000/XP10000 domain control storage subsystem and externally connected storage subsystem group are registered as a storage domain. The name of the storage domain is set as MegaTechXP12000-Primary.

```
D:\>htsmcli CreateStorageDomain --detail controllerserialnumber=14011
controllermodel=USP name="MegaTechXP12000-Primary" description="XP12000-
Primary"
```

**Output**

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
  controllerSerialNumber=14011
  controllerModel=USP
  controllerDisplayModel=XP12000
  controllerName=XP12000@10.208.151.151
  description=XP12000-Primary
```

D:\>

## 4-1-2 DeleteStorageDomain

The DeleteStorageDomain command can be used to delete a registered storage domain.

Note that storage domains in the following statuses cannot be deleted:

- Storage domains that contain migration tasks that have not ended (End)
- Storage domains that are being refreshed

You can use the GetTasks command to check the statuses of migration tasks.

**Command syntax**

```
htsmcli server-location DeleteStorageDomain
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  name=storage-domain-name
```

**Table 4-4** Options of the DeleteStorageDomain Command

Option Name	Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the deleted storage domain to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-5** Parameters of the DeleteStorageDomain Command

Parameter Name	Optional or Required	Description
name	Required	Specify the name of the storage domain to be deleted.

Table 4-6 Items Output by the DeleteStorageDomain Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
Storage domain information	name	The name of the deleted storage domain.	-d	
	controllerSerialNumber	The serial number of the domain control storage subsystem.	-d	
	controllerModel	The model name of the domain control storage subsystem.	-d	
	controllerDisplayModel	The display model name of the domain control storage subsystem.	-d	#1
	controllerName	The name of the domain control storage subsystem.	-d	#1
	description	A description of the storage domain.	-d	

Legend: -d indicates output only when either the -d or the --detail option is specified.

#1 Unknown is output for items when refresh processing is being performed or has failed.

#### Example

In this example, the registration for the MegaTechXP12000-Primary storage domain is deleted.

```
D:\>htsmcli DeleteStorageDomain --detail name="MegaTechXP12000-Primary"
```

#### Output:

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
  controllerSerialNumber=14011
  controllerModel=USP
  controllerDisplayModel=XP12000
  controllerName=XP12000@10.208.151.151
  description=XP12000-Primary
```

```
D:\>
```

### 4-1-3 GetStorageDomains

The `GetStorageDomains` command can be used to obtain information about all storage domains, or about the storage domain specified by the `name` parameter.

Some information may not be obtainable for storage domains in the refresh status, or for which refresh has failed. Output items for which no information could be obtained are output as `Unknown`.

#### Command Syntax

```
htsmcli server-location GetStorageDomains
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  [ name=storage-domain-name [ , storage-domain-name ] ... ]
```

Table 4-7 Options of the GetStorageDomains Command

Option Name	Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output all information about the storage domain to the standard output, after command execution. If this is omitted, only summary information <sup>#</sup> is output.

<sup>#</sup> Summary information consists of the information for items for which the *Output by -d* column is blank in Table 4-9.

Table 4-8 Parameters of the GetStorageDomains Command

Parameter Name	Optional or Required	Description
name	Optional	Specify the name of the storage domain for which you want to obtain information. If this is omitted, this command will be applied to all storage domains. When specifying multiple storage domain names, separate each with a comma. Up to 255 storage domains can be specified, depending on the maximum number of characters allowed by the command line.

Table 4-9 Items Output by the GetStorageDomains Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
Storage domain information	name	The name of the storage domain.		
	totalCapacityInGB	The total capacity of the volumes in the storage domain (units: GB). The decimal portion of the value is truncated to give a whole value.		#1
	usedCapacityInGB	The total amount of capacity used for the volumes in the storage domain (units: GB). The decimal portion of the value is truncated to give a whole value.		#1
	usedCapacityPercentage	The ratio (percentage) of usedCapacityInGB to totalCapacityInGB. The decimal portion of the value is rounded up to give a whole value.		#1
	freeCapacityInGB	The total amount of capacity free for the volumes in the storage domain (units: GB). The decimal portion of the value is truncated to give a whole value.		#1
	freeCapacityPercentage	The ratio (percentage) of freeCapacityInGB to totalCapacityInGB. The decimal portion of the value is truncated to give a whole value.		#1
	numberOfSubsystems	The number of storage subsystems in the storage domain.	-d	#1
	numberOfStorageTiers	The number of storage tiers in the storage domain.		
	numberOfMigrationGroups	The number of migration groups in the storage domain.		
refreshStatus	The refresh status. NotInitialized Processing Success (ended in success) Failure (ended in failure)			

Table 4-9 Items Output by the GetStorageDomains Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
	lastRefreshedTime	The date and time when the previous refresh finished. If the previous refresh has not finished, this is blank.	-d	
	controllerSerialNumber	The serial number of the domain control storage subsystem.	-d	
	controllerModel	The model name of the domain control storage subsystem.	-d	
	controllerDisplayModel	The display model name of the domain control storage subsystem.	-d	#1
	controllerName	The name of the domain control storage subsystem.	-d	#1
	description	A description of the storage domain.	-d	
Error information	message	An error message.		

**Legend:**

-d indicates output only when either the -d or the --detail option is specified.

#1 Unknown is output for items when refresh processing is being performed or has failed.

**Example (1):** In this example, detailed information is obtained for storage domains MegaTechXP12000-Primary and MegaTechXP12000-Secondary.

```
D:\>htsmcli GetStorageDomains --detail name="MegaTechXP12000-Primary", "MegaTechXP12000-Secondary"
```

**Output (1):**

RESPONSE:

List of 2 StorageDomain elements:

```
An instance of StorageDomain(1 of 2)
  name=MegaTechXP12000-Primary
  totalCapacityInGB=8,552
  usedCapacityInGB=6,576
  usedCapacityPercentage=77
  freeCapacityInGB=1,975
  freeCapacityPercentage=23
  numberOfSubsystems=2
  numberOfStorageTiers=0
  numberOfMigrationGroups=0
  refreshStatus=Success
  lastRefreshedTime=
  controllerSerialNumber=14011
  controllerModel=USP
  controllerDisplayModel=XP12000
  controllerName=XP12000@10.208.151.151
  description=XP12000-Primary
An instance of StorageDomain(2 of 2)
  name=MegaTechXP12000-Secondary
```

```
totalCapacityInGB=Unknown
usedCapacityInGB=Unknown
usedCapacityPercentage=Unknown
freeCapacityInGB=Unknown
freeCapacityPercentage=Unknown
numberOfSubsystems=Unknown
numberOfStorageTiers=3
numberOfMigrationGroups=3
refreshStatus=Failure
lastRefreshedTime=
controllerSerialNumber=59432
controllerModel=USP
controllerDisplayModel=XP12000
controllerName=Unknown
description=XP12000-Secondary
List of 1 ErrorInfo elements:
    An instance of ErrorInfo(1 of 1)
        message=KATS50212-E An attempt to execute the refresh operation has
failed.
```

D:\>

**Example (2):** In this example, summary information is obtained for storage domains MegaTechXP12000-Primary and MegaTechXP12000-Secondary.

```
D:\>htsmcli GetStorageDomains name="MegaTechXP12000-Primary", "MegaTechXP12000-Secondary"
```

**Output (2):**

RESPONSE:

```
List of 2 StorageDomain elements:
    An instance of StorageDomain(1 of 2)
        name=MegaTechXP12000-Primary
        totalCapacityInGB=8,552
        usedCapacityInGB=1,616
        usedCapacityPercentage=45
        freeCapacityInGB=1,976
        freeCapacityPercentage=55
        numberOfStorageTiers=25
        numberOfMigrationGroups=13
        refreshStatus=Success
    An instance of StorageDomain(2 of 2)
        name=MegaTechXP12000-Secondary
        totalCapacityInGB=Unknown
        usedCapacityInGB=Unknown
```

```

usedCapacityPercentage=Unknown
freeCapacityInGB=Unknown
freeCapacityPercentage=Unknown
numberOfStorageTiers=3
numberOfMigrationGroups=3
refreshStatus=Failure
List of 1 ErrorInfo elements:
    An instance of ErrorInfo(1 of 1)
        message=KATS50212-E An attempt to execute the refresh operation has
failed.
D:\>

```

**Example (3):** In this example, to obtain summary information for all storage domains, the `GetStorageDomains` command is executed without specifying the storage domain name. However, no storage domain exists.

```

D:\>htsmcli GetStorageDomains

Output (3):

RESPONSE:

(Command completed; empty list returned)

D:\>

```

## 4-1-4 ModifyStorageDomain

The `ModifyStorageDomain` command can be used to change information (the name or description) for a storage domain.

Note that information cannot be changed for storage domains in the following statuses:

- Storage domains that contain migration tasks that have not ended (End)
- Storage domains that are being refreshed

You can use the `GetTasks` command to check the statuses of migration tasks.

### Command Syntax

```

htsmcli server-location ModifyStorageDomain
    { -u | --username } user-name
    { -p | --password } { password | @name-of-password-file }
    [ { -o | --output } name-of-the-standard-output-redirect-file ]
    [ { -d | --detail } ]
    name=storage-domain-name
    [ newname=storage-domain-name ]
    [ newdescription=description-for-the-storage-domain ]

```

**Table 4-10** Options of the `ModifyStorageDomain` Command

Option Name	Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the changed storage domain to the standard output, after command execution. If this is omitted, nothing is output to the standard output.



**Table 4-11 Parameters of the ModifyStorageDomain Command**

Parameter Name	Optional or Required	Description
name	Required	Specify the name of the storage domain for which you want to change information.
newname	Optional	Specify a new storage domain name. This name should be unique within Tiered Storage Manager. If this is omitted, the name of the storage domain will not change.
newdescription	Optional	Specify a new storage domain description. If this is omitted, the description of the storage domain will not change. If an empty character string is specified, the storage domain description that was previously set is deleted.

**Table 4-12 Items Output by the ModifyStorageDomain Command**

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
	controllerSerialNumber	The serial number of the domain control storage subsystem.	-d
	controllerModel	The model name of the domain control storage subsystem.	-d
	controllerDisplayModel	The display model name of the domain control storage subsystem.	-d
	controllerName	The name of the domain control storage subsystem.	-d
	description	A description of the storage domain.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the name of the MegaTechXP12000-Primary storage domain is changed to MyStorageDomain.

```
D:\>htsmcli ModifyStorageDomain --detail name="MegaTechXP12000-Primary"
newname="MyStorageDomain"
```

Output:

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MyStorageDomain
  controllerSerialNumber=14011
  controllerModel=USP
  controllerDisplayModel=XP12000
  controllerName=XP12000@10.208.151.151
  description=XP12000-Primary
```

```
D:\>
```

## 4-1-5 GetVolumes

The `GetVolumes` command can be used to obtain a list of volumes (LUs) in the domain control storage subsystem within the storage domain.

You can specify or omit the storage tier name and migration group name parameters to limit the items obtained as follows:

- Storage domain (when no storage tier name or migration group name is specified)
- Storage tier (when a storage tier name is specified)

- Migration group (when a migration group name is specified)

You can also further limit the items obtained by specifying both a volume filter condition and each item such as a storage domain, storage tier, or migration group.

Detailed information cannot be obtained for volumes in storage domains that are being refreshed.



**NOTE:** If information about a volume in the storage domain cannot be obtained because the volume in the storage subsystem has been deleted using Device Manager, `Unknown` is output as the value of the output items.

### Command Syntax

```
htsmcli server-location Getvolumes
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]

  storagedomainname=storage-domain-name

  [ { storagetiername=storage-tier-name | migrationgroupname=migration-
  group-name } ]

  [ filtercondition=filter-condition ]
```

**Table 4-13** Options of the GetVolumes Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output all information about the volume to the standard output, after command execution. If this is omitted, only summary information <sup>#</sup> is output.

<sup>#</sup> Summary information consists of the information for items for which the *Output by -d* column is blank in [Table 4-16](#).

**Table 4-14** Parameters of the GetVolumes Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
storagetiername	Optional	Specify the name of a storage tier. Note that this cannot be specified when migrationgroupname is specified.
migrationgroupname	Optional	Specify the name of a migration group. Note that this cannot be specified when storagetiername is specified.
filtercondition	Optional	Specify a filter condition. For details about filtercondition properties, see <a href="#">Table 4-15</a> . If this is omitted, no filter condition is used to narrow down the obtained items.

**Table 4-15** Properties Specifiable for the filtercondition Parameter

Property Name	Operators	Description
SubsystemDisplayModel	=, <>	The name used for displaying the model of the storage subsystem. This name is displayArrayType of Device Manager (not arrayType). Example: StorageWorks XP1024
SubsystemSerialNumber	=, <>, startsWith, contains	The serial number of the storage subsystem.
SubsystemName	=, <>	The name of the storage subsystem.

Table 4-15 Properties Specifiable for the filtercondition Parameter

Property Name	Operators	Description
SubsystemVendor	= , <>	The name of the storage subsystem vendor.
ControllerDeviceNumber	=	The controller LDEV number. <ul style="list-style-type: none"> <li>Only a representative LDEV can be specified for a LUSE volume.</li> </ul>
Host	= , <> , startsWith , contains	The name of the host.
ArrayGroup	= , <> , startsWith , contains	The name of the array group.
Capacity	< , <= , = , <> , > , >=	The volume capacity.
RAIDLevel	= , <>	The RAID level.
EmulationType	= , <>	The emulation type.
DiskType	= , <>	The disk type.
VolumeStatus	=	A character string indicating whether the volume is being used.
VolumeLockStatus	=	A character string indicating the lock status of the volume.
SLPRNumber	= , <>	The SLPR number.
CLPRNumber	= , <>	The CLPR number.
ControllerArrayGroup	= , <> , startsWith , contains	The name of the controller array group.

Table 4-16 Items Output by the GetVolumes Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
Storage domain information	name	The name of the storage domain.		
LU information	controllerDeviceNumber	The controller LDEV number. (Only a representative LDEV is displayed for a LUSE volume.)		
	subsystemSerialNumber	The serial number of the storage subsystem in which the data is actually contained.	-d	#1
	subsystemDisplayModel	The display name of the storage subsystem model in which the data is actually contained. If the displayed model name is Unknown, the product name is displayed.	-d	#1,
	subsystemName	The name of the storage subsystem in which the data is actually contained. If the subsystem name is unknown, the product name and serial number are displayed.	-d	#1,
	subsystemVendor	The vendor name of the storage subsystem in which actual data is stored.	-d	#1
	migrationGroupName	The name of the migration group to which the volume belongs.		
	emulationType	The emulation type.		#1

Table 4-16 Items Output by the GetVolumes Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
	CVS	The CVS volume attribute of the volume. This can be either <i>Yes</i> or <i>No</i> .	-d	#1
	capacityInKB	The resource capacity of the volume (units: KB).		#1
	raidLevel	The RAID level.		#1, #2
	diskType	The disk type.		#1, #2
	arrayGroupNumber	The array group number of the LU in which the data is actually contained in the storage subsystem.	-d	#1, #2
	controllerArrayGroupName	The LU array group name in the controller		#1
	arrayGroupName	The array group name of the LU in which the data is actually contained in the storage subsystem.		#1, #2
	businessCopyXP	The Business Copy XP volume type.	-d	#1
	continuousAccessXP	The Continuous Access XP volume type.	-d	#1
	continuousAccessXPJournal	The Continuous Access XP Journal volume type.	-d	#1
	snapshotXP	The volume type for Snapshot XP.	-d	#1
	volumeStatus	Indicates whether the volume is being used. This can be either <i>Used</i> (you cannot specify the volume as the migration destination) or <i>Free</i> (you can specify the volume as the migration destination).		#1
	volumeLockStatus	Indicates whether the volume is locked. This can be either <i>Locked</i> or <i>Unlocked</i> .		#1
	path	Indicates whether the path has been set. This can be either <i>Yes</i> or <i>No</i> .	-d	#1
	hostNames	The host name. If multiple host names exist, they are separated by commas (,).		#1
	canMigrate	Indicates whether migration is possible. Yes: Can migrate. No: Cannot migrate.		
Cause of impossibility of migration	Cause and reason for impossibility	Displays a list showing the cause and reason for each problem, such as the cause of the inability to use the volume as a migration source volume or migration target volume. The sequence in which the information is output might differ depending on the version of the Tiered Storage Manager server and CLI.	-d	

Table 4-16 Items Output by the GetVolumes Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
LDEV information for the domain control storage subsystem	controllerDeviceNumber	The controller LDEV number.	-d	
	controllerSerialNumber	The serial number of the domain control storage subsystem.	-d	
	controllerModel	The model name of the domain control storage subsystem.	-d	
	controllerDisplayModel	The display model name of the domain control storage subsystem.	-d	#1
	controllerName	The name of the domain control storage subsystem.	-d	#1
	emulationType	The emulation type.	-d	#1
	CVS	The CVS volume attribute of the volume. This can be either Yes or No.	-d	#1
	capacityInKB	The capacity of the LDEV (units: KB).	-d	#1
	SLPRNumber	The SLPR number.	-d	#1
	CLPRNumber	The CLPR number.	-d	#1
	raidLevel	The RAID level.	-d	#1, #2
	diskType	The disk type.	-d	#1, #2
	ControllerArrayGroupNumber	The array group number of the LDEV.	-d	#1
	ControllerArrayGroupName	The array group name of the LDEV.	-d	#1
	cacheMode	The cache mode. Enable: The cache mode is ON. Disable: The cache mode is OFF.	-d	#1
	IOSuppressionMode	The IO suppression mode. Enable: The IO suppression mode is ON. Disable: The IO suppression mode is OFF.	-d	#1
LU information for the actual data	subsystemDeviceNumber	The LDEV number of the volume in which the data is actually contained in the storage subsystem.	-d	#1
	subsystemSerialNumber	The serial number of the storage subsystem in which the data is actually contained.	-d	#1
	subsystemDisplayModel	The display name of the storage subsystem model in which the data is actually contained. If the displayed model name is Unknown, the product name is displayed.	-d	#1,
	subsystemName	The name of the storage subsystem in which the data is actually contained. If the subsystem name is unknown, the product name and serial number are displayed.	-d	#1,

**Table 4-16** Items Output by the GetVolumes Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
	subsystemVendor	The vendor name of the storage subsystem in which actual data is stored.	-d	#1
	arrayGroupNumber	The array group number of the LU in which the data is actually contained in the storage subsystem.	-d	#1, #2
	arrayGroupName	The array group name of the LU in which the data is actually contained in the storage subsystem.	-d	#1, #2

**Legend:**

-d indicates output only when either the -d or the --detail option is specified.

#1 Unknown is output when volume information cannot be obtained for the domain control storage subsystem.

#2 Unknown is output when information cannot be obtained for externally connected storage.

Table 4-17 shows the GUI-displayed character strings representing the reasons that a volume cannot be a migration target, and a description of those character strings.

**Table 4-17** GUI-Displayed Character Strings Representing Reasons a Volume Cannot Be a Migration Target, and a Description of those Character Strings

Displayed character string	Description	Migration source volume	Migration target volume
Continuous Access XP (target)	A volume that makes up a Continuous Access XP pair and whose status is PSUS or PSUE	-	Y
Continuous Access XP Status	A volume that makes up a Continuous Access XP pair and whose status is neither PSUS nor PSUE	Y	Y
Business Copy XP (target)	A volume that makes up a Business Copy XP pair	-	Y
Business Copy XP Configuration [Root]	A volume that makes up a Business Copy XP pair (This is a P-VOL that makes up a pair with three S-VOLs (three P-VOL/S-VOL pairs).)	Y	Y
Business Copy XP Configuration [Node]	A volume that makes up a Business Copy XP pair (This is an SP-VOL that makes up a pair with two S-VOLs (two SP-VOL/S-VOL pairs).)		
Business Copy XP Configuration [Leaf]	A volume that makes up a Business Copy XP pair (This is an S-VOL that makes up a pair with an SP-VOL.)		
Migration Group (target)	A volume that is included in an migration group	-	Y
Already Reserved <sup>#1</sup>	A volume reserved as a migration target	Y	Y
Continuous Access XP Journal	A volume that makes up a Continuous Access XP Journal pair	Y	Y
Snapshot XP	A volume that makes up a Snapshot XP pair	Y	Y
Cache LUN XP	A volume for which Cache LUN XP is set	Y	Y
Command Device	A volume used as a Command Device	Y	Y
LUSE (target)	A volume that makes up LUSE	-	Y
Path (target)	A volume for which a path is set	-	Y
Locked (target)	Volume that is locked (not Read/Write) by LUN Security XP Extension <sup>#2</sup>	-	Y

**Table 4-17** GUI-Displayed Character Strings Representing Reasons a Volume Cannot Be a Migration Target, and a Description of those Character Strings

Displayed character string	Description	Migration source volume	Migration target volume
NAS (target)	NAS system volume	-	Y
Externally Locked	A volume that is using an external subsystem function and is locked (not Read/Write) by LUN Security XP Extension <sup>#2</sup>	Y	Y

**Legend:**

Y: Corresponds to the reason that cannot be migrated (cannot be used as a volume for migration)

-: Does not correspond to the reason that cannot be migrated (can be used as a volume for migration)

#1 Includes volumes migrated by USP Performance Manager.

#2 LUN Security XP Extension is a product name. For details on this product, see the manual *HP StorageWorks LUN Security XP Extension User Guide for the XP12000/XP10000/XP1024/XP128*.

Example (1): In this example, detailed information is obtained for the volumes belonging to the MyStorageTier storage tier of the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli GetVolumes --detail storagedomainname="MegaTechXP12000-Primary"
storagetiername="MyStorageTier"
```

**Output (1):**

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
  List of 2 LogicalUnit elements:
    An instance of LogicalUnit(1 of 2)
      controllerDeviceNumber=1:E0
      subsystemSerialNumber=14011
      subsystemDisplayModel=USP
      subsystemName=USP#14011
      subsystemVendor=HP
      migrationGroupName=
      emulationType=OPEN-V
      CVS=Yes
      capacityInKB=5,120,640
      raidLevel=Unknown
      diskType=Unknown
      arrayGroupNumber=Unknown
      controllerArrayGroupName= E9960-1
      arrayGroupName=Unknown
      businessCopyXP=Simplex
      continuousAccessXP=Simplex
      continuousAccessXPJournal=Simplex
      snapshotXP=Simplex
      volumeStatus=Free
```

```
volumeLockStatus=Unlocked
path=No
hostNames=
canMigrate=No
List of 2 reason(s) for volume migration exclusion:
  reason(1 of 2)=LUSE (target)
  reason(2 of 2)=Universal Replicator
List of 1 Ldev elements:
  An instance of Ldev(1 of 1)
    controllerDeviceNumber=1:E0
    controllerSerialNumber=14011
    controllerModel=USP
    controllerDisplayModel=XP12000
    controllerName=XP12000@10.208.151.151
    emulationType=OPEN-V
    CVS=Yes
    capacityInKB=5,120,640
    SLPRNumber=0
    CLPRNumber=1
    raidLevel=Unknown
    diskType=Unknown
    controllerArrayGroupNumber=0
    controllerArrayGroupName=E1-1
    subsystemDeviceNumber=1:E0
    subsystemSerialNumber=14011
    subsystemDisplayModel=128
    subsystemName=128#14011
    subsystemVendor=HP
    arrayGroupNumber=Unknown
    arrayGroupName=Unknown
  An instance of LogicalUnit(2 of 2)
    controllerDeviceNumber=3:FF
    subsystemSerialNumber=14011
    subsystemDisplayModel=USP
    subsystemName=USP#14011
    subsystemVendor=HP
    migrationGroupName=
    emulationType=OPEN-V
    CVS=Yes
    capacityInKB=5,120,640
    raidLevel=Unknown
    diskType=Unknown
```



```

arrayGroupNumber=Unknown
controllerArrayGroupName= E9980-1
arrayGroupName=Unknown
businessCopyXP=Simplex
continuousAccessXP=Simplex
continuousAccessXPJournal=Simplex
snapshotXP=Simplex
volumeStatus=Free
volumeLockStatus=Unlocked
path=No
hostNames=
canMigrate=Yes
List of 0 reason(s) for volume migration exclusion:
List of 1 Ldev elements:
  An instance of Ldev(1 of 1)
    controllerDeviceNumber=3:FF
    controllerSerialNumber=14011
    controllerModel=USP
    controllerDisplayModel=XP12000
    controllerName=XP12000@10.208.151.151
    emulationType=OPEN-V
    CVS=Yes
    capacityInKB=5,120,640
    SLPRNumber=0
    CLPRNumber=0
    raidLevel=Unknown
    diskType=Unknown
    controllerArrayGroupNumber=1
    controllerArrayGroupName=E1-2
    subsystemDeviceNumber=3:FF
    subsystemSerialNumber=14011
    subsystemDisplayModel=128
    subsystemName=128#14011
    subsystemVendor=HP
    arrayGroupNumber=Unknown
    arrayGroupName=Unknown

```

D:\>

**Example (2):** In this example, summary information is obtained for the volumes belonging to the MyStorageTier storage tier of the MegaTechXP12000-Primary storage domain.

```

D:\>htsmcli GetVolumes storagedomainname="MegaTechXP12000-Primary"
storagetiername="MyStorageTier"

```

Output (2):

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 2 LogicalUnit elements:

An instance of LogicalUnit(1 of 2)

controllerDeviceNumber=1:E0

subsystemVendor=HITACHI

migrationGroupName=

emulationType=OPEN-V

capacityInKB=5,120,640

raidLevel=Unknown

diskType=Unknown

controllerArrayGroupName=E9960-1

arrayGroupName=Unknown

volumeStatus=Free

volumeLockStatus=Unlocked

hostNames=

An instance of LogicalUnit(2 of 2)

controllerDeviceNumber=3:FF

migrationGroupName=

emulationType=OPEN-V

capacityInKB=5,120,640

raidLevel=Unknown

diskType=Unknown

controllerArrayGroupName= E9980-1

arrayGroupName=Unknown

volumeStatus=Free

volumeLockStatus=Unlocked

hostNames=

canMigrate=Yes

D:\>

**Example (3):** In this example, a volume search is performed for the storage tier MyStorageTier in the storage domain MegaTechXP12000-Primary. However, no volume that matches the specified conditions exists.

```
D:\>htsmcli GetVolumes storagedomainname="MegaTechXP12000-Primary"  
storagetiername="MyStorageTier" filtercondition="EmulationType='OPEN-9'"
```

Output (3):

RESPONSE:

(Command completed; empty list returned)

D:\>

## 4-1-6 Refresh

The `Refresh` command can be used to perform refresh processing (processing to re-obtain configuration information from Device Manager and register it in the Tiered Storage Manager repository) for all storage domains, or for the storage domain specified by the `storagedomainname` parameter.

Note that refresh processing is performed asynchronously to execution of this command. The `GetStorageDomains` command can be used to check the refresh status.

### Command Syntax

```
htsmcli server-location Refresh
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ storagedomainname=storage-domain-name ]
```

Table 4-18 Parameters of the Refresh Command

Parameter Name	Optional or Required	Description
<code>storagedomainname</code>	Optional	Specify the name of the storage domain. If this is omitted, all storage domains are refreshed.

Example: In this example, the `Refresh` command is issued for the `MegaTechXP12000-Primary` storage domain, and configuration information is re-obtained from Device Manager and registered in the Tiered Storage Manager repository.

```
D:\>htsmcli Refresh storagedomainname="MegaTechXP12000-Primary"
```

Output:

No information is output with this command.

## 4-2 Storage Tier Management Commands

This section includes a detailed description for each storage tier management command.



**NOTE:** The examples shown in this section assume that the user name, password, and location of the Tiered Storage Manager server have been set in the properties file.

### 4-2-1 CreateStorageTier

The `CreateStorageTier` command can be used to create a storage tier within a storage domain.

Storage tiers cannot be created within a storage domain that is being refreshed.

### Command Syntax

```
htsmcli server-location CreateStorageTier
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  name=storage-tier-name
  filtercondition=filter-condition
  [ description=description-for-the-storage-tier ]
```

**Table 4-19** Options of the CreateStorageTier Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the created storage tier to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-20** Parameters of the CreateStorageTier Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the storage tier to be created. This name should be unique within the storage domain.
filtercondition	Required	Specify a filter condition. For details about the property specified in the filtercondition parameter, see Table 4-21.
description	Optional	Specify a description of the storage tier.

**Table 4-21** Properties Specifiable for the filtercondition Parameter

Property Name	Operators	Description
SubsystemDisplayModel	= , <>	The name used for displaying the model of the storage subsystem. This name is displayArrayType of Device Manager (not arrayType). Example: StorageWorks XP1024
SubsystemSerialNumber	= , <> , startsWith , contains	The serial number of the storage subsystem.
SubsystemName	= , <>	The name of the storage subsystem.
SubsystemVendor	= , <>	The name of the storage subsystem vendor.
ArrayGroup	= , <> , startsWith , contains	The name of the array group.
Capacity	< , <= , = , <> , > , >=	The volume capacity.
RAIDLevel	= , <>	The RAID level.
EmulationType	= , <>	The emulation type.
DiskType	= , <>	The disk type.
SLPRNumber	= , <>	The SLPR number.
CLPRNumber	= , <>	The CLPR number.
ControllerArrayGroup	= , <> , startsWith , contains	The name of the controller array group

**Table 4-22** Items Output by the CreateStorageTier Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
Storage tier information	name	The name of the created storage tier.	-d
	filterCondition	Filter conditions for the storage tier.	-d
	description	A description of the storage tier.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, a storage tier consisting of volumes of RAID level RAID5 (5D+1P) and the FC disk type is created in the MegaTechXP12000-Primary storage domain. The name of the storage tier is set as MegaTech-HighCost.

```
D:\>htsmcli CreateStorageTier --detail storagedomainname="MegaTechXP12000-Primary" name="MegaTech-HighCost" filterCondition="RAIDLevel='RAID5(3D+1P)' AND ArrayGroup='1-10-1'"
```

**Output:**

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
  List of 1 StorageTier elements:
    An instance of StorageTier(1 of 1)
      name=MegaTech-HighCost
      filterCondition=RAIDLevel = 'RAID5(3D+1P)' AND ArrayGroup = '1-10-1'
      description=
```

D:\>

## 4-2-2 DeleteStorageTier

The `DeleteStorageTier` command can be used to delete a storage tier. Storage tiers are deleted regardless of whether they contain any volumes.

Note that storage tiers in the following statuses cannot be deleted:

- Storage tiers that are specified for migration tasks that have not ended (End)
- Storage tiers within the storage domains that are being refreshed

You can use the `GetTasks` command to check the statuses of migration tasks.

**Command Syntax**

```
htsmcli server-location DeleteStorageTier
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  name=storage-tier-name
```

**Table 4-23** Options of the `DeleteStorageTier` Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the deleted storage tier to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-24** Parameters of the `DeleteStorageTier` Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the storage tier to be deleted.

**Table 4-25** Items Output by the `DeleteStorageTier` Command

Type of Information	Item Name	Description	Output by
Storage domain information	name	The name of the storage domain.	-d

**Table 4-25** Items Output by the DeleteStorageTier Command

Type of Information	Item Name	Description	Output by -d
Storage tier information	name	The name of the deleted storage tier.	-d
	filterCondition	Filter conditions for the storage tier.	-d
	description	A description of the storage tier.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the MegaTech-HighCost storage tier is deleted from the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli DeleteStorageTier --detail storagedomainname="MegaTechXP12000-Primary" name="MegaTech-HighCost"
```

Output:

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 1 StorageTier elements:

An instance of StorageTier(1 of 1)

name=MegaTech-HighCost

filterCondition=RAIDLevel='RAID5(3D+1P)' AND Capacity < '1GB'

description=

D:\>

### 4-2-3 GetStorageTiers

The GetStorageTiers command can be used to obtain information about all storage tiers in the storage domain, or about the storage tier specified by the name parameter.

Information cannot be obtained for storage tiers in storage domains that are being refreshed.

Command Syntax

```
htsmcli server-location GetStorageTiers
{ -u | --username } user-name
{ -p | --password } { password | @name-of-password-file }
[ { -o | --output } name-of-the-standard-output-redirect-file ]
[ { -d | --detail } ]
storagedomainname=storage-domain-name
[ name=storage-tier-name, [ ,storage-tier-name ] ...]
```

**Table 4-26** Options of the GetStorageTiers Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output all information about the storage tier to the standard output, after command execution. If this is omitted, only summary information <sup>#</sup> is output.

<sup>#</sup> Summary information consists of the information for items for which the *Output by -d* column is blank in [Table 4-28](#).

Table 4-27 Parameters of the GetStorageTiers Command

Parameter name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Optional	Specify the name of the storage tier for which you want to obtain information. If this is omitted, this command will be applied to all storage tiers in the storage domain. When specifying multiple storage tier names, separate each with a comma. Up to 255 storage tier names can be specified, depending on the maximum number of characters allowed by the command line.

Table 4-28 Items Output by the GetStorageTiers Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	
Storage tier information	name	The name of the storage tier.	
	filterCondition	The filter condition for the storage tier.	-d
	numberOfVolumes	The number of volumes in the storage tier.	-d
	totalCapacityInGB	The total capacity of the volumes in the storage tier (units: GB). Values less than 1 GB are rounded down to display an integer.	
	totalCapacityPercentageToStorageDomain	Ratio (percentage) of totalCapacityInGB to the total amount of capacity in the volumes within the storage domain. Values less than 1% are rounded up to display an integer.	
	usedCapacityInGB	The total amount of capacity of volumes being used in the storage tier (units: GB). Values less than 1 GB are rounded down to display an integer.	
	usedCapacityPercentage	The ratio (percentage) of usedCapacityInGB to totalCapacityInGB. Values less than 1% are rounded up to display an integer.	
	freeCapacityInGB	The total amount of capacity of the volumes that are free in the storage tier (units: GB). Values less than 1 GB are rounded down to display an integer.	
	freeCapacityPercentage	The ratio (percentage) of freeCapacityInGB to totalCapacityInGB. Values less than 1% are rounded down to display an integer.	
	description	A description of the storage tier.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example (1): In this example, detailed information is obtained for both the MegaTech-HighCost and MyStorageTier storage tiers, in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli GetStorageTiers --detail storagedomainname="MegaTechXP12000-Primary" name="MegaTech-HighCost"," MyStorageTier"
```

Output (1):

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 2 StorageTier elements:

```
An instance of StorageTier(1 of 2)
  name=MegaTech-HighCost
  filterCondition=RAIDLevel = 'RAID5(3D+1P)' AND Capacity < '1GB'
  numberOfVolumes=91
  totalCapacityInGB=387
  totalCapacityPercentageToStorageDomain=5
  usedCapacityInGB=29
  usedCapacityPercentage=8
  freeCapacityInGB=358
  freeCapacityPercentage=92
  description=
```

```
An instance of StorageTier(2 of 2)
  name=MyStorageTier
  filterCondition=RAIDLevel <> 'RAID5(3D+1P)'
  numberOfVolumes=2
  totalCapacityInGB=9
  totalCapacityPercentageToStorageDomain=1
  usedCapacityInGB=0
  usedCapacityPercentage=0
  freeCapacityInGB=9
  freeCapacityPercentage=100
  description=
```

D:\>

**Example (2):** In this example, summary information is obtained for both the MegaTech-HighCost and MyStorageTier storage tiers, in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli GetStorageTiers storagedomainname="MegaTechXP12000-Primary"
name="MegaTech-HighCost", " MyStorageTier"
```

**Output (2):**

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
List of 2 StorageTier elements:
  An instance of StorageTier(1 of 2)
    name=MegaTech-HighCost
    totalCapacityInGB=387
    totalCapacityPercentageToStorageDomain=5
    usedCapacityInGB=29
    usedCapacityPercentage=8
    freeCapacityInGB=358
    freeCapacityPercentage=92
  An instance of StorageTier(2 of 2)
    name=MyStorageTier
```



```

totalCapacityInGB=9
totalCapacityPercentageToStorageDomain=1
usedCapacityInGB=0
usedCapacityPercentage=0
freeCapacityInGB=9
freeCapacityPercentage=100

```

D:\>

Example (3): In this example, to obtain summary information for all storage tiers in the storage domain `MegaTechXP12000-Secondary`, the `GetStorageTiers` command is executed without specifying the storage tier name. However, no storage tier exists.

```
D:\>htsmcli GetStorageTiers storagedomainname="MegaTechXP12000-Secondary"
```

Output (3):

RESPONSE:

(Command completed; empty list returned)

D:\>

## 4-2-4 ModifyStorageTier

The `ModifyStorageTier` command can be used to change information (the name, filter condition, or description) for a storage tier. Note that information about storage tiers in the following statuses cannot be changed:

- Storage tiers specified for migration tasks that have not ended (End)
- Storage tiers within the storage domains that are being refreshed

You can use the `GetTasks` command to check the statuses of migration tasks.

Command Syntax

```

htsmcli server-location ModifyStorageTier
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  name=storage-tier-name
  [ newname=storage-tier-name ]
  [ newfiltercondition=filter-condition ]
  [ description=description-for-the-storage-tier ]

```

Table 4-29 Options of the ModifyStorageTier Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the changed storage tier to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

Table 4-30 Parameters of the ModifyStorageTier Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the storage tier.

**Table 4-30** Parameters of the ModifyStorageTier Command

Parameter Name	Optional or Required	Description
newname	Optional	Specify a new storage tier name. This name should be unique within the storage domain. If this is omitted, the name of the storage tier will not change.
newfiltercondition	Optional	Specify a filter condition. For details about the property specified in the newfiltercondition parameter, see <a href="#">Table 4-31</a> . If this is omitted, the filter condition will not be updated.
newdescription	Optional	Specify a new storage tier description. If this is omitted, the description of the storage tier will not change. If an empty character string is specified, the storage tier description that was previously set is deleted.

**Table 4-31** Properties Specifiable for the newfiltercondition Parameter

Property Name	Operators	Description
SubsystemSerialNumber	=, <>, startsWith, contains	The serial number of the storage subsystem.
SubsystemName	=, <>	The name of the storage subsystem.
ArrayGroup	=, <>, startsWith, contains	The name of the array group.
Capacity	<, <=, =, <>, >, >=	The volume capacity.
RAIDLevel	=, <>	The RAID level.
EmulationType	=, <>	The emulation type.
DiskType	=, <>	The disk type.
SLPRNumber	=, <>	The SLPR number.
CLPRNumber	=, <>	The CLPR number.
ControllerArrayGroup	=, <>, startsWith, contains	The name of the controller array group

**Table 4-32** Items Output by the ModifyStorageTier Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
Storage tier information	name	The name of the storage tier.	-d
	filterCondition	The filter conditions of the storage tier.	-d
	description	A description of the storage tier.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the name of the MyStorageTier storage tier in the MegaTechXP12000-Primary storage domain is changed to OurStorageTier.

```
D:\>htsmcli ModifyStorageTier --detail storagedomainname="MegaTechXP12000-Primary" name="MyStorageTier", newname="OurStorageTier"
```

Output:

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 1 StorageTier elements:

An instance of StorageTier(1 of 1)

name=OurStorageTier

filterCondition=RAIDLevel <> 'RAID5 (3D+1P)'

```
description=
```

```
D:\>
```

## 4-2-5 GetVolumes (with storagetiername Specified)

The `GetVolumes` command with `storagetiername` parameter specified can be used to obtain a list of volumes (LUs) in the storage tier of the storage domain to specify.

You can also limit the volumes obtained, by specifying a volume filter condition.

For details about how to specify options, parameters, and filter conditions, or about the items output by this command, see the `GetVolumes` command in the Storage Domain Management section [4-1-5](#).

### Command Syntax

```
htsmcli server-location Getvolumes
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  [ { storagetiername=storage-tier-name | migrationgroupname=migration-
  group-name } ]
  [ filtercondition=filter-condition ]
```

## 4-3 Migration Group Management Commands

This section includes a detailed description for each migration group management command.



**NOTE:** The examples shown in this section assume that the user name, password, and location of the Tiered Storage Manager server have been set in the properties file.

### 4-3-1 CreateMigrationGroup

The `CreateMigrationGroup` command can be used to create a migration group within a storage domain.

For the migration group to be created, you can use the `canmigrate` parameter to specify an attribute indicating whether the migration group is subject to migration operations. If you specify that migration is disabled, you can prevent the volume belonging to the migration group from being migrated by mistake.

Migration groups cannot be created within a storage domain that is being refreshed.

### Command Syntax

```
htsmcli server-location CreateMigrationGroup
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  name=migration-group-name
  [ canmigrate={ Yes | No } ]
  [ description=description-for-the-migration-group ]
```

**Table 4-33** Options of the CreateMigrationGroup Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the created migration group to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-34** Parameters of the CreateMigrationGroup Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the migration group to be created. This name should be unique within the storage domain.
canmigrate	Optional	Specify whether migration is possible. <ul style="list-style-type: none"> <li>• Yes: Migration is possible (default).</li> <li>• No: Migration is not possible.</li> </ul>
description	Optional	Specify a description of the migration group.

**Table 4-35** Items Output by the CreateMigrationGroup Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
Migration group information	name	The name of the created migration group.	-d
	canMigrate	Indicates whether migration is possible.	-d
	description	A description of the migration group.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

**Example:** In this example, a migration group named MG01 is created in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli CreateMigrationGroup --detail storagedomainname="MegaTechXP12000-Primary" name="MG01" description="MigrationGroup01"
```

**Output:**

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 1 MigrationGroup elements:

An instance of MigrationGroup(1 of 1)

name=MG01

canMigrate=Yes

description=MigrationGroup01

D:\>

## 4-3-2 DeleteMigrationGroup

The DeleteMigrationGroup command can be used to delete a migration group. Migration groups are deleted regardless of whether they contain any volumes.

Note that migration groups in the following statuses cannot be deleted:

- Migration groups specified for migration tasks that have not ended (End)
- Migration groups within the storage domains that are being refreshed

You can use the GetTasks command to check the statuses of migration tasks.

## Command Syntax

```
htsmcli server-location DeleteMigrationGroup
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]

storagedomainname=storage-domain-name
name=migration-group-name
```

Table 4-36 Options of the DeleteMigrationGroup Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the deleted migration group to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

Table 4-37 Parameters of the DeleteMigrationGroup Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the storage domain name.
name	Required	Specify the name of the migration group to be deleted.

Table 4-38 Items Output by the DeleteMigrationGroup Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
Migration group information	name	The name of the deleted migration group.	-d
	canMigrate	Indicates whether migration is possible.	-d
	description	A description of the migration group.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the MG01 migration group is deleted from the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli DeleteMigrationGroup --detail storagedomainname="MegaTechXP12000-Primary" name="MG01"
```

Output:

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 1 MigrationGroup elements:

An instance of MigrationGroup(1 of 1)

name=MG01

canMigrate=Yes

description=MigrationGroup01

```
D:\>
```

### 4-3-3 GetMigrationGroups

The GetMigrationGroups command can be used to obtain information about all migration groups in the storage domain, or about the migration group specified by the name parameter.

Information cannot be obtained for migration groups in storage domains that are being refreshed.

#### Command Syntax

```
htsmcli server-location GetMigrationGroups
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  [ name=migration-group-name [ , migration-group-name ] ...]
```

**Table 4-39** Options of the GetMigrationGroups Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output all information about the migration group to the standard output, after command execution. If this is omitted, only summary information <sup>#</sup> is output.

<sup>#</sup> Summary information consists of the information for items for which the *Output by -d* column is blank in [Table 4-41](#).

**Table 4-40** Parameters of the GetMigrationGroups Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Optional	Specify the name of the migration group for which you want to obtain information. If this is omitted, this command will be applied to all migration groups in the storage domain. When specifying multiple migration groups, separate each with a comma. Up to 255 migration groups can be specified, depending on the maximum number of characters allowed by the command line.

**Table 4-41** Items Output by the GetMigrationGroups Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	
Migration group information	name	The name of the migration group.	
	targetStorageTierName	The name of the storage tier for which the migration destination was last specified. If no migration task has ever been created, this is blank.	
	canMigrate	Indicates whether migration is possible.	
	totalCapacityInGB	The total capacity of the volumes in the migration group (units: GB). Values less than 1 GB are rounded down to display an integer.	
	lastModifyUserGroup	The user group name of the user who created or last modified the migration group.	-d
	creationTime	The date and time when the migration group was created.	-d
	lastModifyTime	The date and time when the migration group information was last changed.	-d

Table 4-41 Items Output by the GetMigrationGroups Command

Type of Information	Item Name	Description	Output by -d
	lastMigrationTime	The date and time when migration was performed for the storage tier specified in targetStorageTierName. If the previous migration has not finished, this is blank. If a new migration task is created, this is blank.	
	migrationStatus	The status of the migration task. If migration has not previously been performed, this is blank. This can be any of the following: Standby Active.WaitingMigration (waiting for migration to be performed) Active.Migrating Active.WaitingDataErasure (waiting for erasure to be performed) Active.DataErasing Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Failure (ended with a failure other than those mentioned above) Cancel (ended by cancellation)	
	numberOfVolumes	The number of volumes in the migration group.	
	description	A description of the migration group.	-d

Legend:

-d indicates output only when either the -d or the --detail option is specified.

Example (1): In this example, detailed information is obtained for all migration groups in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli GetMigrationGroups --detail storagedomainname="MegaTechXP12000-Primary"
```

Output (1):

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
List of 2 MigrationGroup elements
  An instance of MigrationGroup(1 of 2)
    name=MG01
    targetStorageTierName=
    canMigrate=Yes
    totalCapacityInGB=0
    lastModifyUserGroup=Admin
    creationTime=2005/03/31 11:57:23
    lastModifyTime=2005/03/31 12:05:59
    lastMigrationTime=
```

```
migrationStatus=  
numberOfVolumes=0  
description=MigrationGroup01  
An instance of MigrationGroup(2 of 2)  
name=MyGroup  
targetStorageTierName=  
canMigrate=Yes  
totalCapacityInGB=0  
lastModifyUserGroup=Admin  
creationTime=2005/03/31 12:06:41  
lastModifyTime=2005/03/31 12:06:41  
lastMigrationTime=  
migrationStatus=  
numberOfVolumes=0  
description=MyMigrationGroup
```

D:\>

**Example (2):** In this example, summary information is obtained for all migration groups in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli GetMigrationGroups storagedomainname="MegaTechXP12000-Primary"
```

**Output (2):**

RESPONSE:

```
An instance of StorageDomain(1 of 1)  
name=MegaTechXP12000-Primary  
List of 2 MigrationGroup elements  
An instance of MigrationGroup(1 of 2)  
name=MG01  
targetStorageTierName=  
canMigrate=Yes  
totalCapacityInGB=0  
lastMigrationTime=  
migrationStatus=  
numberOfVolumes=0  
An instance of MigrationGroup(2 of 2)  
name=MyGroup  
targetStorageTierName=  
canMigrate=Yes  
totalCapacityInGB=0  
lastMigrationTime=  
migrationStatus=  
numberOfVolumes=0
```

D:\>



Example (3): In this example, to obtain summary information for all migration groups in the storage domain `MegaTechXP12000-Secondary`, the `GetMigrationGroups` command is executed without specifying the migration group name. However, no migration group exists.

```
D:\>htsmcli GetMigrationGroups storagedomainname="MegaTechXP12000-Secondary"
```

Output (3):

```
RESPONSE:
(Command completed; empty list returned)
D:\>
```

## 4-3-4 ModifyMigrationGroup

The `ModifyMigrationGroup` command can be used to change information (the name, attribute indicating whether the migration group is subject to migration operations, or description) for a migration group.

Note that information cannot be changed for migration groups in the following statuses:

- Migration groups specified for migration tasks that have not ended (End)
- Migration groups within the storage domains that are being refreshed

You can use the `GetTasks` command to check the statuses of migration tasks.

Command Syntax

```
htsmcli server-location ModifyMigrationGroup
    { -u | --username } user-name
    { -p | --password } { password | @name-of-password-file }
    [ { -o | --output } name-of-the-standard-output-redirect-file ]
    [ { -d | --detail } ]
    storagedomainname=storage-domain-name
    name=migration-group-name
    [ newname=migration-group-name]
    [ newcanmigrate={ Yes | No } ]
    [ description=description-for-the-migration-group ]
```

Table 4-42 Options of the `ModifyMigrationGroup` Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the changed migration group to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

Table 4-43 Parameters of the `ModifyMigrationGroup` Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the migration group.
newname	Optional	Specify a new migration group name. This name should be unique within the storage domain. If this is omitted, the name of the migration group will not change.
newcanmigrate	Optional	Specify whether migration is possible. <ul style="list-style-type: none"> <li>• Yes: Migration is possible.</li> <li>• No: Migration is not possible.</li> </ul> If this is omitted, the migration will remain the same.
newdescription	Optional	Specify a new migration group description. If this is omitted, the description of the migration group will not change. If an empty character string is specified, the migration group description that was previously set is deleted.

Table 4-44 Items Output by the ModifyMigrationGroup Command

Type of Information	Item Name	Description	Output by -d
Storage domain information	name	The name of the storage domain.	-d
Migration group information	name	The name of the migration group.	-d
	canMigrate	Indicates whether migration is possible.	-d
	description	A description of the migration group.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the name and description are changed for the MG01 migration group in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli ModifyMigrationGroup --detail storagedomainname="MegaTechXP12000-Primary" name="MG01" newname="MG011" newdescription="MigrationGroup011"
```

Output:

RESPONSE:

An instance of StorageDomain(1 of 1)

name=MegaTechXP12000-Primary

List of 1 MigrationGroup elements:

An instance of MigrationGroup(1 of 1)

name=MG011

canMigrate=Yes

description=MigrationGroup011

D:\>

### 4-3-5 AddVolumeToMigrationGroup

The AddVolumeToMigrationGroup command can be used to add a volume to the specified migration group. Use the LDEV number in the domain control storage subsystem (controller LDEV number) to specify a volume. Only volumes that do not belong to any migration groups can be added to a migration group. Note that volumes cannot be added to migration groups in the following statuses:

- Migration groups specified for migration tasks that have not ended (End)
- Migration groups within the storage domains that are being refreshed

You can use the GetTasks command to check the statuses of migration tasks.



**NOTE:** If information about a volume in the storage domain cannot be obtained because the volume in the storage subsystem has been deleted using Device Manager, Unknown is output as the value of the output items.

#### Command Syntax

```
htsmcli server-location AddVolumeToMigrationGroup
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  name=migration-group-name
  cotrollerdevicenumberr=controller-LDEV-number
```

Table 4-45 Options of the AddVolumeToMigrationGroup Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the volume added to the migration group, to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

Table 4-46 Parameters of the AddVolumeToMigrationGroup Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the migration group.
controllerdevicenumber	Required	Specify the controller LDEV number.

Table 4-47 Items Output by the AddVolumeToMigrationGroup Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
Storage domain information	name	The name of the storage domain.	-d	
Migration group information	name	The name of the migration group.	-d	
	canMigrate	Indicates whether migration is possible.	-d	
	description	A description of the migration group.	-d	
Information for added volumes (LUs)	controllerDeviceNumber	The controller LDEV number.	-d	
	emulationType	The emulation type.	-d	#1
	CVS	The CVS volume attribute of the volume. This can be either Yes or No.	-d	#1
	capacityInKB	The resource capacity of the volume (units: KB).	-d	#1
	raidLevel	The RAID level.	-d	#1, #2
	diskType	The disk type.	-d	#1, #2
	ControllerArrayGroupName	The array group name of the LU in the controller		#1
	arrayGroupName	The array group name of the LU in which the data is actually contained in the storage subsystem.	-d	#1, #2
	volumeStatus	Indicates whether the volume is being used. This can be either Used (you cannot specify the volume as the migration destination) or Free (you can specify the volume as the migration destination).	-d	#1
	volumeLockStatus	Indicates whether the volume is locked. This can be either Locked or Unlocked.	-d	#1
hostNames	The host name. If multiple host names exist, they are separated by commas (,).	-d	#1	

Legend:

-d indicates output only when either the -d or the --detail option is specified.

#1 Unknown is output when volume information cannot be obtained for the domain control storage subsystem.

#2 Unknown is output when information cannot be obtained for externally connected storage.

Example: In this example, a volume is added to the MG011 migration group in the MegaTechXP12000-Primary storage domain. The controller LDEV number for the added volume in the domain control storage subsystem is 3:A6.

```
D:\>htsmcli AddVolumeToMigrationGroup --detail
storagedomainname="MegaTechXP12000-Primary" name="MG011"
controllerdevicenumber=3:A6
```

Output:

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
List of 1 MigrationGroup elements
  An instance of MigrationGroup(1 of 1)
    name=MG011
    canMigrate=Yes
    description=MigrationGroup011
List of 1 Volume elements:
  An instance of Volume(1 of 1)
    controllerDeviceNumber=3:A6
    emulationType=OPEN-V
    CVS=Yes
    capacityInKB=10,240,320
    raidLevel=RAID5(3D+1P)
    diskType=Unknown
    controllerArrayGroupName=E9980-1
    arrayGroupName=1-9-1
    volumeStatus=Used
    volumeLockStatus=Unlocked
    hostNames=
```

D:\>

## 4-3-6 RemoveVolumeFromMigrationGroup

The `RemoveVolumeFromMigrationGroup` command can be used to remove a specified volume from its migration group. Use the LDEV number in the domain control storage subsystem (controller LDEV number) to specify a volume.

Note that volumes cannot be removed from migration groups in the following statuses:

- Migration groups specified for migration tasks that have not ended (End)
- Migration groups within the storage domains that are being refreshed

You can use the `GetTasks` command to check the statuses of migration tasks.



---

**NOTE:** If information about a volume in the storage domain cannot be obtained because the volume in the storage subsystem has been deleted using Device Manager, `Unknown` is output as the value of the output items.

---

### Command Syntax

```
htsmcli server-location RemoveVolumeFromMigrationGroup
  { -u | --username } user-name
```

```

{ -p | --password } { password | @name-of-password-file }
[ { -o | --output } name-of-the-standard-output-redirect-file ]
[ { -d | --detail } ]

storagedomainname=storage-domain-name

name=migration-group-name

cotrollerdevicenumber=controller-LDEV-number

```

**Table 4-48** Options, RemoveVolumeFromMigrationGroup Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output information about the volume removed from the migration group, to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

**Table 4-49** Parameters, RemoveVolumeFromMigrationGroup Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
name	Required	Specify the name of the migration group.
controllerdevicenumber	Required	Specify the controller LDEV number.

**Table 4-50** Output, RemoveVolumeFromMigrationGroup Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
Storage domain information	name	The name of the storage domain.	-d	
Migration group information	name	The name of the migration group.	-d	
	canMigrate	Indicates whether migration is possible.	-d	
	description	A description of the migration group.	-d	
Information for removed volumes (LUs)	controllerDeviceNumber	The controller LDEV number.	-d	
	emulationType	The emulation type.	-d	#1
	CVS	The CVS volume attribute of the volume. This can be either Yes or No.	-d	#1
	capacityInKB	The resource capacity of the volume (units: KB).	-d	#1
	raidLevel	The RAID level.	-d	#1, #2
	diskType	The disk type.	-d	#1, #2
	ControllerArrayGroupName	The array group name of the LU in the controller		#1
	arrayGroupName	The array group name of the LU in which the data is actually contained in the storage subsystem.	-d	#1, #2
	volumeStatus	Indicates whether the volume is being used. This can be either Used (you cannot specify the volume as the migration destination) or Free (you can specify the volume as the migration destination).	-d	#1
volumeLockStatus	Indicates whether the volume is locked. This can be either Locked or Unlocked.	-d	#1	

Table 4-50 Output, RemoveVolumeFromMigrationGroup Command

Type of Information	Item Name	Description	Output by -d	Displayed as Unknown
	hostNames	The host name. If multiple host names exist, they are separated by commas (,).	-d	#1

**Legend:**

-d indicates output only when either the -d or the --detail option is specified.

#1 Unknown is output when volume information cannot be obtained for the domain control storage subsystem.

#2 Unknown is output when information cannot be obtained for externally connected storage.

**Example:** In this example, a volume is removed from the MG011 migration group in the MegaTechXP12000-Primary storage domain. The controller LDEV number for the removed volume in the domain control storage subsystem is 3:A7.

```
D:\>htsmcli RemoveVolumeFromMigrationGroup --detail
storagedomainname="MegaTechXP12000-Primary" name=" MG011"
controllerdevicenumber=3:A7
```

**Output:**

RESPONSE:

```
An instance of StorageDomain(1 of 1)
  name=MegaTechXP12000-Primary
List of 1 MigrationGroup elements
  An instance of MigrationGroup(1 of 1)
    name=MG011
    canMigrate=Yes
    description=MigrationGroup011
List of 1 Volume elements:
  An instance of Volume(1 of 1)
    controllerDeviceNumber=3:A7
    emulationType=OPEN-V
    CVS=Yes
    capacityInKB=10,240,320
    raidLevel=RAID5(3D+1P)
    diskType=Unknown
    controllerArrayGroupName=E9980-1
    arrayGroupName=1-9-1
    volumeStatus=Used
    volumeLockStatus=Unlocked
    hostNames=
```

D:\>

### 4-3-7 GetVolumes (with migrationgroupname Specified)

The `GetVolumes` command with `migrationgroupname` parameter specified can be used to obtain a list of volumes (LUs) in the migration group of the storage domain to specify.

You can also limit the volumes obtained, by specifying a volume filter condition.

For details about how to specify options, parameters, and filter conditions, or about the items output by this command, see the `GetVolumes` command in the Storage Domain Management section 4-1-5 .

## Command Syntax

```
htsmcli server-location Getvolumes
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  storagedomainname=storage-domain-name
  [ { storagetiername=storage-tier-name | migrationgroupname=migration-
group-name } ]
  [ filtercondition=filter-condition ]
```

## 4-4 Migration Commands

This section includes a detailed description for each migration command.



**NOTE:** The examples shown in this section assume that the user name, password, and location of the Tiered Storage Manager server have been set in the properties file.

### 4-4-1 CreateMigrationPlan

The `CreateMigrationPlan` command can be used to create a candidate migration plan for the specified migration group. Candidate migration plans are output to the standard output in text format, or created in the redirect file specified by the `output` option.

Candidates for migration target volumes for each volume of a migration group are chosen from the specified migration target storage tier. When you use the `filtercondition` parameter to specify a volume filter condition, candidates for the migration target volume are chosen based on the condition.

Candidates chosen for migration target volumes are displayed in the candidate migration plan as pairs with the migration source volumes.



**NOTE:** A candidate for the migration target volume is chosen from the logical partition (SLPR and CLPR) to which the migration source volume belongs.

Even if you cannot select candidates for the migration target volume for all migration source volumes, the candidate migration plans for those selected are created. In this case, the command will end in an error.

Comment lines (with # in the first column) are generated in the candidate migration plan. If multiple migration target volume candidates exist, those are shown in comment lines as well. Note that all volumes other than the first candidate are chosen not only from the logical partition (SLPR and CLPR) to which the migration source volume belongs, but also from the other logical partitions (SLPRs and CLPRs).



**NOTE:** This command does not perform volume migration reserve for migration source volumes and migration target volumes.



**NOTE:** Volumes specified for migration tasks that have not ended (and are in any other status than `End`) cannot be selected as migration target volumes, because volume migration reserve is performed for such volumes.



**NOTE:** Candidate migration plans cannot be created in storage domains that are being refreshed.

## Command Syntax

```
htsmcli server-location CreateMigrationPlan
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  storagedomainname=storage-domain-name
```

```

migrationgroupname=migration-group-name
targetstoragetiername=target-storage-tier-name
[ filtercondition=filter-condition ]

```

**Table 4-51** Parameters of the CreateMigrationPlan Command

Parameter Name	Optional or Required	Description
storagedomainname	Required	Specify the name of the storage domain.
migrationgroupname	Required	Specify the name of the migration group.
targetstoragetiername	Required	Specify the name of the storage tier (migration target storage tier name) to which migration is to be performed.
filtercondition	Optional	Specify a volume filter condition. For details about the property specified in the filtercondition parameter, see <a href="#">Table 4-52</a> .

**Table 4-52** Properties Specifiable for the filtercondition Parameter

Property Name	Operators	Description
SubsystemDisplayModel	=, <>	The name used for displaying the model of the storage subsystem. This name is displayArrayType of Device Manager (not arrayType). Example: StorageWorks XP1024
SubsystemSerialNumber	=, <>, startsWith, contains	The serial number of the storage subsystem.
SubsystemName	=, <>	The name of the storage subsystem.
SubsystemVendor	=, <>	The name of the storage subsystem vendor.
ControllerDeviceNumber	=	The controller LDEV number.
Host	=, <>, startsWith, contains	The name of the host.
ArrayGroup	=, <>, startsWith, contains	The name of the array group.
Capacity	<, <=, =, <>, >, >=	The volume capacity.
RAIDLevel	=, <>	The RAID level.
EmulationType	=, <>	The emulation type.
DiskType	=, <>	The disk type.
VolumeStatus	=	A character string indicating whether the volume is being used.
VolumeLockStatus	=	A character string indicating the lock status of the volume.
SLPRNumber	=, <>	The SLPR number.
CLPRNumber	=, <>	The CLPR number.
ControllerArrayGroup	=, <>, startsWith, contains	The name of the controller array group.

**Table 4-53** Items Output by the CreateMigrationPlan Command

Type of Information	Item Name	Description
Overall plan information	plan-type	The plan type.
	format-version	The plan format version. Specify this for compatibility between different format versions.
	storageDomainName	The name of the storage domain.
	migrationGroupName	The name of the migration group.
	targetStorageTierName	The name of the migration target storage tier.



Table 4-53 Items Output by the CreateMigrationPlan Command

Type of Information	Item Name	Description
	permitCrossSlprMigration <sup>#</sup>	Indicates whether migration is permitted for transferring volume data between SLPRs. Yes: permitted. No: not permitted.
	permitCrossClprMigration <sup>#</sup>	Indicates whether migration is permitted for transferring volume data between CLPRs. Yes: permitted. No: not permitted.
Information about each volume pair for migration	pair	The symbol indicating the start of specification for a migration source volume and migration target volume.
	sourceControllerDeviceNumber	The migration source volume.
	targetControllerDeviceNumber	The migration target volume. Blank space characters are output when a migration target volume cannot be selected.

<sup>#</sup> This is set to No when the CreateMigrationPlan command creates a candidate migration plan.

Example (1): In this example, a candidate migration plan is created for when each volume in the MG01 migration group is migrated to the MegaTech-HighCost storage tier, in the MegaTechXP12000-Primary storage domain.

```
D:\>htsmcli CreateMigrationPlan storagedomainname="MegaTechXP12000-Primary"
migrationgroupname=" MG01" targetstoragetiername= MegaTech-HighCost
```

Output (1):

```
#Example plan for migration
plan-type=Migration
format-version=1.0
storageDomainName=MegaTechXP12000-Primary
migrationGroupName=MG011
targetStorageTierName=MegaTech-HighCost
permitCrossSlprMigration=No
permitCrossClprMigration=No
pair
# LUSE=No
# LU=3:A6
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# cacheMode=Disable
# IOSuppressionMode=Disable
sourceControllerDeviceNumber=3:A6
targetControllerDeviceNumber=2:80
pair
```

```

# LUSE=No
# LU=3:A7
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# cacheMode=Disable
# IOSuppressionMode=Disable
# sourceControllerDeviceNumber=3:A7
# targetControllerDeviceNumber=2:84

# Target candidates for source LDEV - 3:A7, 3:A6
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# subsystem=USP#14011
# SLPRNumber=0
# CLPRNumber=0
# arrayGroupName=1-10-1
# diskType=FC
# RAIDLevel=RAID5 (3D+1P)
# cacheMode=Disable
# IOSuppressionMode=Disable
# targetControllerDeviceNumber=2:80 * (3:A6)
# targetControllerDeviceNumber=2:84 * (3:A7)
# targetControllerDeviceNumber=2:85
# targetControllerDeviceNumber=2:86
# targetControllerDeviceNumber=2:87
# targetControllerDeviceNumber=2:89
# targetControllerDeviceNumber=2:8A
# targetControllerDeviceNumber=2:8C
# targetControllerDeviceNumber=2:8F
# targetControllerDeviceNumber=2:91
# targetControllerDeviceNumber=2:92
# targetControllerDeviceNumber=2:95
# targetControllerDeviceNumber=2:99
# targetControllerDeviceNumber=2:9E
# targetControllerDeviceNumber=2:9F
# targetControllerDeviceNumber=2:A0
# targetControllerDeviceNumber=2:A3
# targetControllerDeviceNumber=2:A4

```

```
# targetControllerDeviceNumber=2:A5
# targetControllerDeviceNumber=2:A6
# targetControllerDeviceNumber=2:A7
```

D:\>

Example (2): In this example, the conditions for creation of the candidate migration plan are the same as in example (1), but some of the candidate migration target volumes cannot be found.

```
D:\>htsmcli CreateMigrationPlan storagedomainname="MegaTechXP12000-Primary"
migrationgroupname=" MG01" targetstoragetiername= MegaTech-HighCost
```

Output (2):

```
#Example plan for migration
plan-type=Migration
format-version=1.0
storageDomainName=MegaTechXP12000-Primary
  migrationGroupName=MG011
  targetStorageTierName=MegaTech-HighCost
  permitCrossSlprMigration=No
  permitCrossClprMigration=No
  pair
#   LUSE=No
#   LU=0:E7
#   emulationType=OPEN-9
#   CVS=No
#   capacityInKB=7,211,520
#   SLPRNumber=0
#   CLPRNumber=0
#   cacheMode=Disable
#   IOSuppressionMode=Disable
#   sourceControllerDeviceNumber=0:E7
#   targetControllerDeviceNumber=
pair
#   LUSE=No
#   LU=3:A6
#   emulationType=OPEN-V
#   CVS=Yes
#   capacityInKB=10,240,320
#   SLPRNumber=0
#   CLPRNumber=0
#   cacheMode=Disable
#   IOSuppressionMode=Disable
#   sourceControllerDeviceNumber=3:A6
#   targetControllerDeviceNumber=2:80
```

```

pair
# LUSE=No
# LU=3:A7
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# cacheMode=Disable
# IOSuppressionMode=Disable
# sourceControllerDeviceNumber=3:A7
# targetControllerDeviceNumber=2:84

# Target candidates for source LDEV - 3:A7, 3:A6
# emulationType=OPEN-V
# CVS=Yes
# capacityInKB=10,240,320
# SLPRNumber=0
# CLPRNumber=0
# arrayGroupName=1-10-1
# diskType=FC
# RAIDLevel=RAID5 (3D+1P)
# cacheMode=Disable
# IOSuppressionMode=Disable
# targetControllerDeviceNumber=2:80 * (3:A6)
# targetControllerDeviceNumber=2:84 * (3:A7)
# targetControllerDeviceNumber=2:85
# targetControllerDeviceNumber=2:86
# targetControllerDeviceNumber=2:87
# targetControllerDeviceNumber=2:89
# targetControllerDeviceNumber=2:8A
# targetControllerDeviceNumber=2:8C
# targetControllerDeviceNumber=2:8F
# targetControllerDeviceNumber=2:91
# targetControllerDeviceNumber=2:92
# targetControllerDeviceNumber=2:95
# targetControllerDeviceNumber=2:99
# targetControllerDeviceNumber=2:9E
# targetControllerDeviceNumber=2:9F
# targetControllerDeviceNumber=2:A0
# targetControllerDeviceNumber=2:A3

```

```
# targetControllerDeviceNumber=2:A4
# targetControllerDeviceNumber=2:A5
# targetControllerDeviceNumber=2:A6
# targetControllerDeviceNumber=2:A7
```

KATS10601-E An attempt to create a candidate migration plan has failed. There is a pair for which a target volume was not found.

D:\>

## 4-4-2 CreateMigrationTask

The `CreateMigrationTask` command can be used to create a migration task to perform migration using the specified migration plan.

When the `execute` option is specified for the created migration task, the task is executed immediately. Otherwise, the task is put in `Standby` status, and can subsequently be executed by using the `ExecuteTask` command.

You can use the `erasedata` parameter to specify whether the data for the migration source volume is to be deleted once after migration terminates normally.



**NOTE:** Migration tasks are executed by requests to the Tiered Storage Manager server. Actual task execution is performed asynchronously to this command.

When processing for the Tiered Storage Manager server to receive an execution request fails after a migration task has been created, the error message `KATS50213-E` appears. In such a case, resolve the server failure, and then use the `ExecuteTask` command to execute the task.



**NOTE:** Migration tasks cannot be created in storage domains that are being refreshed.

### Command Syntax

```
htsmcli server-location CreateMigrationTask
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -e | --execute } ]
  migrationplan=migration-plan-file-name
  [ erasedata={ Yes | No } ]
  [ description=description- of- the-migration-task ]
```

Table 4-54 Options of the CreateMigrationTask Command

Option Name	Option Arguments	Optional or Required	Description
-e or --execute	None	Optional	Specify this to immediately execute the created migration task. If this is omitted, the migration task is placed in <code>Standby</code> status.

Table 4-55 Parameters of the CreateMigrationTask Command

Parameter Name	Optional or Required	Description
migrationplan	Required	Specify the name of the migration plan file. Specify it as an absolute path or relative path from the command execution directory.

Table 4-55 Parameters of the CreateMigrationTask Command

Parameter Name	Optional or Required	Description
erasedata	Optional	Specify whether the data for the migration source volume is to be deleted once after migration task creation terminates normally. <ul style="list-style-type: none"> <li>• Yes: Delete the data. (default)</li> <li>• No: Do not delete the data.</li> </ul>
description	Optional	Specify a description of the migration task.

Table 4-56 Items Output by the CreateMigrationTask Command

Information Level	Item Name	Description
Task information	id	The task ID. The task ID format is TK#####. The time and serial number are converted to base 36 and displayed in the format #####.
	status	The task status. Standby Active.WaitingMigration (waiting for execution)
	creationTime	The date and time when the task was created.
	storageDomainName	The name of the storage domain.
	migrationGroupName	The name of the migration group.
	targetStorageTierName	The name of the migration target storage tier.
	eraseData	Indicates whether the data for the migration source volume is to be deleted once after migration terminates normally.
	description	The task description.
Migration volume information	sourceControllerDeviceNumber	The controller LDEV number of the migration source volume.
	targetControllerDeviceNumber	The controller LDEV number of the migration target volume.

Example: In this example, a task for performing migration is created by loading the migration plan from the D:\tmp\plan.txt text file. The task is set to execute immediately.

```
D:\>htsmcli CreateMigrationTask --execute migrationplan=" D:\tmp\plan.txt"
```

Output:

RESPONSE:

An instance of MigrationTask(1 of 1)

id=TK1f2lymqv

status=Standby

creationTime=2005/03/25 16:53:11

storageDomainName=MegaTechXP12000-Primary

migrationGroupName=MG011

targetStorageTierName=MegaTech-HighCost

eraseData=No

description=

List of 2 MigrationInfo elements

An instance of MigrationInfo(1 of 2)

sourceControllerDeviceNumber=3:A6

targetControllerDeviceNumber=2:80

An instance of MigrationInfo(2 of 2)

```
sourceControllerDeviceNumber=3:A7
```

```
targetControllerDeviceNumber=2:84
```

```
D:\>
```

### 4-4-3 GetTasks

The `GetTasks` command can be used to obtain information about the task specified by the `id` parameter, or about tasks that match other specified parameters.

You can also specify a range of tasks by using the `status` parameter, which indicates the task status.

You can also use dates linked to the task, such as the creation date or end date, to specify a range of tasks, such as the following:

- Tasks created (or ended) on or before the specified base date
- Tasks created (or ended) on or after the specified base date
- Tasks created (or ended) on the specified base date

#### Command Syntax

```
htsmcli server-location GetTasks
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -d | --detail } ]
  [ { id=task-ID |
    [ storagedomainname=storage-domain-name
      [ migrationgroupname=migration-group-name ]
        [ targetstoragetiername=target-storage-tier-name ] ]
    [ status= status [, status ] ... ]
    [ [ datatype= { Creation | End } ] daytobase=days-to the-base-date
      [ direction= { Before | After | Just } ] ] ] ]
```

Table 4-57 Options of the GetTasks Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output all information about the task to the standard output, after command execution. If this is omitted, only summary information <sup>#</sup> is output.

<sup>#</sup> Summary information consists of the information for items for which the *Output by -d* column is blank in Table 4-59.

Table 4-58 Parameters of the GetTasks Command

Parameter Name	Optional or Required	Description
id	Optional	Specify the task ID. This parameter cannot be specified with other parameters.
storagedomainname	Optional	Specify the name of the storage domain. This must be specified when migrationgroupname or targetstoragetiername is specified.
migrationgroupname	Optional	Specify the name of the migration group, along with storagedomainname.

Table 4-58 Parameters of the GetTasks Command

Parameter Name	Optional or Required	Description
targetstoragetiername	Optional	Specify the name of the migration target storage tier, along with storagedomainname.
status	Optional	Specify the status of the task. This can be any of the following: Standby Active.WaitingMigration (waiting for migration) Active.Migrating Active.WaitingDataErasure (waiting for erasure) Active.DataErasing Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Cancel (ended by cancellation) Active (running, same as multiple specification of Active.WaitingMigration, Active.Migrating, Active.WaitingDataErasure, and Active.DataErasing) NotEnd (not ended, same as multiple specification of Standby and Active) Failure (ended in one of the failures such as Failure.MigrationFailure and Failure.DataErasureFailure) End (ended, same as multiple specification of Success, Failure, and Cancel) When specifying multiple task statuses, separate each one with a comma. Only a lower-level status can be specified by omitting Active. or Failure..
datetype	Optional	Specify the type of date (creation date or end date) linked to the task, for specifying a date range. Creation (default) End
daystobase	Optional	Specify the number of days to the base date. Specify how many days from the base date tasks should be obtained. Acceptable value is 0 or a positive integer.
direction	Optional	Specify the direction for daystobase. Before (days on or before the base date) After (days on or after the base date) Just (the base date itself, which is the default)

Table 4-59 Items Output by the GetTasks Command

Type of Information	Item Name	Description	Output by -d
Task information	id	The task ID. The task ID format is TK#####. The time and serial number are converted to base 36 and displayed in the format #####.	
	status	The status of the task: Standby Active.WaitingMigration (waiting for migration) Active.Migrating Active.WaitingDataErasure (waiting for erasure) Active.DataErasing Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Failure (ended with a failure other than those mentioned above) Cancel (ended by cancellation)	



Table 4-59 Items Output by the GetTasks Command

Type of Information	Item Name	Description	Output by -d
	creationTime	The date and time when the task was created.	
	executionRequestTime	The execution request time and date for the task.	
	endTime	The date and time when task execution ended.	
	migrationStartedTime	The date and time when migration execution started.	
	migrationCompletionTime	The date and time when migration execution completed.	-d
	migrationProgress	Indicates the migration progress, as a percentage. Values less than 1% are rounded down to display an integer.	
	estimatedMigrationCompletionTime	The date and time when migration is estimated to end.	-d
	dataErasureStartedTime	The date and time when erasure execution started.	
	dataErasureCompletionTime	The date and time when erasure execution completed.	-d
	dataErasureProgress	Indicates the erasure progress, as a percentage. Values less than 1% are rounded down to display an integer.	
	estimatedDataErasureCompletionTime	The date and time when erasure is estimated to end.	-d
	ownerId	The user ID of the user that created the task.	
	ownerGroupId	The user group ID of the user that created the task.	
	storageDomainName	The name of the storage domain.	
	migrationGroupName	The name of the migration group.	
	previousTargetStorageTierName	The name of the migration target storage tier for the previous migration. If no previous migration has been performed, this is blank.	-d
	targetStorageTierName	The name of the migration target storage tier.	
	eraseData	Indicates whether the data for the migration source volume is to be deleted once after migration terminates normally.	
	totalCapacityInGB	The total capacity of the volumes in the migration group (units: GB). Values less than 1 GB are rounded down to display an integer.	
	description	A description of the task.	
Task error information	message	An error message.	-d
Migration volume information	sourceControllerDeviceNumber	The controller LDEV number of the migration source volume.	-d
	sourceSubsystemSerialNumber	The serial number of the storage subsystem on which data is actually stored for the migration source volume.	-d
	sourceSubsystemModel	The name of the storage subsystem model on which data is actually stored for the migration source volume. If the model name obtained from Device Manager is Unknown, the product name is displayed.	-d
	sourceSubsystemDisplayModel	The display name of the storage subsystem model on which data is actually stored for the migration source volume. If the displayed model name is unknown, the product name is displayed.	-d

Table 4-59 Items Output by the GetTasks Command

Type of Information	Item Name	Description	Output by -d
	sourceSubsystemName	The name of the storage subsystem on which data is actually stored for the migration source volume. If the subsystem name is unknown, the product name and serial number are displayed.	-d
	sourcesubsystemVendor	The vendor name of the storage subsystem in which actual data is stored.	-d
	sourceSubsystemDeviceNumber	The LDEV number of the migration source volume on which data is actually stored in the storage subsystem.	-d
	sourceSLPRNumber	The number for the SLPR to which the migration source volume belongs.	-d
	sourceCLPRNumber	The number for the CLPR to which the migration source volume belongs.	-d
	sourceRaidLevel	The RAID level of the migration source volume.	-d
	sourceDiskType	The type of disks in which the migration source volume exists.	-d
	sourceControllerArrayGroupName	The name of the controller array group in which the migration source volume exists.	-d
	sourceArrayGroupName	The array group name of the migration source volume.	-d
	targetControllerDeviceNumber	The controller LDEV number of the migration target volume.	-d
	targetSubsystemSerialNumber	The serial number of the storage subsystem on which data is actually stored for the migration target volume.	-d
	targetSubsystemModel	The name of the storage subsystem model on which data is actually stored for the migration target volume. If the model name obtained from Device Manager is Unknown, the product name is displayed.	-d
	targetSubsystemDisplayModel	The display name of the storage subsystem model on which data is actually stored for the migration target volume. If the display model name is unknown, the product name is displayed.	-d
	targetSubsystemName	The name of the storage subsystem on which data is actually stored for the migration target volume. If the subsystem name is unknown, the product name and serial number are displayed.	-d
	targetsubsystemVendor	The vendor name of the storage subsystem in which actual data is stored.	-d
	targetSubsystemDeviceNumber	The LDEV number of the migration target volume on which data is actually stored in the storage subsystem.	-d
	targetSLPRNumber	The number for the SLPR to which the migration target volume belongs.	-d
	targetCLPRNumber	The number for the CLPR to which the migration target volume belongs.	-d
	targetRaidLevel	The RAID level of the migration target volume.	-d
	targetDiskType	The type of disks in which the migration target volume exists.	-d
	targetControllerArrayGroupName	The name of the controller array group in which the migration target volume exists.	-d
	targetArrayGroupName	The array group name of the migration target volume.	-d
	emulationType	The emulation type.	-d
	capacityInKB	The resource capacity of the volume (units: KB).	-d

Table 4-59 Items Output by the GetTasks Command

Type of Information	Item Name	Description	Output by -d
	status	The migration status for each volume: Standby Active.WaitingMigration (waiting for migration) Active.Migrating Active.WaitingDataErasure (waiting for erasure) Active.DataErasing Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Failure (ended with a failure other than those mentioned above) Cancel (ended by cancellation)	-d
	migrationProgress	Indicates the migration progress, as a percentage. Values less than 1% are rounded down to display an integer.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example (1): In this example, of the tasks in the MegaTechXP12000-Primary storage domain, detailed information is obtained about those tasks that ended five or more days ago for which results failed.

```
htsmcli GetTasks --detail storagedomainname="MegaTechXP12000-Primary"
status="Standby" datatype="Creation" daystobase="5" direction="After"
```

Output (1):

RESPONSE:

List of 1 Task elements:

An instance of MigrationTask(1 of 1)

```
id=TK1f2lymqv
status=Standby
creationTime=2005/03/25 16:53:11
executionRequestTime=
endTime=
migrationStartedTime=
migrationCompletionTime=
migrationProgress=0
estimatedMigrationCompletionTime=
dataErasureStartedTime=
dataErasureCompletionTime=
dataErasureProgress=0
estimatedDataErasureCompletionTime=
ownerId=user
ownerGroupId=Admin
storageDomainName=MegaTechXP12000-Primary
migrationGroupName=MG011
previousTargetStorageTierName=
targetStorageTierName=MegaTech-HighCost
eraseData=No
```

totalCapacityInGB=19

description=

List of 2 MigrationInfo elements:

An instance of MigrationInfo(1 of 2)

sourceControllerDeviceNumber=3:A6  
sourceSubsystemSerialNumber=14011  
sourceSubsystemModel=USP  
sourceSubsystemDisplayModel=XP12000  
sourceSubsystemName=XP12000@10.208.151.151  
sourceSubsystemVendor=HP  
sourceSubsystemDeviceNumber=3:A6  
sourceSLPRNumber=0  
sourceCLPRNumber=0  
sourceRaidLevel=RAID5 (3D+1P)  
sourceDiskType=Unknown  
sourceControllerArrayGroupName=E9960-1  
sourceArrayGroupName=1-9-1  
targetControllerDeviceNumber=2:80  
targetSubsystemSerialNumber=14011  
targetSubsystemModel=USP  
targetSubsystemDisplayModel=XP12000  
targetSubsystemName=XP12000@10.208.151.151  
targetSubsystemVendor=HP  
targetSubsystemDeviceNumber=2:80  
targetSLPRNumber=0  
targetCLPRNumber=0  
targetRaidLevel=RAID5 (3D+1P)  
targetDiskType=Unknown  
targetControllerArrayGroupName=E9960-11  
targetArrayGroupName=1-10-1  
emulationType=OPEN-V  
capacityInKB=10,240,320  
status=Standby  
migrationProgress=0

An instance of MigrationInfo(2 of 2)

sourceControllerDeviceNumber=3:A7  
sourceSubsystemSerialNumber=14011  
sourceSubsystemModel=USP  
sourceSubsystemDisplayModel=XP12000  
sourceSubsystemName=XP12000@10.208.151.151  
sourceSubsystemVendor=HP  
sourceSubsystemDeviceNumber=3:A7

```
sourceSLPRNumber=0
sourceCLPRNumber=0
sourceRaidLevel=RAID5 (3D+1P)
sourceDiskType=Unknown
sourceControllerArrayGroupName=E9980-1
sourceArrayGroupName=1-9-1
targetControllerDeviceNumber=2:84
targetSubsystemSerialNumber=14011
targetSubsystemModel=USP
targetSubsystemDisplayModel=XP12000
targetSubsystemName=XP12000@10.208.151.151
targetSubsystemVendor=HP
targetSubsystemDeviceNumber=2:84
targetSLPRNumber=0
targetCLPRNumber=0
targetRaidLevel=RAID5 (3D+1P)
targetDiskType=Unknown
targetControllerArrayGroupName=E9980-11
targetArrayGroupName=1-10-1
emulationType=OPEN-V
capacityInKB=10,240,320
status=Standby
migrationProgress=0
```

D:\>

**Example (2):** In this example, of the tasks in the MegaTechXP12000-Primary storage domain, summary information is obtained for those tasks that ended five or more days ago.

```
htsmcli GetTasks storagedomainname="MegaTechXP12000-Primary" status="Standby"
datatype="Creation" daystobase="5" direction="After"
```

**Output (2):**

RESPONSE:

List of 1 Task elements:

An instance of MigrationTask(1 of 1)

```
id=TK1f2lymqv
status=Standby
creationTime=2005/03/25 16:53:11
executionRequestTime=
endTime=
migrationStartedTime=
migrationProgress=0
dataErasureStartedTime=
dataErasureProgress=0
ownerId=user
ownerGroupId=Admin
```

```

storageDomainName=MegaTechXP12000-Primary
migrationGroupName=MG011
targetStorageTierName=MegaTech-HighCost
eraseData=No
totalCapacityInGB=19
description=

```

D:\>

Example (3): In this example, to obtain summary information for all the tasks that finished 5 days ago or before among the tasks in the storage domain `MegaTechXP12000-Secondary`, the `GetTasks` command is executed. However, no task that matches the conditions exists.

```
D:\>htsmcli GetTasks storagedomainname="MegaTechXP12000-Primary" status="End"
datatype="Creation" daystobase="5" direction="Before"
```

Output (3):

RESPONSE:

(Command completed; empty list returned)

D:\>

## 4-4-4 ModifyTask

The `ModifyTask` command can be used to change task information (the description).

Task information cannot be changed in the following statuses:

- Task has ended (End).
- Task is in a storage domain that is being refreshed.

### Command Syntax

```

htsmcli server-location ModifyTask
    { -u | --username } user-name
    { -p | --password } { password | @name-of-password-file }
    [ { -o | --output } name-of-the-standard-output-redirect-file ]
    [ { -d | --detail } ]
    id =task-ID
    [newdescription=description-of-the-task ]

```

Table 4-60 Options of the ModifyTask Command

Option Name	Option Arguments	Optional or Required	Description
-d or --detail	None	Optional	Specify this to output the changed task information to the standard output, after command execution. If this is omitted, nothing is output to the standard output.

Table 4-61 Parameters of the ModifyTask Command

Parameter Name	Optional or Required	Description
id	Required	Specify the task ID.
newdescription	Optional	Modify a description of the task. If this is omitted, the task description does not change. If an empty character string is specified, the task description that was previously set is deleted.

Table 4-62 Items Output by the ModifyTask Command

Type of Information	Item Name	Description	Output by -d
Task information	id	The task ID. The task ID format is TK#####. The time and serial number are converted to base 36 and displayed in the format #####.	-d
	status	The status of the task: Standby Active.WaitingMigration (waiting for migration) Active.Migrating Active.WaitingDataErasure (waiting for erasure) Active.DataErasing	-d
	creationTime	The date and time when the task was created.	-d
	executionRequestTime	The execution request time and date for the task.	-d
	storageDomainName	The name of the storage domain.	-d
	migrationGroupName	The name of the migration group.	-d
	targetStorageTierName	The name of the migration target storage tier.	-d
	eraseData	Indicates whether the data for the migration source volume is to be deleted once after migration terminates normally.	-d
	description	A description of the task.	-d
Migration volume information	sourceControllerDeviceNumber	The controller LDEV number of the migration source volume.	-d
	targetControllerDeviceNumber	The controller LDEV number of the migration target volume.	-d

Legend: -d indicates output only when either the -d or the --detail option is specified.

Example: In this example, the description is changed for the task whose ID is TK1f2lymqv.

```
D:\>htsmcli ModifyTask --detail id="TK1f2lymqv" newdescription="This property was changed."
```

Output:

RESPONSE:

An instance of MigrationTask(1 of 1)

```
id=TK1f2lymqv
status=Standby
creationTime=2005/03/25 16:53:11
executionRequestTime=
storageDomainName=MegaTechXP12000-Primary
migrationGroupName=MG011
targetStorageTierName=MegaTech-HighCost
eraseData=No
description=This property was changed.
```

List of 2 MigrationInfo elements:

```
An instance of MigrationInfo(1 of 3)
sourceControllerDeviceNumber=3:A6
targetControllerDeviceNumber=2:80
```

```
An instance of MigrationInfo(2 of 2)
    sourceControllerDeviceNumber=3:A7
    targetControllerDeviceNumber=2:84
```

```
D:\>
```

## 4-4-5 ExecuteTask

The `ExecuteTask` command can be used to request execution of a specified task in the `Standby` status, on the Tiered Storage Manager server. Task execution is performed asynchronously to this command.

Execution cannot be requested on the Tiered Storage Manager server, for a task in a storage domain that is being refreshed. The `GetTasks` command can be used to check the status of a task.

### Command Syntax

```
htsmcli server-location ExecuteTask
    { -u | --username } user-name
    { -p | --password } { password | @name-of-password-file }
    [ { -o | --output } name-of-the-standard-output-redirect-file ]
    [ { -d | --detail } ]
    id=task-ID
```

Table 4-63 Parameters of the ExecuteTask Command

Parameter Name	Optional or Required	Description
id	Required	Specify the task ID.

No output is generated by this command.

Example: In this example, the task whose ID is TK1ev677gu was executed.

```
D:\>htsmcli ExecuteTask id=TK1ev677gu
```

Output:

No output is generated by this command.

## 4-4-6 CancelTask

The `CancelTask` command can be used to cancel a specified task in the `Standby` status. If cancellation is successful, the status of the task changes from `Standby` to `Cancel` (ended by cancellation). When this command is executed, volume migration reserve is released for the volume.

Tasks cannot be cancelled in the following statuses:

- Tasks are in the executing status (`Active`).
- Tasks are in the ended status (`End`).
- Tasks are in a storage domain that is being refreshed.

### Command Syntax

```
htsmcli server-location CancelTask
    { -u | --username } user-name
    { -p | --password } { password | @name-of-password-file }
    [ { -o | --output } name-of-the-standard-output-redirect-file ]
    id=task-ID
```



Table 4-64 Items Output by the CancelTask Command

Parameter Name	Optional or Required	Description
id	Required	Specify the task ID.

Example: In this example, the task whose ID is TK1ev677gu is cancelled.

```
D:\>htsmcli CancelTask id=TK1ev677gu
```

Output:

No output is generated by this command.

## 4-4-7 DeleteTasks

The `DeleteTasks` command can be used to delete a task, specified by the `id` parameter, that has the ended status (End).

You can specify a range of tasks using the `status` parameter, which indicates the task status.

You can also use dates linked to the task, such as the creation date or end date, to specify a range of tasks, such as the following:

- Tasks created (or ended) on or before the specified base date
- Tasks created (or ended) on or after the specified base date
- Tasks created (or ended) on the specified base date

Specify the `force` option to delete the task without seeing the confirmation message. If the `force` option is omitted, a message for confirming each task is output to the standard error output.

### Command Syntax

```
htsmcli server-location DeleteTasks
  { -u | --username } user-name
  { -p | --password } { password | @name-of-password-file }
  [ { -o | --output } name-of-the-standard-output-redirect-file ]
  [ { -f | --force } ]
  [ { id=task-ID |
    [ storagedomainname=storage-domain-name
      [ migrationgroupname=migration-group-name ]
      [ targetstoragetiername=target-storage-tier-name ] ] ]
  [ status= status [, status ] ....]
  [ [ datatype= { Creation | End } ] daytobase=days-to-the-base-date
    [ direction= { Before | After | Just } ] ] ] ]
```

Table 4-65 Options of the DeleteTasks Command

Option Name	Option Arguments	Optional or Required	Description
-f or --force	None	Optional	Specify this to perform deletion without confirmation. If this is omitted, deletion will need to be confirmed for each task.

Table 4-66 Parameters of the DeleteTasks Command

Parameter Name	Optional or Required	Description
id	Optional	Specify the task ID. This parameter cannot be specified with other parameters.

Table 4-66 Parameters of the DeleteTasks Command

Parameter Name	Optional or Required	Description
storagedomainname	Optional	Specify the name of the storage domain. This must be specified when migrationgroupname or targetstoragetiername is specified.
migrationgroupname	Optional	Specify the name of the migration group, along with storagedomainname.
targetstoragetiername	Optional	Specify the name of the migration target storage tier, along with storagedomainname.
status	Optional	Specify the status of the task. This can be any of the following: Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Cancel (ended by cancellation) Failure (ended in one of the failures such as Failure.MigrationFailure and Failure.DataErasureFailure) End (ended, same as multiple specification of Success, Failure, and Cancel) When specifying multiple task statuses, separate each one with a comma. Only a lower-level status can be specified by omitting Failure..
datetype	Optional	Specify the type of date (creation date or end date) linked to the task, for specifying a date range. This can be any of the following: Creation (default) End
daystobase	Optional	Specify the number of days to the base date. Specify how many days from the base date tasks should be obtained.
direction	Optional	Specify the direction for daystobase. This can be any of the following: Before (days on or before the base date) After (days on or after the base date) Just (the base date itself, which is the default)

Table 4-67 Items Output by the DeleteTasks Command

Type of Information	Item Name	Description
Task information	id	The task ID. The task ID format is TK#####. The time and serial number are converted to base 36 and displayed in the format #####.
	status	The status of the task: Success (ended in success) Failure.MigrationFailure (ended in migration failure) Failure.DataErasureFailure (ended in erasure failure) Failure (ended with a failure other than those mentioned above) Cancel (ended by cancellation)
	creationTime	The date and time when the task was created.
	executionRequestTime	The execution request time and date for the task.
	endTime	The date and time when task execution ended.
	migrationStartedTime	The date and time when migration execution started.
	migrationCompletionTime	The date and time when migration execution completed.
	migrationProgress	Indicates the migration progress, as a percentage. Values less than 1% are rounded down to display an integer.

Table 4-67 Items Output by the DeleteTasks Command

Type of Information	Item Name	Description
	DataErasureStartedTime	The date and time when erasure execution started.
	DataErasureCompletionTime	The date and time when erasure execution completed.
	DataErasureProgress	Indicates the erasure progress, as a percentage. Values less than 1% are rounded down to display an integer.
	ownerId	The user ID of the user that created the task.
	ownerGroupId	The user group ID of the user that created the task.
	storageDomainName	The name of the storage domain.
	migrationGroupName	The name of the migration group.
	previousTargetStorageTierName	The name of the migration target storage tier for the previous migration. If no previous migration has been performed, this is blank.
	targetStorageTierName	The name of the migration target storage tier.
	eraseData	Indicates whether the data for the migration source volume is to be deleted once after migration terminates normally.
	totalCapacityInGB	The total capacity of the volumes in the migration group (units: GB). Values less than 1 GB are rounded down to display an integer.
	description	A description of the task.

If the applied task does not exist within the specified task range, nothing is output.

Example: In this example, the command deletes canceled tasks from the tasks in the MegaTechXP12000-Primary storage domain. Since the `force` option is not specified in this example, a message is output confirming deletion for each task.

```
D:\>htsmcli DeleteTasks storagedomainname="MegaTechXP12000-Primary"
status="Cancel"
```

Output:

```
CONFIRMATION:
An instance of MigrationTask(1 of 1)
  id=TK1f2lymqv
  status=Cancel
  creationTime=2005/03/25 16:53:11
  executionRequestTime=
  endTime=2005/03/25 16:53:45
  migrationStartedTime=
  migrationCompletionTime=
  migrationProgress=0
  dataErasureStartedTime=
  dataErasureCompletionTime=
  dataErasureProgress=0
  ownerId=user
  ownerGroupId=Admin
  storageDomainName=MegaTechXP12000-Primary
  migrationGroupName=MG011
  previousTargetStorageTierName=
```

```
targetStorageTierName=MegaTech-HighCost
eraseData=No
totalCapacityInGB=19
description=This property was changed.
Do you agree with deletion of this task? (Y/N) :
```

# 5 Tiered Storage Manager Properties Files

This chapter describes the properties files for the Tiered Storage Manager CLI.

- [5-1 Overview of Properties for Tiered Storage Manager CLI](#)
- [5-2 Specifying Values in the `htsmcli.properties` File](#)
- [5-3 Specifying Values in the `htsmclienv.properties` File](#)

## 5-1 Overview of Properties for Tiered Storage Manager CLI

There are two kinds of properties for the Tiered Storage Manager CLI: those stored in the `htsmcli.properties` file, and those stored in the `htsmclienv.properties` file.

- Properties pertaining to options and parameters for the Tiered Storage Manager CLI are stored in the `htsmcli.properties` file.
- Properties pertaining to the trace log for the Tiered Storage Manager CLI are stored in the `htsmclienv.properties` file.

When decompressing the CLI setup file into the following directory during installation of the Tiered Storage Manager CLI on a Management client, the files `htsmcli.properties` and `htsmclienv.properties` are revealed in this directory:

```
system-drive\TieredStorageManager\0110\CLI      (in Windows)
/opt/TieredStorageManager/0110/CLI             (in Solaris and HP-UX)
```

The revealed `htsmcli.properties` file contains comment lines which show sample property settings to use as a guide. Based on this sample, a user can create a new `htsmcli.properties` file in a desired location. The directory containing the `htsmcli.properties` file must be set to the environment variable `HTSM_CLI_HOME` in advance.



**NOTE:** `HTSM_CLI_HOME` is an environment variable used for reporting, to the Tiered Storage Manager CLI, the location of the `htsmcli.properties` file that is to be used. If you do not set the directory containing the `htsmcli.properties` file to `HTSM_CLI_HOME`, Tiered Storage Manager will not use the `htsmcli.properties` file.

The default values for each property have been set in the `htsmclienv.properties` file that is revealed when the CLI setup file is decompressed. The `htsmclienv.properties` file must be located in the directory containing the `htsmcli.jar` file. The `htsmcli.jar` file is revealed in the same directory where the properties file was revealed when the CLI setup file was decompressed.

These files are in the same format as Java properties files. Properties can be updated using a text editor. Each property has a name and a value, separated by an equal sign (for example, `foo.bar=12345`). Each property is separated by the line-break character defined for the OS.

In the properties files for the Tiered Storage Manager CLI, any lines that start with the `#` character are treated as comments. Literal strings or numbers do not need to be enclosed in quotation marks.

In Java properties files, the backslash character (`\`) is a reserved escape character, and any character following the backslash is not treated as a normal character. Instead, the character following the backslash is treated as a tab, line-feed, or other control character. Since absolute path names on Windows platforms generally contain backslashes, the path name must be preceded by another backslash. For example, the file path name `c:\CVXPAE\docroot\foo.bar` must be entered as `c:\\CVXPAE\\docroot\\foo.bar`. For property specifications, other characters do not generally need to be preceded by an escape character.

[Table 5-1](#) lists and describes the properties for the Tiered Storage Manager CLI.

**Table 5-1** Properties Specifiable for the Tiered Storage Manager CLI

Type	File Name	Property	For Details:
Properties pertaining to CLI options and parameters	<code>htsmcli.properties</code>	<code>htsmserver.location</code>	See section <a href="#">5-2-1</a>
		<code>option.output</code>	See section <a href="#">5-2-2</a>
		<code>option.password</code>	See section <a href="#">5-2-3</a>
		<code>option.username</code>	See section <a href="#">5-2-4</a>

Table 5-1 Properties Specifiable for the Tiered Storage Manager CLI

Type	File Name	Property	For Details:
		<code>parameter.parameter-name</code>	See section 5-2-5
Properties pertaining to the trace log of the CLI	<code>htsmclienv.properties</code>	<code>logger.fileCount</code>	See section 5-3-1
		<code>logger.filePath</code>	See section 5-3-2
		<code>logger.maxFileSize</code>	See section 5-3-3
		<code>logger.traceLogLevel</code>	See section 5-3-4

## 5-2 Specifying Values in the `htsmcli.properties` File

You can set the location of Tiered Storage Manager server, and the options and parameters used during execution of CLI commands as properties in the `htsmcli.properties` file.



**IMPORTANT:** Usable characters are restricted to printable ASCII characters, including `\u0020 - \u007E` (which are recognized as printable ASCII characters), when they are used for values of properties in the `htsmcli.properties` file.

Table 5-2 shows sample settings for the location of the Tiered Storage Manager server, and options in the `htsmcli.properties` file.

Table 5-2 Sample `htsmcli.properties` Property Values

Property	Value
<code>htsmserver.location</code>	<code>rmi://myhost.mydomain:20352/HTSMServer</code>
<code>option.username</code>	<code>Usertaro</code>
<code>option.password</code>	<code>@C:\\TieredStorageManager\\0110\\CLI\\pass.txt</code>

The following shows an example of the above properties and values.

```
#HP StorageWorks XP Tiered Storage Manager CLI - Configuration
#Mon May 17 18:53:54 JST 2004
htsmserver.location=rmi://myhost.mydomain:20352/HTSMServer

option.username=usertaro

#option.password=hogehoge
#option.password=@/home/taro/htsmclipassword

option.password=@C:\\TieredStorageManager\\0110\\CLI\\pass.txt
```

### 5-2-1 `htsmserver.location` Property

Specify the location of the Tiered Storage Manager server.

For details about how to specify the location of the Tiered Storage Manager server, see section 3-3 .

### 5-2-2 `option.output` Property

Specify the file name to which the standard output is to be redirected.

For details about how to specify the value of this property, see the explanation of the `output` option in section 3-3 .

### 5-2-3 `option.password` Property

Specify the password that corresponds to the user name set for the `option.username` property. You can specify the password directly, or specify the name of a text file that contains the password. The file name can be specified using an absolute path or a relative path from the CLI installation directory.

When specifying a file name, precede the file name with the @ character. When a string starting with the @ character is specified, the first line of the text file indicated by the string is treated as the password.

For details about how to specify the value of this property, see the explanation of the `password` option in section 3-3 .

### 5-2-4 option.username Property

Specify the name used to log on to the Tiered Storage Manager server.

For details about how to specify the value of this property, see the explanation of the `username` option in section 3-3 .

### 5-2-5 parameter.parameter-name Property

Specify the value of a command parameter. Values specified here are applied to all commands.

For details about how to specify the value of each command parameter, see section 3-3 .

## 5-3 Specifying Values in the `htsmclienv.properties` File

You can set each type of value for the log output function of the Tiered Storage Manager CLI as properties in the `htsmclienv.properties` file.



**IMPORTANT:** Usable characters are restricted to printable ASCII characters, including `\u0020 - \u007E` (which are recognized as printable ASCII characters), when they are used for values of properties in the `htsmclienv.properties` file.



**NOTE:** Property names are case sensitive.

### 5-3-1 logger.fileCount Property

Specify the maximum number of trace log files output by the log output function of the Tiered Storage Manager CLI.

Trace log files are created with the size specified for the *4.3.3 logger.maxFileSize Property*, with a log number appended to the file name (for example, `HTSMCLITrace1.log` and `HTSMCLITrace2.log`). Trace information is written to log files in the order of the log numbers. If the last file becomes full, the first file is overwritten.

Acceptable values: 2 to 16.

Default: 10

### 5-3-2 logger.filePath Property

Specify the name of the file to which the trace log is output, using an absolute path or a relative path from the CLI installation directory. `n.log` is automatically appended to the specified file name (where `n` is a positive integer indicating the log number for the file).



**IMPORTANT:** Do not use any characters or file names or directory names that are not permitted by the OS, or that are reserved by the OS.

Default:

*installation-directory*\logs\HTSMCLITrace (in Windows)

*installation-directory*/logs/HTSMCLITrace (in Solaris and HP-UX)

The installation directory is that which contains the `htsmcli.jar` file.

### 5-3-3 logger.maxFileSize Property

Specify the maximum size of a trace log file. When setting this value, specify KB for kilobytes, MB for megabytes, or neither of these for bytes. Note that for this property, KB indicates 1,024 bytes, and MB indicates 1,024 KB.

Acceptable values: From 32,768 bytes to 2,147,483,647 bytes (less than 2 GB).

Default: 1 MB

## 5-3-4 logger.traceLogLevel Property

Specify the threshold for the output level of the trace log.

With the Tiered Storage Manager CLI, an output level of 0, 10, 20, or 30 is set based on the contents of the log output message, regardless of whether the type of error message is Error, Warning, or Information. Only messages whose output level is less than or equal to the value set for this property are output to the trace log.

This property can be set to a value from 0 to 30, but we recommend the default output level of 20.

Default: 20



## 6 Troubleshooting

This chapter describes the actions to be taken if problems occur with the Tiered Storage Manager CLI.

### 6-1 Troubleshooting Tiered Storage Manager CLI

If a problem occurs with the Tiered Storage Manager CLI, perform the following operations:

- Make sure that the cause of the problem is not the software, nor the computer nor the LAN hardware, and then restart the computer.
- Make sure that no problems exist with the Tiered Storage Manager server. For details about troubleshooting for the Tiered Storage Manager server, refer to the *HP StorageWorks XP Tiered Storage Manager Server Installation and Configuration Guide*.
- For details about troubleshooting specific to the Tiered Storage Manager CLI, see [Table 6-1](#).
- For troubleshooting information common to both the CLI client and the Web client of Tiered Storage Manager, refer to the *HP StorageWorks XP Tiered Storage Manager User's Guide*.

**Table 6-1** Troubleshooting Tiered Storage Manager CLI

Problem	Cause	Recommended Action
Cannot log in to Tiered Storage Manager.	The Tiered Storage Manager server is not running.	Start the Tiered Storage Manager server.
	The Tiered Storage Manager server was not found.	See the server location that was specified at the command line or property, and make sure that the specified port number is correct.
		See the server location that was specified at the command line or property, and make sure that the specified host address is correct.
	No users have been registered in Device Manager.	Register users in Device Manager.
	You do not have the permissions needed to log in to Tiered Storage Manager.	Use Device Manager to change the user permissions to System Administrator, Storage Administrator, or Guest.
	The user name or password is incorrect.	Change the user name or password that was specified at the command line or property to the correct one.
The contents set in the properties file <code>htsmclienv.properties</code> have not been executed properly.	Operation is not possible because there is an incorrect setting in the properties file.	Follow the instructions in the output error message to correct the settings in the properties file.
The contents set in the properties file <code>htsmcli.properties</code> have not been executed properly.	The parameter has been specified directly from the command line.	The values specified directly from the command line take preference over the values set in the properties file. If you omit the command line specification, the values in the properties file take preference.
	Operation is not possible because there is an incorrect setting in the properties file.	Follow the instructions in the output error message to correct the settings in the properties file.
	The environment variable <code>HTSM_CLI_HOME</code> has not been set up.	Set the directory containing the properties file <code>htsmcli.properties</code> to the environment variable <code>HTSM_CLI_HOME</code> .
An error occurred that indicated the specified command was not found.	A path to <code>java.exe</code> (or <code>java</code> ) has not been established.	In Windows, add the directory containing <code>java.exe</code> to the environment variable <code>Path</code> .

Table 6-1 Troubleshooting Tiered Storage Manager CLI

Problem		Cause	Recommended Action
			In Solaris or HP-UX, add the directory containing java to the environment variable PATH.
Times, such as the task creation time, that are displayed by CLI commands on the Management client do not match those displayed by the Web client or by CLI commands on the Management server.		The time settings on the Management client differ from those on the Management server.	In Windows, make the date and time properties and the environment variable TZ the same as those on the Management server.
			In Solaris or HP-UX, make the environment variable TZ the same as that on the Management server.
Some of the LDEVs that make up the LUSE volume are not included in the same storage tier.	Situation (1) A migration plan was created so that LDEVs other than the representative LDEV that do not meet the conditions of the migration destination storage tier would not be migrated.	Both of the following conditions exist: <ul style="list-style-type: none"> <li>The representative LDEV is included in the storage tier.</li> <li>LDEVs other than the representative LDEV are not included in the storage tier.</li> </ul>	Review the migration plan. If you migrate LDEVs other than the representative LDEV, first re-specify the migration destination volume, and then perform migration.
	Situation (2) A migration plan was created so that LDEVs that meet the conditions of the migration destination storage tier would be migrated unnecessarily.	Both of the following conditions exist: <ul style="list-style-type: none"> <li>The representative LDEV is not included in the storage tier.</li> <li>LDEVs other than the representative LDEV are included in the storage tier.</li> </ul>	Review the migration plan. Create a storage tier that includes the representative LDEV, and the status will change to situation (1). See the recommended action column for situation (1) and take appropriate action.

---

# Acronyms and Abbreviations

API	application programming interface
BNF	Bachus Naur form
CLI	command line interface
GB	gigabyte
GUI	graphical user interface
HTSM	HP StorageWorks XP® Tiered Storage Manager
JRE	Java™ Runtime Environment
KB	kilobyte
LAN	local area network
LU	logical unit
MB	megabyte
OS	operating system
SAN	storage area network
TB	terabyte
TID	target ID

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