Logical Replication (LREP) Tool 3.0.1
User Guide

NetApp, Inc.
495 East Java Drive
Sunnyvale, CA 94089 U.S.A.
Telephone: +1 (408) 822-6000
Fax: +1 (408) 822-4501
Support telephone: +1 (888) 4-NETAPP
Documentation comments: doccomments@netapp.com
Information Web: www.netapp.com

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Overview of the Logical Replication Tool 1

What the Logical Replication tool does

The Logical Replication (LREP) tool enables you to create a baseline relation between an Open Systems SnapVault primary storage system (or a Data ONTAP primary storage system) and a secondary storage system using a portable device (for example, a USB external drive). You can then ship the portable device to the secondary storage system location (for example, a data center), transfer the data from the portable device to the secondary storage system, and modify the relationship between the primary and secondary storage systems.

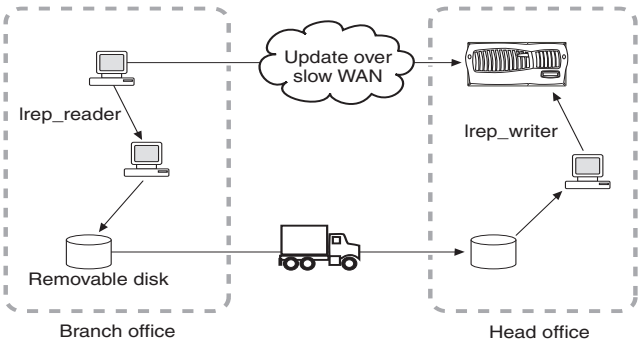
Backup and restore of Microsoft SQL Server database on Windows:

The LREP tool enables you to create baseline relationships of Microsoft SQL Server database in Open Systems SnapVault 3.0.1. The backup and restore of Microsoft SQL Server database is supported only on Windows platforms.

What LREP does

The baseline transfers can slow down the limited bandwidth WAN connections of remote or branch offices. When you use the LREP tool, the existing network bandwidth is not affected.

The baseline data is physically transferred from the primary storage system to the SnapVault secondary storage system by using LREP, as shown in the following illustration. After the baseline data is transferred to the secondary storage system, the relationship between the primary and secondary storage systems is established for incremental transfers to occur directly. For more information, see “Data Backup using the LREP Tool” on page 9.



You can also use LREP to restore data from the secondary storage system to the primary storage system. For more information, see “Data Restore using the LREP Tool”on page 15.

Supported platforms

The LREP tool is supported on the following operating systems:

- Windows Server 2003, Windows 2003 R2, and Windows Storage Server 2003 on x86 and x86-64/EM64T platforms, Windows Server 2008 and Windows Server 2008 R2
- Red Hat Enterprise Linux 4.0 for x86 and x86-64/EM64T
- Red Hat Enterprise Linux 5.0 for x86 and x86-64/EM64T
- Red Hat Enterprise Linux 5.4
- SUSE® Linux Enterprise Server 9 for x86 and x86-64/EM64T
- SUSE Linux Enterprise Server 10 for x86 and x86-64/EM64T
- SUSE Linux Enterprise Server 11
- Solaris™ 9 and 10 on UltraSPARC® and x86 platforms
- AIX 5L™ 5.1, 5.2, 5.3, and 6.1 on IBM® PowerPC® and IBM POWER™ processor-based systems
- HP-UX® 11.23 and HP-UX 11.31 on PA-RISC® based systems

For example, by using the LREP tool running on Windows 2003, you can write data from a Data ONTAP primary storage system to a Zip drive that is locally attached to the Windows 2003 system.

Features

The LREP tool provides the following features:

- Compression

  The LREP tool enables the compression of data using a zlib library. The LREP data is compressed in the memory before it is written to the disk.

  Note

  The compression feature described here is different from the compression feature available in the qtree SnapMirror data transfer protocol.

- Encryption

  The advanced Encryption Standard algorithm is used to encrypt and decrypt the LREP data. The supported key sizes are 128 bits, 192 bits, and 256 bits. The data is compressed prior to encryption.

  - Password-based encryption—During encryption, the user enters a password and a private encryption key is derived from the password by lrep_reader. The user has to enter the same password for decryption.

    The password should be a minimum of 8 characters and a maximum of 64 characters. It should include both alphanumeric and non-alphanumeric characters.

- Password verification—During decryption, the password is verified by lrep_writer before decrypting the data.
- Data authentication—During encryption, a data digest is generated and stored as part of the file. This data digest authenticates the data during decryption.
- IPv6 support—Logical Replication Tool 3.0.1 supports both Internet Protocol version 6 (IPv6) and IPv4. In IPv6, the IP address size is 128 bits, which is larger than the IPv4 address size of 32 bits. This larger address space provides expanded routing, security, and addressing capabilities.

  Example: `C:\>lrep_reader.exe -p snapvault_start -f SEC1 -q /vol/vol1/backup -m inet6 -o E:\test@0 -l reader.log WIN1:D:\dataset`

  This uses IPv6 for connection.

- Checkpoint restart

  If the transfer of data is aborted during data backup, the lrep_reader and lrep_writer utilities identify the last checkpoint and resume data transfer from that checkpoint whenever the utilities are restarted.

  For example, the transfer of data is aborted when the lrep_reader utility is reading data from the Open Systems SnapVault primary storage system. When you restart the lrep_reader utility, the data transfer is resumed from the last checkpoint recorded by the Open Systems SnapVault primary storage system.

  Similarly, if the transfer of data is aborted when the lrep_writer utility is writing data to the secondary storage system, the data transfer is resumed from the last checkpoint.

  Note

  The checkpoint restart feature is available only for data backup from an Open Systems SnapVault primary storage system to a secondary storage system. This feature is not supported for data backup from a Data ONTAP primary storage system to a secondary storage system and data restore from a secondary storage system to a primary storage system.

Downloading the LREP tool

The binary files for the LREP tool are packaged with the Open Systems SnapVault software. You can access the binary files from the same location where you decompressed the Open Systems SnapVault software package on the primary storage system.

You can also download the LREP tool from the NOW™ (NetApp on the Web)® site in one of the following ways:

- Go to the Download Software page at http://now.netapp.com/NOW/cgi-bin/software and follow the directions to go to the Download page of Open Systems SnapVault package for your platform. The binary file of the LREP tool is located on that Download page.
- Go to http://now.netapp.com/NOW/download/tools/lrep/ to download the LREP tool.

Note

Before you download the LREP 3.0.1 software, delete any earlier versions of LREP on the system.

Installing the LREP tool

The LREP tool is a stand-alone binary file. It does not need to be installed and can be run from the system on which the binary file is located. If Open Systems SnapVault is installed, the following files are available to run the LREP operation:

- For Windows:

  <INSTALL_DIR>\bin\lrep_reader.exe

  <INSTALL_DIR>\bin\lrep_writer.exe
- For UNIX:

  $INSTALL_DIR/bin/lrep_reader

  $INSTALL_DIR/bin/lrep_writer

Note

Before installing LREP 3.0.1, delete any earlier versions of LREP from the system.

Versioning

To check the version number of LREP, run the following command from <INSTALL_DIR>\bin\:

```
lrep_reader -v
```

How the LREP tool works

The LREP tool consists of two utilities:

- lrep_reader—Used at the remote office to write data from the primary storage system to the portable device

- lrep_writer—Used at the location of the secondary storage system to write data from the portable device to the secondary storage system

Note

If lrep_writer is run on a machine on which the Open Systems SnapVault software is installed, stop the Open Systems SnapVault service before using this tool.

LREP command options

LREP reader:

The script for the lrep_reader utility is as follows:

lrep_reader [options] <host>: <path>

The following table shows the different options that can be used with the lrep_reader utility.

Options	Description	Default value
`-c`	Enables compression **Note** Encryption implies compression. The `-c` option is redundant for encryption. You are prompted to enter a password consisting of ASCII printable characters.	
`-e`	Enables encryption, that is, this option enables compression followed by encryption.	
`-k`	Specifies the key size (which might be 128 bits, 192 bits, or 256 bits)	128 bits
`-o`	Specifies the output files in the format outfiles@*max_files* For example, if your original data set is 4 GB, -o E:\test@0 results in E:\test.0 E:\test.1, each file of 2 GB.	lrep_reader.data:0

Options	Description	Default value
`-p`	Specifies the protocol for data transfer (`snapvault_start` or `snapvault_restore`)	`snapvault_start`
`-l`	Enables logging of headers	OFF
`-f`	Specifies the destination host name	lrep_reader
`-q`	Specifies the destination path	/vol/lrep_reader/lrep_reader
`-O`	Enables data transfer from a Data ONTAP system	
`-P`	Specifies that the file transfer is paused after each file is transferred	
`-m`	Provides connection mode for host name resolution	unspec
`-v`	Specifies the version information	
`-A`	Enables backup or restore of Microsoft SQL server database	

During backup, *host*:*path* specifies the following:

IP address or DNS name of the primary storage system:location of primary source data

During restore, *host:path* specifies the following:

IP address or DNS name of the SnapVault secondary storage system:location of qtree

LREP writer:

The script for the lrep_writer utility is as follows:

`lrep_writer [`*`options`*`] `*`list of paths`*

list of paths specifies the paths to the output files created by `lrep_reader`.

The following table shows the different options that can be used with the lrep_writer utility:

Options	Description	Default value
`-p`	Specifies the protocol for data transfer (`snapvault_start` or `snapvault_restore`)	`snapvault_start`
`-O`	Enables data transfer from a Data ONTAP system	
`-P`	Specifies that the file transfer is paused after each file is transferred	
`-A`	Enables backup or restore of Microsoft SQL server database	

The variables used in the LREP commands are as follows:

- *prim_host:dirpath* is the directory path on the Open Systems SnapVault primary server from where data is backed up to the Zip drive.
- *prim_host:prim_vol* specifies the qtree on the primary storage system to be backed up.
- *prim_host:apppath* is the application path on the Open Systems SnapVault primary server from where application data is backed up to the Zip drive.
- *Zip_dirpath* is the directory path on the Zip drive.
- *sec* is the name of the destination (secondary storage system) to which the data from the primary storage system qtree is transferred. If no secondary storage system is specified, the local host's name is used.
- */vol/sec_vol/sec_qtree* is the path of the qtree on the secondary storage system.

Data Backup using the LREP Tool 2

Overview of data backup using the LREP tool

Assume a Windows server (WIN1) is located in a remote office of an enterprise. A volume (vol1) of a SnapVault secondary storage system (SEC1) located in the data center will be used to back up data from WIN1. The remote office has a WAN connection of small bandwidth to the data center. Therefore, the system administrator uses the LREP tool for the baseline transfer. For more information, see "Overview of the Logical Replication Tool" on page 1.

Using `lrep_reader`, the baseline transfer is done from WIN1 to a Zip drive (drive letter E) connected to a Windows client CL1. The Zip drive is shipped to the data center where a second Windows client CL2 uses `lrep_writer` to write data from the Zip drive to the secondary storage system SEC1.

Note

The backup of Microsoft SQL Server database is supported only on Windows platforms.

Backing up data from open systems to a secondary storage system

At the remote office: To back up data using LREP, complete the following steps:

Step	Action

1	Enter the following command in the directory of the system (CL1) on which lrep_reader is installed:
	lrep_reader.exe [-c] [-e] [-m][-p snapvault_start] -f *sec* -q */vol/sec_vol/sec_qtree* -o *Zip_dirpath*@0 [-l reader.log] *prim_host:dirpath*
	`-l reader.log` is the location where the LREP headers are saved.
	Note
	When the -c option is used, the output files generated at *Zip_dirpath* are compressed. When the -e option is used, you are prompted to enter and reconfirm the encryption password.
	Example:
	`C:\>lrep_reader.exe -p snapvault_start -f SEC1 -q /vol/vol1/backup -o E:\test@0 -l reader.log WIN1:D:\dataset`
	
	`Transfer started.`
	`Use 'snapvault status' on source to monitor progress.`
	`Transfer done.`
	`Verify by using 'snapvault status' on filer.`

At the data center: After the Zip drive arrives at the data center, connect it to the second Windows client (CL2).

Ensure that the Open Systems SnapVault services are stopped before lrep_writer is installed.

Step	Action

1	Enter the following command in the directory of the system (CL2) on which lrep_writer is installed:
	`lrep_writer.exe Zip_dirpath`
	Note
	If the files at *Zip_dirpath* are compressed, lrep_writer will internally decompress the files. If the files are encrypted, lrep_writer prompts you to enter the decryption password and internally decrypt the files.
	Example:
	`C:\>lrep_writer.exe E:\test`
	`lrep_writer: Will read 1 files from prefix e:\test`
	`Waiting for connection.`
	`Use snapvault start command on secondary to create a relationship`
	E:\test is the source LREP data. If the source LREP data spans multiple portable drives (for example, drive E contains the first 8 GB of data and drive F contains the next 4 GB of data) then enter the following command:
	`C:\>lrep_writer.exe E:\test F:\test`

2	To start the data transfer from the secondary storage system (SEC1), enter the following command in the console of the secondary storage system:
	`snapvault start -S CL2:Zip_dirpath /vol/sec_vol/sec_qtree`
	Example:
	`SEC1> snapvault start -S CL2:E:\test /vol/vol1/backup`
	`Snapvault configuration for the qtree has been set.`
	`Transfer started.`
	`Monitor progress with 'snapvault status' or the snapmirror log.`

Step	Action

3	Enter the following command to modify the relationship on the secondary storage system (SEC1):
	snapvault modify -S *prim_host:dirpath /vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault modify -S WIN1:D:\dataset /vol/vol1/backup`
	
	`Configuration for qtree /vol/vol1/backup is: /vol/vol1/backup source=WIN1:D:\dataset kbs=unlimited tries=2 back_up_open_files=on,ignore_atime=off`

4	To ensure that a relationship between the primary storage system (WIN1) and the SnapVault secondary storage system (SEC1) is established, force an incremental backup:
	snapvault update */vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault update /vol/vol1/backup`
	
	`Transfer started.`
	`Monitor progress with 'snapvault status' or the snapmirror log.`

5	Run the following command on the secondary storage system to check the status:
	snapvault status
	Example:
	`SEC1> snapvault status`
	
	`Snapvault secondary is ON`
	`Source Destination State Lag Status`
	`WIN1:D:\dataset SEC1:/vol/vol1/backup Snapvaulted 00:00:35 Idle`

Backing up data from a SnapVault primary storage system to a secondary storage system

At the remote office: Here, the source is a Data ONTAP primary storage system. Complete the following steps:

Step	Action

1	Run the following command in the directory of the system (CL1) on which lrep_reader is installed:
	lrep_reader.exe -O [-c] [-e] [-m][-p snapvault_start] -f *sec* -q */vol/sec_vol/sec_qtree* -o *Zip_dirpath*@0 [-l reader.log] *prim_host*:*prim_vol*
	Note
	When the -c option is used, the output files generated at *Zip_dirpath* are compressed. When the -e option is used, you are prompted to enter and reconfirm the encryption password.
	Example:
	`C:\>lrep_reader.exe -O -p snapvault_start -f SEC1 -q /vol/vol1/backup -o E:\test@0 -l reader.log FAS_PRI:/vol/data/Logic`
	
	`Transfer started.`
	`Use 'snapvault status' on source to monitor progress.`
	`Transfer done.`
	`Verify by using 'snapvault status' on storage system.`

At the data center: After the Zip drive arrives at the data center, connect it to the second Windows client, CL2.

Step	Action

1	Enter the following command in the directory of the system (CL2) on which lrep_writer is installed:
	`lrep_writer.exe -O Zip_dirpath`
	Note
	If the files at *Zip_dirpath* are compressed, lrep_writer internally decompress the files. If the files are encrypted, lrep_writer prompts you to enter the decryption password and internally decrypt the files.
	Example:
	`C:\>lrep_writer.exe -O E:\test`
	`lrep_writer: Will read 1 files from prefix e:\test`
	`Waiting for connection.`
	`Use snapvault start command on secondary to create a relationship`
	E:\test is the source LREP data. If the source LREP data spans multiple portable drives (for example, drive E contains the first 8-GB of data and drive F contains the next 4-GB of data) then enter the following command:
	`C:\>lrep_writer.exe -O E:\test F:\test`

2	To start the data transfer from the secondary storage system (SEC1), enter the following command at the console of the secondary storage system:
	`snapvault start -S CL2:Zip_dirpath /vol/sec_vol/sec_qtree`
	Example:
	`SEC1> snapvault start -S CL2:E:\test /vol/vol1/backup`
	`Snapvault configuration for the qtree has been set.`
	`Transfer started.`
	`Monitor progress with 'snapvault status' or the snapmirror log.`

Step	Action

3	Modify the relationship on the secondary storage system (SEC1) by entering the following command:
	snapvault modify -S *prim_host:prim_vol /vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault modify -S FAS_PRI:/vol/data/Logic /vol/vol1/backup`
	
	`Configuration for qtree /vol/vol1/backup is: /vol/vol1/backup source=FAS_PRI:/vol/data/Logic kbs=unlimited tries=2 back_up_open_files=on,ignore_atime=off`

4	To ensure that a relationship between WIN1 and the secondary storage system (SEC1) is established, force an incremental backup:
	snapvault update */vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault update /vol/vol1/backup`
	
	`Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.`

5	Run the following command on the secondary storage system to check the status:
	snapvault status
	Example:
	`SEC1> snapvault status`
	
	`Snapvault secondary is ON Source Destination State Lag Status FAS_PRI:/vol/data/Logic SEC1:/vol/vol1/backup Snapvaulted 00:00:35 Idle`

Backing up a Microsoft SQL Server database

Assume *Sample_DB* is the Microsoft SQL Server database on a Windows server WIN1 and the backup path of the database is *app:mssql:OSSVMSSQL:Sample_DB*.

At the remote office: To perform a baseline transfer of the Microsoft SQL Server database to a portable drive, complete the following steps:

Step	Action

1	Enter the following command in the directory of the system (CL1) on which lrep_reader is installed:
	`lrep_reader.exe [-c] [-e] [-m] [-p snapvault_start] -A -f sec -q /vol/sec_vol/sec_qtree -o Zip_dirpath@0 [-l reader.log] prim_host:apppath`
	`-l reader.log` is the location where the LREP headers are saved.
	Note
	When the -c option is used, the output files generated at *Zip_dirpath* are compressed. When the -e option is used, you are prompted to enter and reconfirm the encryption password. When the -A option is used, the Microsoft SQL Server database is backed up.
	Example:
	`C:\>lrep_reader.exe -c -e -p snapvault_start -A -f SEC1 -q /vol/vol1/backup -l reader.log -o E:\test@0 WIN1:app:mssql:OSSVMSSQL:Sample_DB`
	
	app:mssql is the keyword to backup MSSQL
	OSSVMSSQL is the SQL server instance
	Sample_DB is the database to backup
	
	`Transfer started.`
	`Use 'snapvault status' on source to monitor progress.`
	`Transfer done.`
	`Verify by using 'snapvault status' on storage system.`

At the data center: After the Zip drive arrives at the data center, connect it to the second Windows client (CL2).

Ensure that the Open Systems SnapVault services are stopped before lrep_writer is installed.

Step	Action

1	Enter the following command in the directory of the system (CL2) on which lrep_writer is installed:
	`lrep_writer.exe -A Zip_dirpath`
	Note
	If the files at *Zip_dirpath* are compressed, lrep_writer internally decompress the files. If the files are encrypted, lrep_writer prompts you to enter the decryption password and internally decrypt the files.
	Example:
	`C:\>lrep_writer.exe -A E:\test`
	`lrep_writer: Will read 1 files from prefix e:\test`
	`Waiting for connection.`
	`Use snapvault start command on secondary to create a relationship`
	E:\test is the source LREP data. If the source LREP data spans multiple portable drives (for example, drive E contains the first 8 GB of data and drive F contains the next 4 GB of data) then enter the following command:
	`C:\>lrep_writer.exe -A E:\test F:\test`

2	To start the data transfer from the secondary storage system (SEC1), enter the following command in the console of the secondary storage system:
	`snapvault start -S CL2:Zip_dirpath /vol/sec_vol/sec_qtree`
	Example:
	`SEC1> snapvault start -S CL2:E:\test /vol/vol1/backup`
	`Snapvault configuration for the qtree has been set.`
	`Transfer started.`
	`Monitor progress with 'snapvault status' or the snapmirror log.`

Step	Action

3	Enter the following command to modify the relationship on the secondary storage system (SEC1):
	snapvault modify -S *prim_host:apppath /vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault modify -S WIN:app:mssql:OSSVMSSQL:Sample_DB /vol/vol1/backup`
	
	`Configuration for qtree /vol/vol1/backup is: /vol/vol1/backup source=WIN:app:mssql:OSSVMSSQL:Sample_DB kbs=unlimited tries=2 back_up_open_files=on,ignore_atime=off`

4	To ensure that a relationship between the primary storage system (WIN1) and SnapVault secondary storage system (SEC1) is established, force an incremental backup:
	snapvault update */vol/sec_vol/sec_qtree*
	Example:
	`SEC1> snapvault update /vol/vol1/backup`
	
	`Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.`

5	Run the following command on the secondary storage system to check the status:
	snapvault status
	Example:
	`SEC1> snapvault status`
	
	`Snapvault secondary is ON Source Destination State Lag Status WIN:app:mssql:OSSVMSSQL:Sample_DB SEC1:/vol/vol1/backup Snapvaulted 00:00:35 Idle`

Data Restore using the LREP Tool 3

Restoring data using the LREP tool

You can restore data from a secondary storage system to the primary storage system using the LREP tool, without having to transfer data over the network.

At the data center, using `lrep_reader`, the baseline transfer is done from SEC1 to a Zip drive (drive letter E) connected to a Windows client, CL1. The Zip drive is shipped to the remote office where a second Windows client, CL2, uses `lrep_writer` to write data from the Zip drive to WIN1.

Note

The restore operation of Microsoft SQL Server database is supported only on Windows platforms.

Restoring data from a secondary storage system to the primary storage system

Complete the following steps to resynchronize a relationship after restoring the data from the secondary storage system (SEC1) to the primary storage system (PRI1) using the LREP tool.

At the data center: Assume that the LREP tool is installed on the Windows client CL1, and you have to restore the data to the remote office PRI1.

Step	Action

1	Run the following command on the directory of the client (CL1) on which lrep_reader is installed:
	lrep_reader -O [-c] [-e] [-m] -p snapvault_restore -o *Zip_dirpath*@0 -f *prim_host* -q *prim_vol* [-l reader.log] *sec:/vol/sec_vol/sec_qtree*
	Note
	When the -c option is used, the output files generated at *Zip_dirpath* are compressed. When the -e option is used, you are prompted to enter and reconfirm the encryption password.
	Example:
	`C:\> lrep_reader -O -p snapvault_restore -o E:\rest@0 -f PRI1 -q /vol/vol1/backup [-l reader.log] SEC1:/vol/data/Logic`
	
	`Transfer started.`
	`Use 'snapvault status' on source to monitor progress.`
	`Transfer done.`
	`Verify by using 'snapvault status' on storage system.`

At the remote office: Assume that the LREP tool is installed on the Windows client CL2 and the Zip drive is connected to CL2. Complete the following step:

Step	Action

1	Enter the following command in the directory of the system (CL2) on which lrep_writer is installed:
	`lrep_writer -O -p snapvault_restore Zip_dirpath`
	Note
	If the files at *Zip_dirpath* are compressed, lrep_writer internally decompress the files. If the files are encrypted, lrep_writer prompts you to enter the decryption password and internally decrypt the files.
	Example:
	`C:\> lrep_writer -O -p snapvault_restore E:\rest`
	
	`lrep_writer: Will read 1 files from prefix e:\rest`
	`Waiting for connection.`
	`Use snapvault start command on secondary to create a relationship`

2	Run the following command on the primary storage system (PRI1) to start the data transfer: **`snapvault restore -S CL2:Zip_dirpath prim_vol`** **Example:** `PRI1> snapvault restore -S CL2:E:\rest /vol/vol1/backup`

Step	Action
3	To resynchronize the relationship on the secondary storage system, run the following command on the secondary storage system (SEC1): **snapvault start -r -S *prim_host*:*prim_vol* */vol/sec_vol/sec_qtree*** **Example:** SEC1> snapvault start -r -S PRI1:/vol/vol1/backup /vol/data/Logic The resync base snapshot will be: *snapshot name* Resync may alter the data in this qtree. Are you sure you want to resync the qtree? *y* Wed Mar 21 15:33:33 GMT [replication.dst.resync.success:notice]: SnapVault resync of /vol/data/Logic to PRI1:/vol/vol1/backup was successful. Snapvault configuration for the qtree has been set. Transfer started. Monitor progress with 'snapvault status' or the snapmirror log.

Restoring a Microsoft SQL Server database

Complete the following steps to restore a Microsoft SQL server database from the secondary storage system (SEC1) to the Open Systems SnapVault primary server (WIN1) using the LREP tool.

Assume that *Sample_DB* is the Microsoft SQL Server database that you want to restore on the primary storage system WIN1.

At the data center: Assume that the LREP tool is installed on a Windows client CL1. Complete the following step:

Step	Action

1	Run the following command in the directory of the client (CL1) on which lrep_reader is installed:
	lrep_reader [-c] [-e][-m] -p snapvault_restore -A -o *Zip_dirpath*@0 -f WIN1 -q C:\data [-l reader.log] *sec:/vol/sec_vol/sec_qtree*
	Note
	When the -c option is used, the output files generated at *Zip_dirpath* are compressed. When the -e option is used, you are prompted to enter and reconfirm the encryption password.
	Example:
	`C:\> lrep_reader -p snapvault_restore -A -o E:\rest@1 F:\rest1@0 -f WIN1 -q C:\data [-l reader.log] SEC1:/vol/data/Logic`
	`Transfer started.`
	`Use 'snapvault status' on source to monitor progress.`
	`Transfer done.`
	`Verify by using 'snapvault status' on storage system.`
	E:\rest and F:\rest1 are existing empty directories where the LREP files are created. One LREP file is created in the E:\rest directory and the remaining files are created in the F:\rest1 directory.

At the remote office: Assume that the LREP tool is installed on a Windows client (CL2). Complete the following steps:

Step	Action

1	Connect the Zip drive to the system. Enter the following command in the directory (CL2) on which lrep_writer is installed:
	`lrep_writer -p snapvault_restore -A Zip_dirpath`
	Note
	If the files at *Zip_dirpath* are compressed, lrep_writer internally decompresses the files. If the files are encrypted, lrep_writer prompts you to enter the decryption password and internally decrypts the files.
	Example:
	`C:\> lrep_writer -p snapvault_restore -A E:\rest F:\rest1`
	
	`lrep_writer: Will read 1 files from prefix E:\rest`
	`lrep_writer: Will read 1 files from prefix F:\rest1`
	`Waiting for connection.`
	`Use snapvault start command on secondary to create a relationship`

2	Start data transfer by running the following command on the Open Systems SnapVault primary server (WIN1): **`snapvault restore -S CL2:Zip_dirpath prim_apppath`** **Note** Before you start data transfer, select the Enable restart/resync on restore check box in the Configurator GUI to enable restart or resynchronization. **Example:** `C:\> snapvault restore -S CL2:E:\rest app:mssql:OSSVMSSQL:Sample_DB`

Step	Action

3	Check the status by running the following command:
	`snapvault status`
	Example:
	`C:\> snapvault status`
	
	`Snapvault primary is ON`
	`Source Destination State Lag Status`
	`SEC1:/vol/data/Logic CL2:C:\data Broken-off - Idle`

4	Resynchronize the relationship on the secondary storage system by running the following command on the secondary storage system (SEC1):
	`snapvault start -r -S prim_host:apppath /vol/sec_vol/sec_qtree`
	Example:
	`SEC1> snapvault start -r -S`
	`WIN1:app:mssql:OSSVMSSQL:Sample_DB /vol/data/Logic`
	
	`The resync base snapshot will be: snapshot name`
	`Resync may alter the data in this qtree.`
	`Are you sure you want to resync the qtree? y`
	`Wed Mar 21 15:33:33 GMT`
	`[replication.dst.resync.success:notice]: SnapVault resync of /vol/data/Logic to WIN1:app:mssql:OSSVMSSQL:Sample_DB was successful.`
	`Snapvault configuration for the qtree has been set.`
	`Transfer started.`
	`Monitor progress with 'snapvault status' or the snapmirror log.`

Error Messages

A

The following table lists the error messages you might encounter while using the LREP tool, their causes, and the actions you can take to remedy these errors.

Error message	Cause	Corrective action
Error in bind: *No such file or directory*	The LREP writer fails with this error message. This indicates that Open Systems SnapVault is using 10566, which LREP is also trying to use.	Stop the Open Systems SnapVault agent or try another machine that is not running Open Systems SnapVault.
Could not connect to host host_name: No error	The lrep_reader tries to communicate to Open Systems SnapVault, residing on the host, (when Open Systems SnapVault is not running) and fails with this error message. When the Open Systems SnapVault service is not running on the host, which is mentioned in the `lrep_reader` command, this error occurs.	Start the Open Systems SnapVault service.

Error message	Cause	Corrective action
The password is incorrect after checkpoint restart	This error occurs if the password provided during a checkpoint restart does not match with the password that was provided before the data transfer was aborted.	Provide the correct password.
Compression or encryption option before and after checkpoint restart does not match	This error can occur because of one of the following reasons: ◆ Compression is enabled before the transfer is aborted but it is disabled after checkpoint restart. ◆ Encryption is enabled before the transfer is aborted but it is disabled after checkpoint restart. ◆ Compression is disabled before the transfer is aborted but it is enabled after checkpoint restart. ◆ Encryption is disabled before the transfer is aborted but it is enabled after checkpoint restart.	Ensure that the compression or encryption option is used consistently before and after checkpoint restart. For example, if the error is due to compression being enabled before checkpoint restart and disabled after checkpoint restart, you must enable it after checkpoint restart.

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