NetBackup™ for SQLite Administrator's Guide

Windows and Linux

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COHESITY

NetBackup™ for SQLite Administrator's Guide

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- Log in to the Cohesity Support Portal to create a new case.
- Click the (**?**) icon on the Cohesity UI and select Support Portal.

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- Log in to the Cohesity Support Portal to create a new case.
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1. The customer may contact Cohesity Support first if the issue cannot be determined as a hardware issue.

   Note: Cohesity cannot process hardware replacement requests for partner hardware.

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3. If it is a hardware/firmware issue or is suspected to be a hardware/firmware issue, Cohesity provides information about the issue to the customer and requests that the customer open a support ticket with the appropriate partner.
4. If needed, Cohesity Support can join a three-way call with the partner and the customer.
5. The customer informs Cohesity Support on the progress of the partner's case.

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Chapter 1

Introduction to NetBackup for SQLite

This chapter includes the following topics:

- About NetBackup for SQLite
- Features supported by NetBackup for SQLite
- NetBackup for SQLite Agent Documentation
- Prerequisites for NetBackup for SQLite

About NetBackup for SQLite

NetBackup for SQLite Agent extends the capabilities of NetBackup to include backup and restore of SQLite databases. The agent supports the SQLite version 3.10.0 and later.

NetBackup for SQLite is available with the NetBackup client.

Note: Ensure that all NetBackup hosts are of the same NetBackup versions for successful backup and restore operations.

The agent also supports to:

- Validate the backup.
- Query a backup and restore.
- Delete the backup information from the catalog files.
- Redirect restores.

NetBackup for SQLite workflow

The agent creates a snapshot of the volume where the single database file exists. The Volume Shadow Copy Services (VSS) for Windows or Logical Volume Manager (LVM) for Linux, takes a snapshot of the SQLite database.

The agent mounts the snapshot, copies the file into the XBSA data object, and then sends it to the NetBackup XBSA interface. The NetBackup XBSA interface writes this data to the mounted media or disk storage that is managed by the NetBackup media server.

The Linux operating systems that are not configured with LVM, the agent copies the database file directly from the file system.

Features supported by NetBackup for SQLite

Table 1-1 lists the features that are supported by the agent.

Table 1-1 Features supported by the agent

Feature	Description
Backup	The agent supports single file-based backups of the SQLite database.
Restore	The agent supports to restore the SQLite backup files.
Redirected Restores	The agent supports to restore the SQLite backup files to alternate NetBackup clients.

NetBackup for SQLite Agent Documentation

The NetBackup for SQLite Agent documentation is available at the following URL:

https://support.cohesity.com/s/article/article-100040135

Prerequisites for NetBackup for SQLite

Ensure that you meet the following prerequisites:

- NetBackup is installed and operational on the primary server, media server, and the client.
- The SQLite database is installed and operational on the client.

Note: If the NetBackup is upgraded to version 10.1 or above from prior versions, then NetBackup client must also be upgraded to the corresponding NetBackup version.

Post-installation requirements for NetBackup

After you install

- (Windows) Ensure that the user who is performing backups and restores has administrative privileges.
- (Linux) Ensure that the user who is performing backups and restores is a super user or has superuser privileges.

Chapter 2

Configuring the NetBackup for SQLite

This chapter includes the following topics:

- Configuring SQLite backups with DataStore policies

Configuring SQLite backups with DataStore policies

The agent supports the **DataStore** policies to define the attributes, schedules, clients list, and backup selections.

To configure the SQLite database backups with DataStore policies

1. Log on to the primary server as an administrator (Windows) or root (Linux).
2. In the UI, expand **NetBackup Management**, and then click **Policies**.
3. In the **All Policies** pane, right-click **Summary of All Policies**, and then click **New Policy**.
4. In **Add a New Policy** dialog box, enter a unique name for the policy.
5. In the **Change Policy** dialog box, select **DataStore Policy** from **Policy Type** drop-down list.
6. From the **Policy Storage** drop-down list, select a **disk-based storage unit** for storage.

7 To select the schedule type, under the **Schedules** tab, click **OK** to select the **Application Backup** schedule type.

Note: The XBSA framework supports the **Application Backup** schedule type only.

---

8 Under the **Clients** tab, click **New** and then add the NetBackup client that has the **NetBackup for SQLite Agent.**

9 In the **Add Client** screen, click **New**, and type the name of the client that has the SQLite server.

10 In the UI, click **NetBackup Management > Policies** to view the policy in the existing policies list.

Chapter 3

NetBackup for SQLite backup and restore

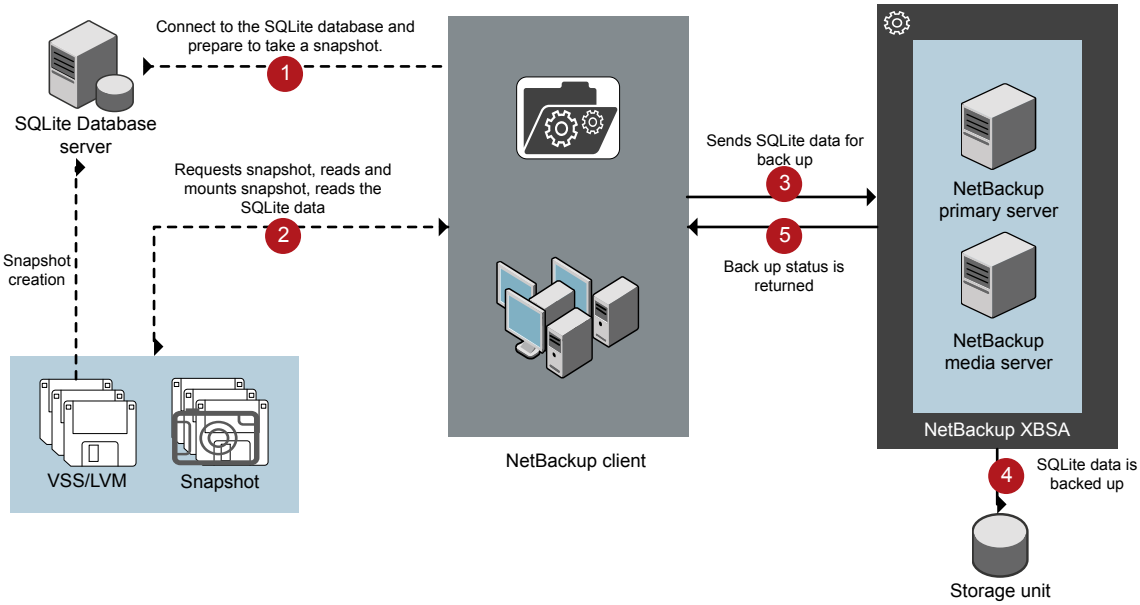
This chapter includes the following topics:

- About SQLite database backups
- Performing SQLite backups
- Validating the backup information
- Querying the backups
- Deleting backup information from the NetBackup catalog files
- About restoring SQLite backups
- Performing restores for SQLite backups
- Redirected restores
- Disaster recovery

About SQLite database backups

The `nbsqlite -o backup` command initiates the backup operation using the `-S`, `-P`, `-d`, and `-s` as the required parameters. The parameter `-z` is the required parameter for Linux LVM configured systems.

Figure 3-1 NetBackup for SQLite backup workflow



The NetBackup for SQLite backup workflow

When you initiate a backup, the NetBackup client `(nbsqlite)` creates a snapshot, mounts the snapshot, copies the file into the XBSA data object. The agent then sends the file to the NetBackup XBSA interface.

The NetBackup XBSA interface writes this data to the mounted media or disk storage that is managed by the NetBackup media server.

The command prompt displays the successful completion status of the backup. The **Activity Monitor** also displays the status for the backup job.

Performing SQLite backups

Prerequisites

Before you perform the backups, you must meet the following prerequisites:

- Ensure that the user has administrator (Windows) or root (Linux) access.
- (Windows) Set the `NetBackup\bin` directory in the user variable path.
- Configure the **DataStore** policy from the UI.
- (LVM) Verify that there is enough space for the snapshot in the volume group, and then set the snapshot size by the command line.

Note: Ensure that the snapshot size is 110% of the file size that you want to backup.

To run backup

1. Configure the parameters on the `nbsqlite` command line.
2. Run the following command:

   `nbsqlite -o backup`

   `-S primary_server_name`

   `-P policy_name`

   `-s schedule_name`

   (Linux) `-z snapshot_size`

   `-d sqlitedb_db_path`

Scheduling the SQLite backups from the NetBackup

You can schedule SQLite backups from the UI using the **DataStore** policy to call a backup script.

For more information, see https://support.cohesity.com/s/article/article-100041699

Validating the backup information

After a successful backup, you can list the backups to view and verify the backup information using the following command:

```
nbsqlite -o query
```

Querying the backups

The `nbsqlite -o query` command lists the backup files according to the options that you specify.

The parameter `-S` is the required parameter. Alternatively, you can query the backups using the `-C` and `-P` options to define a different client and policy.

To query backup

1. Configure the parameters on the `nbsqlite` command line.
2. Run the following command:

   ```
   nbsqlite -o query -S primary_server_name [-C ClientA] [-P policy_name]
   ```

For example, to query a backup from the client `ClientA`, run the following command:

```
nbsqlite -o query -S primary_server_name [-C ClientA]
```

For example, to list backup files with the policy name `policy_name`, run the following command:

```
nbsqlite -o query -S primary_server_name [-P policy_name]
```

For example, to query a backup from the client `ClientA` with policy name `policy_name`, run the following command:

```
nbsqlite -o query -S primary_server_name [-C ClientA] [-P policy_name]
```

Deleting backup information from the NetBackup catalog files

The `nbsqlite` command for delete, removes the backup information from the catalog files but retains the backup files on the NetBackup media server. The parameter `-S` and `-id` are required parameters.

To delete backup

1. Configure the parameters or provide on the command line.
2. Run the following command:

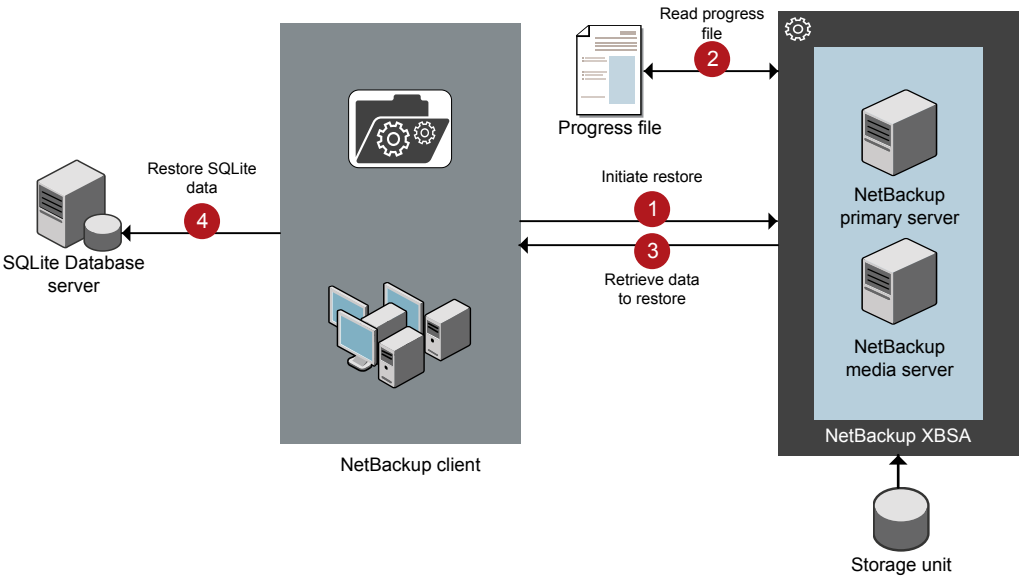
   ```
   nbsqlite -o delete -S primary_server_name -id db_backup_image_name
   ```

About restoring SQLite backups

The `nbsqlite -o restore` command for restore initiates the restore operation using `-S` and `-t` as required parameters. The parameters `-id` and `-C` are optional parameters.

The parameter `-id` restores the backup using the specified backup image name. The parameter `-c` lists all the backups that exist on the specified client. When you do not specify the client, it defaults to the NetBackup primary server.

Figure 3-2 NetBackup for SQLite restore workflow



The NetBackup for SQLite restore workflow

When you initiate a restore, the agent reads the command line arguments.

The agent then interacts with the NetBackup XBSA interface to retrieve the backup according to the specified parameters.

The NetBackup XBSA interface reads the progress files to receive the SQLite backup files to restore them to the target directory.

The command prompt indicates the successful completion status of the restore. The **Activity Monitor** also displays the status for the restore job.

Performing restores for SQLite backups

Prerequisites

Before you run a restore, you must meet the following prerequisites:

- Ensure that the user has administrator (Windows) or root (Linux) access.
- (LVM users) Ensure that data logs and the logs directory reside on the logical volume.

To restore backup

1. Configure the parameters or provide them on the command line.
2. Run the following command:

```
nbsqlite -o restore -S primary_server_name -t target_directory
[-id db_backup_image_name][-C client_name]
```

Redirected restores

Redirected restores lets you restore backup files to a client different from the client that originally performed the backup. The new location can be a different host or a different file path using a different name for the redirected restore. To redirect a restore to a different host, include the destination client name in the `install_path\NetBackup\db\altnames` directory.

Performing redirected restores

To redirect a restore to a different host

1. Update the NetBackup client name as the host and the SQLite target directory as the directory where you want to redirect the restore.
2. On the NetBackup primary server, create an `altnames` directory for the host that you want to have permission to perform the redirected restore. For example, to give Host B permissions to restore from another host, create the following file:
   - (Windows) `install_path\NetBackup\db\altnames\HostB`
   - (Linux RHEL and SLES) `/usr/openv/netbackup/db/altnames/HostB`

3 In the `altnames` directory, add the names of the client(s) whose files the requesting client wants to restore. For example, if you want Host B to have permissions to redirect restores from Host A, add Host A to the Host B file.

Note: (Linux only) The NetBackup service user account must have ownership of the `altnames` directory and host files.

---

4 Run the following command:

```
nbsqlite -o restore -S primary_server_name -t target_directory
-id db_backup_image_name] [-C client_name]
```

Note: For redirected restore, provide the source client name (client from which backup was taken) to the `-C` option.

---

5 After a successful redirected restore, undo the changes that you made on the primary server and the client.

Disaster recovery

Disaster recovery is a plan to recover the data that can get lost in a disaster event. The agent supports redirected restore as a disaster recovery strategy.

For more information, See “Redirected restores” on page 16.

Chapter 4

Troubleshooting for NetBackup for SQLite

This chapter includes the following topics:

- Troubleshooting errors when using NetBackup for SQLite Agent

Troubleshooting errors when using NetBackup for SQLite Agent

General guidelines to resolve problems

Table 4-1 lists the general steps that help you resolve problems you may encounter when using the agent.

Table 4-1 General steps to resolve errors

Steps	Action	Action
Step1	Remember the error message.	Error messages are usually the vehicles for telling you something went wrong. If you do not see an error on the command line, but still suspect a problem, check the logs and the reports. These can provide an error message that directly points to the problem. The logs and reports are essential troubleshooting tools.

Table 4-1 General steps to resolve errors *(continued)*

Steps	Action	Action
Step2	Identify what you were doing when the problem occurred.	Ask the following questions: ■ What operation was tried? ■ What method did you use? ■ What type of server platform and operating system was involved? ■ If your site uses both primary server and media server, was it a primary server or a media server? ■ If a client was involved, what type of client was it? ■ Have you performed the operation successfully in the past? If so, what is different now? ■ What is the service pack level? ■ Do you use operating system software with the latest fixes supplied, especially those required for use with NetBackup? ■ Is your device firmware at a level, or higher than the level, at which it has been tested according to the posted device compatibility lists?
Step3	Record all information.	Capture potentially valuable information: ■ The NetBackup logs. ■ The logs specific to NetBackup for SQLite logs. ■ The logs specific to NetBackup XBSA.
Step4	Correct the problem.	After you define the problem, use the information to correct it.
Step5	Contact Technical Support.	If you cannot solve the error, contact the Technical support.

Troubleshooting errors using logs

To troubleshoot the errors, you can refer to the NetBackup logs. These logs are located at the following locations:

The NetBackup primary server logs are located at:

- `install_path\NetBackup\logs\bprd`
- `install_path\NetBackup\logs\bpcd`
- `install_path\NetBackup\logs\user_ops\dbext\logs`

You must enable the `bprd` and the `bpcd` log files. For more information, see the *NetBackup Troubleshooting Guide*.

The logs that are specific to the NetBackup client are located at:

- `install_path\netbackup\logs\nbsqlite`

The logs that are specific to NetBackup XBSA are located at:

- `<NetBackup_install_path>/netbackup/logs/exten_client`

For troubleshooting NetBackup errors, see *NetBackup Troubleshooting Guide* and the *NetBackup Commands Reference Guide*.

Troubleshooting NetBackup for SQlite errors

Table 4-2 lists the errors and the solutions to troubleshoot the problems when running the operations.

Table 4-2 Troubleshooting NetBackup for SQLite errors

Error	Description	Solution
The `nbsqlite` backup fails with the following error: *Unable to load xbsa.dll*	The `nbsqlite` backup fails if the user environment variable path is not updated with NetBackup bin directory.	To run a `nbsqlite` backup successfully: ■ Update the user environment variable path with `NetBackup_install_path/bin`.
The `nbsqlite` backup fails with status code: 7648.	The backup may fail when the host validation fails for secure connection. The agent may take some time to terminate the backup operation and display the job status on the `nbsqlite` command prompt.	Verify that you configure the valid primary server name and the host name.
The `nbsqlite` backup fails with the following error: *XBSA initiation failed* Or *Failed to create XBSA object*	The `nbsqlite` backup fails if the required parameters are not specified on command line.	To run the backup successfully: ■ Configure the valid primary server name, policy name, schedule type from the command line. ■ Verify for communication errors between the `nbsqlite` agent and the NetBackup primary server. For more information see the *NetBackup Administrator's Guide, Volume I*.
(Windows)*VSS snapshot creation failed*	The `nbsqlite` backup may fail when the user does not have the privileges to run the `nbsqlite` operations.	Run `cmd.exe` in Administrator mode.

Table 4-2 Troubleshooting NetBackup for SQLite errors *(continued)*

Error	Description	Solution
The `nbsqlite` restore operation does not restore any data from the target NetBackup client.	The `nbsqlite` restore fails if the NetBackup client name and the target directory are not updated.	For a successful restore: ■ Initiate the restore from the NetBackup source client. ■ Set the NetBackup client name and target directory parameters.
The `nbsqlite` backup fails with the following error: (Linux) *Error creating LVM snapshot*	The `nbsqlite` backup may fail when the volume group does not have sufficient space for the snapshot.	To verify the space in the volume group, use the following command: **1** `$vgs` The command displays the volume group details. **2** Provide the appropriate snapshot size. The snapshot should be equivalent to or more than the backup file size.

Error messages after a successful backup:
`<volume_group>/<snapshot_name>` Read failure after 0 of 4096 at 29393616896: input or output error.
OR
`<volume_group>/<snapshot_name>`: read failure after 0 of 4096 at 4096: input or output error.
	The `nbsqlite` backup gives these errors when the volume group contains the snapshots. You can list the snapshots and then remove them before you run the backup again.	To remove the snapshots:
		1 To list the existing snapshot, run the following command:
		`$lvs`
		The command displays the snapshot details.
		2 To remove the snapshots, run the following command:
		`$ lvremove -f <volume_group>/<snapshot_name>`

Table 4-2 Troubleshooting NetBackup for SQLite errors *(continued)*

Error	Description	Solution

The `nbsqlite` backup on Linux (LVM), fails with the following error:
Error unmounting the snapshot-Device or resource busy
OR
Error removing the snapshot-sqlitesnap_<timestamp>
	The `nbsqlite` backup fails during an attempt to unmount the snapshot, the device, or when you remove the existing snapshots.	To unmount the snapshot
		1 List all mounted file systems using the following command:
		`$ mount-l`
		2 If the snapshot still exists, run the following command:
		`$unmount<mount_directory>`
		Note: This directory is created in `/mnt/<snapshot_name>`. The prefix name for the snapshot is `sqlitesnap`.
		3 To remove the snapshot manually run the following command:
		`lvremove -f <volume_group>/<snapshot_name>`

Appendix A

NetBackup for SQLite commands and conventions

This appendix includes the following topics:

- About NetBackup for SQLite Agent commands
- About NetBackup for SQLite Agent command conventions

About NetBackup for SQLite Agent commands

This section describes the commands, options, and parameters that are available to run the `nbsqlite` operations. Each command contains a brief description, required parameters, and optional parameters for the respective operations. The agent supports only those commands, options, and parameters that are mentioned in this document.

Observe for the following:

- Set the parameters on the `nbsqlite` command line.
- Set the operation type (`-o`) on the `nbsqlite` command line.
- Set the other parameters and options for the respective operation on the `nbsqlite` command line.

About NetBackup for SQLite Agent command conventions

This document uses the following conventions to describe the commands that are specific to the agent.

Run the following commands in the command line interface to see the results:

- The `-help` command (`-h`) option prints a command-line usage message when it is the only option on the command line. For example,
  `nbsqlite -h`
- Brackets [ ] indicate that the enclosed component of the command line is optional. Other parameters are required.
- Italics indicate that the information is user supplied. For example, you may provide the policy name and the schedule name for a backup operation.
  `nbsqlite -o backup -S primary_server_name -P policy_name -s schedule_name`

The NetBackup for SQLite command options

Table A-1 lists the options for `nbsqlite` operations.

Table A-1 The nbsqlite command options

Option	Description
-C	Configures the NetBackup client name for redirected restores.
-d	Configures the SQLite database path.
-h	Displays the Help usage, when it is the only option on the `nbsqlite` command line.
-id	Configures the specified backup using the backup image name.
-o	Configures the operation type (backup, restore, query, and delete).
-P	Configures the **DataStore** policy.
-s	Configures the NetBackup schedule.
-S	Configures the NetBackup primary server.
-t	Configures the target directory to restore the data.
-z	Configures the LVM snapshot size.

Appendix B

NetBackup for SQLite commands

This appendix includes the following topics:

- nbsqlite -o backup
- nbsqlite -o restore
- nbsqlite -o query
- nbsqlite -o delete

nbsqlite -o backup

`nbsqlite -o backup` – runs the backup operation from the NetBackup client.

SYNOPSIS

```
nbsqlite -o backup

-S primary_server_name

-P policy_name

-s schedule_name

(LVM) -z snapshot_size

[-d sqlite_db_path]
```

Description

This command invokes the backup operation from the NetBackup client using the NetBackup **DataStore** policy name and the schedule type. The parameter `-S`, `-d`, and `-P` are required parameters for Windows. The parameter `-z` is required parameters for LVM users.

On Windows, the directory path is `/usr/openv/netbackup/bin`

On Linux systems, the directory path is `install_path\NetBackup\bin`

Options

`-d` Configures the path to connect to the SQLite database.

`-P` Configures the NetBackup **DataStore** policy name.

`-S` Configures the NetBackup server name.

`-s` Specifies the schedule name that you have configure for the **DataStore** policy.

`-z` (LVM backups) Specifies the LVM snapshot size.

nbsqlite -o restore

`nbsqlite -o restore` – restores the backup files from the NetBackup server.

SYNOPSIS

`nbsqlite -o restore`

`-S` *`primary_server_name`*

`-t` *`target_directory`*

`[-id` *`db_backup_id`*`]`

`[-C` *`NetBackup_client_name`*`]`

Description

The `nbsqlite` command restores the backup file using `-t` and `-S` as the required parameters. The `-id` and `-C` are optional parameters.

On Windows systems, the directory path to this command is `install_path\NetBackup\bin`

On Linux systems, the directory path to this command is `/usr/openv/netbackup/bin`

Options

`-C` Specifies the client name.

`-id`

`Specifies the backup image name.`

`-S` Configures the NetBackup server name.

`-t` Specifies the target directory.

nbsqlite -o query

`nbsqlite -o query` – queries the backups that are performed for SQLite database.

SYNOPSIS

`nbsqlite - o query`

`-S` *`primary_server_name`*

`[-P` *`policy_name`*`]`

`[-C` *`client_name`*`]`

Description

The `nbsqlite -o query` command gets the backup using `-S` as the required parameter and `-C` and `-P` as optional parameters.

On Windows systems, the directory path to this command is `install_path\NetBackup\bin\`

On Linux systems, the directory path to this command is `/usr/openv/netbackup/bin/`

Options

`-C` Retrieves and lists all the backups of the specified client.

`-P` Retrieves and lists all backups with the specified policy name.

`-S` Configures the NetBackup primary server.

nbsqlite -o delete

`nbsqlite -o delete` – deletes the backup information from the NetBackup catalog files.

SYNOPSIS

`nbsqlite - o delete`

`-S` *`primary_server_name`*

`-id` *`db_backup-id`*

Description

The `nbsqlite -o delete` command deletes the backup information from the NetBackup catalog files, but retains the backups in the storage media.

The parameter `-S` and `-id` are the required parameters.

Options

`-id`
: Specifies the backup using the backup image name.

`-S` Configures the NetBackup primary server.

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