BrightStor® ARCserve® Backup for UNIX

Agent for Sybase Guide

r11.5

Computer Associates®

Contents

Chapter 1: Introducing the Agent

BrightStor® ARCserve® Backup is a comprehensive storage solution for applications, databases, distributed servers, and file systems. It provides backup and restore capabilities for databases, business-critical applications, and network clients.

Among the agents BrightStor ARCserve Backup offers is the BrightStor® ARCserve® Backup Agent for Sybase. Using this agent, you can:

- Back up Sybase Adaptive Server databases and transaction logs using BrightStor ARCserve Backup without taking your database offline or preventing users from adding new data to it.

- Restore Sybase Adaptive Server databases and transaction logs using BrightStor ARCserve Backup.

- Access, back up, and restore multiple Sybase Server instances.

The agent handles all communications between BrightStor ARCserve Backup and the database server during backup and restore jobs, including preparing, retrieving, and processing the data packets that are sent back and forth between the database server and BrightStor ARCserve Backup.

Note: Sybase Adaptive Server has built-in capabilities to back up databases that are online. However, it can only back up online databases to the local database server. It cannot back up online databases to other media.

Using BrightStor ARCserve Backup, the agent can back up to any medium available to BrightStor ARCserve Backup.

How the Agent Works

The agent must be installed on the same server as the Sybase Adaptive Server. After installation, Sybase Adaptive Server treats the agent as if it were a user requesting data.

During a backup, the agent acts as a transporting agent. Using the Sybase Adaptive Server Dump Database and Transaction backup method (more simply known as *dump*), the agent retrieves databases or log files in data chunks, one at a time, and writes the data to BrightStor ARCserve Backup. BrightStor ARCserve Backup backs up the data to media.

For information on the Sybase Adaptive Server dump command, see *Sybase Adaptive Server System Administrator Guide*.

How the Data Flows During Backup

The following steps describe the backup process data flow:

1. The user issues a request to BrightStor ARCserve Backup.

2. BrightStor ARCserve Backup forwards the request to the agent.

3. The agent instructs the server, using the database API, to perform the dump on a particular database or log.

4. The server returns the data from the database to the agent buffer, one chunk at a time.

5. The agent receives the data from its buffer and transfers it to BrightStor ARCserve Backup.

6. BrightStor ARCserve Backup writes the data to the media device, depending on the backup destination selection.

These steps are repeated until all the selected database or log files have been backed up. The agent and the Sybase Adaptive Server dump function guarantee the consistency and accuracy of the database or transaction log backup.

Chapter 2: Installing the Agent

The Agent for Sybase is a client program you install on the server machine with Sybase Adaptive Server.

This chapter lists the installation prerequisites for the agent and provides an installation checklist you can use to guide your installation.

For instructions on installing the agent, see the *Getting Started*.

Installation Prerequisites

Before installing the Agent for Sybase, verify that:

- The following applications are installed and working properly:

    - Brightstor ARCserve Backup r11.5

    - The appropriate version of UNIX

    - The appropriate version of Sybase with Sybase Open Client Library

    Note: For information about the correct version of UNIX and Sybase for your environment, see the readme file.

- Your system meets the minimum software requirements to install the agent.

    For a list of requirements, see the Readme file.

- You have administrator privileges or the proper authority to install software on the computers on which you are installing the agent.

    Note: Contact your BrightStor ARCServe Backup Agent for Sybase administrator to obtain the proper rights if you do not have them.

- Check if you know the names of all the Sybase instances that you want the agent to work with.

- If you do not use the default installation path, make a note of the installation path you use for easy reference.

Perform Post-Installation Tasks

After you have installed the Agent for Sybase, you must complete the following post-installation tasks:

- Configure the agent

- Add the agent workstation to the Client Agent database

The following sections contain the instructions for completing those tasks.

Configure the Agent

Run sybsetup to configure the agent to work with Sybase. To run sybsetup, follow these steps:

1. Change to the agent home directory.

2. Enter the following command at the command line:

   ```
   # ./sybsetup
   ```

   sybsetup prompts for the following information:

   - The agent home directory

   - The Sybase home directory

   - The value of SYBASE_OCS (in Sybase Versions 12 and 12.5)

   - The value of SYBASE_ASE (in Sybase Versions 12 and 12.5)

   - The Sybase SQL server name

   - The Sybase backup server name

   Note: sybsetup continues prompting for the last two items until you add a NULL value for the SQL Server name.

   The agent is now configured.

Add the Workstation to the Client Agent Database

To use the agent, you must add the workstation on which it is installed to the BrightStor ARCserve Backup Client Agent database. To add the workstation, follow these steps:

1. Start BrightStor ARCserve Backup.

2. Open the Database Manager.

3. In the Database Manager, select the Clients database view.

4. Click Add.

   The Add Client dialog appears.

5. Enter the machine name (host name) and IP Address for the workstation running the agent.

6. Enter the remaining information for the workstation in this dialog.

7. Click OK.

   The computer or node is now added to the host database, and the BrightStor ARCServe Backup Agent for Sybase can access it.

Enable the Agent

To enable (start) the agent:

1. Log in as root.

2. Enter the following command:

   ```
   caagent enable 30
   ```

3. Press Enter.

   The agent is enabled.

Disable the Agent

To disable (stop) the agent:

1. Log in as root.

2. Enter the following command:

   ```
   # caagent disable 30
   ```

3. Press Enter.

   The agent is disabled.

Chapter 3: Using the Agent

Using the Agent for Sybase, you can backup and restore Sybase Adaptive Server databases while they are active and online. This chapter provides information about backing up and restoring using the agent and gives backup and restore instructions.

Back Up Strategies

You can use the agent to back up whole databases or their transaction logs. When you initiate a backup, the agent backs up:

- Only the transaction logs if you select the Backup Transaction Log option.
- Only the database if you select the Backup Database option.

Important! *Avoid backing up the physical database and log files using BrightStor ARCserve Backup without the agent if Sybase Server is online. The backed up image of the database file can be inconsistent. If you attempt to restore from such a backup image while the database is loaded, you can corrupt the database.*

Transaction Log Backups

A transaction log is a listing of all the transactions occurring on a given database from a given point in time. To ensure that backup files contain the most current transactions, you should back up your transaction logs more frequently than your databases. For example, you could back up a transaction log once a day and the entire database once a week. If you need to restore the database, the most currently backed up transaction would be no more than twenty-four hours old. More frequent transaction log backups would give you files with transactions that are even more current.

Note: The agent gives you the ability to back up log files separately from their corresponding databases only if the log files and the database files on your system are on separate Sybase devices.

Backing up a transaction log takes less time and uses less storage space than backing up a database, so it is an efficient way of keeping your backup files current. To back up a transaction log only, you would select the Backup Transaction Log option during backup job setup. A transaction log backup, like a database backup, can take place while the database is active.

Important! *Do not back up a transaction log unless the database has already been backed up at least once.*

It takes longer to recover a database when you restore the database and all transaction logs sequentially than it does when you restore only the database. Finding the correct strategy depends on your environment. The time required to perform backups must be considered in relation to the time required to restore.

Truncating Transaction Logs

When the agent backs up a transaction log, it backs up the log from the last successfully executed log entry to the current end of the log. By default, the log is truncated to the beginning of the active portion of the log, which contains the oldest open transaction. Truncating a transaction log removes the inactive portion of a log.

View Databases

Using the Backup Manager, you can view the Sybase data servers and databases on a workstation. To view data servers and databases, follow these steps:

1. Start BrightStor ARCserve Backup and the agent.

2. Start the Backup Manager in BrightStor ARCserve Backup.

3. On the Source tab, expand the UNIX Agents.

4. Under the UNIX Agents, click the green square to the left of the Sybase server.

   The Log In dialog appears.

   Note: If you click the plus sign next to the server, it will expand automatically after you log in successfully.

5. Enter the server user name and password, and then click OK.

6. Expand the server if it did not expand automatically.

   The databases on the server appear.

7. Select a Sybase database to view by clicking the green square to its left.

   The database expands.

Back Up Databases or Transaction Logs

Using BrightStor ARCserve Backup, the agent, and Sybase, you can back up one or more Sybase databases or transaction logs.

To back up Sybase databases or transaction logs, follow these steps:

1. Verify that Sybase Adaptive Server is running.

2. Verify that the database you want is online.

3. Start BrightStor ARCserve Backup and the agent.

4. Start the Backup Manager in BrightStor ARCserve Backup.

5. On the Source tab, expand the UNIX Agents.

6. Under the UNIX Agents, double click the server on which Sybase is installed.

    The Log In dialog appears.

7. Enter the server user name and password, and then click OK.

8. Select a Sybase database by clicking the green square to its left.

    Note: If you want to back up the database, you select the database. If you want to back up the transaction log of the database, you also select the database. You determine whether a backup is a database backup or transaction log backup by selecting an option on the Sybase Options tab.

9. Click the Sybase server again.

10. Click the Sybase Options tab on the right side of the Backup Manager.

11. On the Sybase Options tab, select Backup Database or Backup Transaction Log.

    Note: You can select the Backup Transaction Log option only if the transaction log resides on a separate device.

12. Click the Destination tab, and select a backup destination.

13. Click the Schedule tab, and choose your scheduling options.

14. Click Submit.

    The Submit dialog appears.

15. Schedule the job to run now or at another time.

16. Click OK.

    The Backup Manager submits the job to the queue. You can monitor the job on the Job Status Manager.

For further information about customizing your backup, see the *Administrator Guide*.

Verify the Backup

To verify that a backup has been successful, check the Job Status Manager in BrightStor ARCserve Backup. The Job Status Manager displays backup events, and the dates and times they occurred.

To open the Job Status Manager, click the Job Status Manager icon on the BrightStor ARCserve Backup home page. The Job Status Manager appears, as shown in the following example:
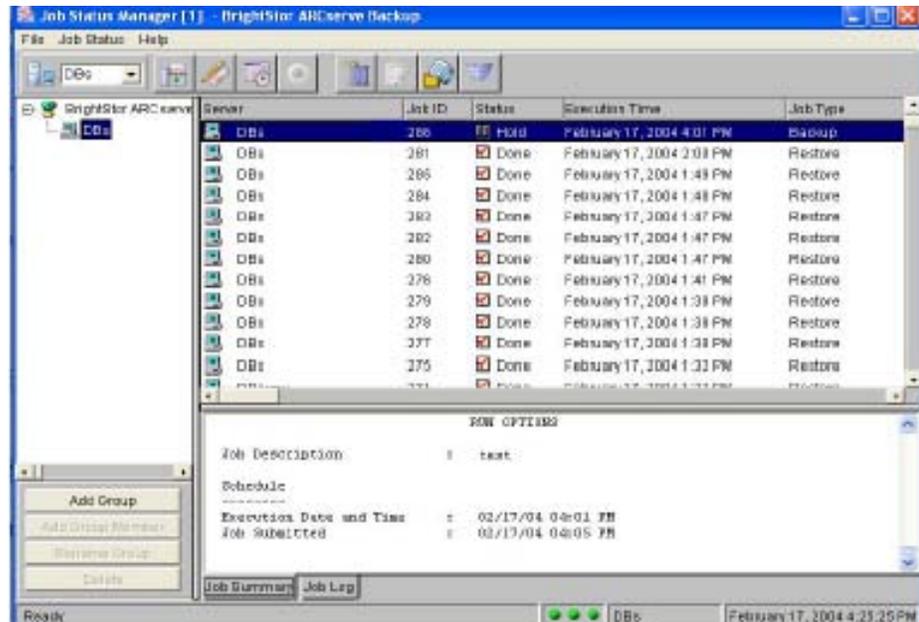
The Agent Logs

The agent includes an activity log with information about backup or restore jobs and their status. The agent log is called sybagntd.log and is located in the directory in which the agent has been installed. If errors appear in the BrightStor ARCserve Backup job logs, check the agent log for more information about why the errors occurred.

Other Log Files

The Agent for Sybase and BrightStor ARCserve Backup provides the following additional log files:

- **BrightStor.log**— Contains information about the Sybase objects that have been backed up.

- **sybbr.log**— Contains browse information.

Monitor these logs to verify that the agent has completed your backup and restore jobs successfully.

For the locations of these log files, see the appendix, "Directory and File Locations".

Restore

The agent can restore a database or transaction log online. You do not need to shut down the server during the restore operation.

Note: Only the database the agent is restoring is inaccessible during a restore operation.

If you are completely reconstructing an entire server, you must confirm that the same database or log and the corresponding physical devices are defined in the server master database. If they are damaged and cannot be recovered, you must drop the database and the related devices before proceeding with the restore. The agent checks the validity of each restore before it begins the operation.

Important! *It is assumed that you have sufficient knowledge about the database you are restoring, such as the size, logical names and physical names of devices.*

Note: Restoring a database incurs significantly more overhead on a server than a backup, therefore it is considerably slower than a backup. Unless an error message is displayed or reported, do not stop the restore.

In general, restoring a transaction log is much faster than restoring a database. Therefore, you may not need to restore a database as often as a transaction log.

For more information on transaction logs, see Transaction Log Backups in this chapter.

Restore Databases or Transaction Log by File System Method

To restore a Sybase database or transaction log, follow these steps:

1. In BrightStor ARCserve Backup, open the Restore Manager

2. Choose Restore by File System.

    A tree view of the servers and databases backed up by the Agent for Sybase appears, as shown in the following example:
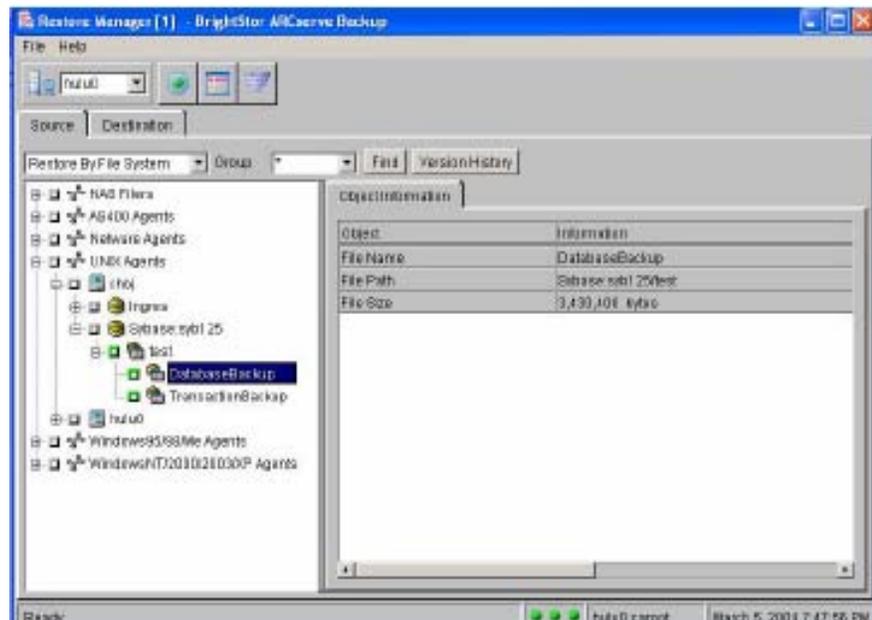
The databases shown in this view are the most recent backup sessions.

a. On the Source tab, open UNIX Agents.

b. Open the host that contains the Sybase database or transaction log backups.

c. Open the Sybase instance that contains the databases or transaction logs you want to restore.

d. Under the database name, select the database or transaction log you want to restore by clicking the green square to the left of the database or transaction log of your choice.

Note: If you are restoring a database and its transaction logs, select the database and the first transaction log you backed up. Logs must be restored in the order you backed them up, one at a time. After you have restored the database and the first transaction log, repeat the restore procedure separately for each transaction log you are restoring, starting at Step 2.

3. If you want to specify a location to restore to:

   a. Open UNIX Agents.

   b. Double click the host that contains the Sybase server to which you want to restore.

      The Login dialog appears.

   c. Enter the host user name and password, and then click OK.

   d. Under the host name, double click the Sybase server to which you want to restore.

      The Database Login dialog appears.

   e. Enter the user name and password for the Sybase server, and then click OK.

   f. Click the Submit button on the toolbar.

      The Session Password dialog appears.

   g. Go to Step 4.

4. If you did not use a session password when you created the backup you want to restore, click OK, and then go to Step 6. If you used a session password when you created the backup you want to restore, click Enter Password, and then go to Step 5.

5. On the Enter Password dialog, enter the session password, and then click OK.

6. Click OK on the Session Password dialog.

   The Submit dialog appears.

7. On the Submit dialog, schedule the restore job to run now or later, and then click OK.

   The Restore Manager submits the job to the queue. You can monitor the job on the Job Status Manager.

8. If you are not restoring transaction log files or you have restored all the transaction log files you need to restore, go to Step 10. If you have one or more transaction log files to restore, go to Step 9.

9. Return to Step 2, select the next transaction log file you want to restore, and then repeat Steps 3 through 8. Repeat this process for each log file you are restoring.

10. After the restoration is complete, use the Sybase isql utility to bring the restored database online.

For more information about using BrightStor ARCserve Backup to restore files, see the *Administrator Guide.*

For more information about bringing Sybase databases online, see the *Sybase Adaptive Server System Administrator's Guide* and the *Sybase Adaptive Server Reference Manual*.

Restore Databases or Transaction Logs by Session Method

To restore a Sybase database or transaction log, follow these steps:

1. In BrightStor ARCserve Backup, open the Restore Manager

2. Choose Restore by Session.

    A list of backup media you have used when backing up with the Agent for Sybase and the sessions on each media appears, as shown in the following example:
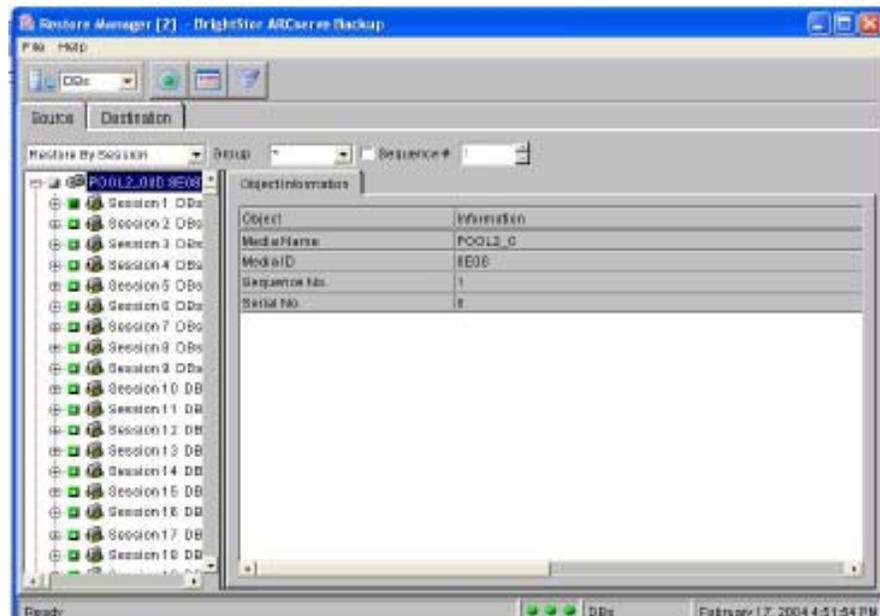
3. On the Source tab, open the backup media that contains the backup session you want to restore.

4. Under the media name, select the specific session you want to restore by clicking the green square to the left of the session of your choice.

5. Click the Destination tab. On the Destination tab, do one of the following:

   - If you want to restore the backup to its original location:

     a. Click the Restore files to their original location(s) check box.

     b. Click the Submit button in the toolbar.

        The Login dialog appears.

     c. Enter the host user name and password, and then click OK.

        The Database Login dialog appears.

     d. Enter the Sybase server user name and password, and then click OK.

        The Session Password dialog appears.

     e. Go to Step 6.

   - If you want to specify a location to restore to:

     a. Open UNIX Agents.

     b. Double click the host that contains the Sybase server to which you want to restore.

        The Login dialog appears.

     c. Enter the host user name and password, and then click OK.

     d. Under the host name, double click the Sybase server to which you want to restore.

        The Database Login dialog appears.

     e. Enter the user name and password for the Sybase server, and then click OK.

     f. Click the Submit button on the toolbar.

        The Session Password dialog appears.

     g. Go to Step 6.

6. If you did not use a session password when you created the backup you want to restore, click OK, and then go to Step 8. If you used a session password when you created the backup you want to restore, click Enter Password, and then go to Step 7.

7. On the Enter Password dialog, enter the session password, and then click OK.

8. Click OK on the Session Password dialog.

   The Submit dialog appears.

9. On the Submit dialog, schedule the restore job to run now or later, and then click OK.

The Restore Manager submits the job to the queue. You can monitor the job on the Job Status Manager.

10. If you are not restoring transaction log files or you have restored all the transaction log files you need to restore, go to Step 12. If you have one or more transaction log files to restore, go to Step 11.

11. Return to Step 2, select the next transaction log file you want to restore, and then repeat Steps 3 through 10. Repeat this process for each log file you are restoring.

12. After the restoration is complete, use the Sybase isql utility to bring the restored database online.

For more information about using BrightStor ARCserve Backup to restore files, see the *Administrator Guide*.

For more information about bringing Sybase databases online, see the *Sybase Adaptive Server System Administrator's Guide* and the *Sybase Adaptive Server Reference Manual*.

Recover a Master Database

You can recover a master database using BrightStor ARCserve Backup, Sybase, and the agent. To recover a master database, follow these steps:

1. Restart Sybase in single-user mode.

2. Edit the command line found in the RUN_<servername> file with a -m parameter, and then execute the file. This file can be found in the <sybase_main_dir>/install directory.

3. Restore the master database from a storage device using BrightStor ARCserve Backup and the agent.

4. Restart the Sybase server.

5. If the master database is in complete condition, restore the other databases and logs using BrightStor ARCserve Backup and the agent.

For more information about recovering master databases, see the *Sybase Adaptive Server System Administrator's Guide* and the *Sybase Adaptive Server Reference Manual*.

Recover from a Disaster

To recover your Sybase Adaptive Server databases if the databases suffer a total disaster, follow these steps:

1. Reinstall your environment as it was before the disaster. You should re-install the components of your environment in the following order:

    a. Operating system

    b. BrightStor ARCserve Backup

    c. Sybase Adaptive Server

    d. BrightStor ARCserve Backup Agent for Sybase

    Note: You should use the same server names and directory paths as before.

2. Restore the master database.

    For instructions, see Recover a Master Database in this chapter.

3. Restore the necessary databases using BrightStor ARCserve Backup and the agent.

    For instructions, see Restore Databases or Transaction Logs in this chapter.

Appendix A: Frequently Asked Questions

This appendix contains a list of troubleshooting tips for the Agent for Sybase.

Why does a job that I am trying to process fail?

Check the following logs for reasons for the failure:

- sybagntd.log
- The BrightStor ARCserve Backup Activity log
- The Sybase Adaptive Server backup server log

What actions can I take if a backup or restore fails?

If a backup or restore fails, do the following:

- Verify your Sybase data server and backup server are running.
- If you are running under HP-UX, verify that the CA Backup API library libCASyb.sl for HP-UX exists in the Sybase Adaptive Server library directory. Then, do one of the following:
  - If the library exists, and your backup server runs in 32-bit mode, copy libCASyb_32.sl to the Sybase Adaptive Server library directory.
  - If the library exists, and your server runs in 64-bit mode, copy libCASyb_64.sl to the Sybase Adaptive Server library directory.
- If you are running under Solaris, verify that the CA Backup API library libCASyb.so for Solaris exists in the Sybase Adaptive Server library directory. Then, do one of the following:
  - If the library exists, and your backup server runs in 32-bit mode, copy libCASyb_32.so to the Sybase Adaptive Server library directory.
  - If the library exists, and your backup server runs in 64-bit mode, copy libCASyb_64.so to the Sybase Adaptive Server library directory.
- Check the DB Backup Utility Output section for backup server messages appear during backup.
- Check the DB Restore Utility Output section for backup server messages appear during restore in sybagntd.log.

How do I increase the debug level for the agent to show more debug messages?

To increase the debug level for the agent to show more debug messages, uncomment the CA_ENV_DEBUG_LEVEL in the agent section of agent.cfg and change its value to 4 (the maximum values). agent.cfg is located in the Common Agent directory.

What should I do if the transaction backup fails?

Try the following:

- Verify that you have backed up the database at least once.
- Verify that the database transaction log resides on a separate device.

When I have trouble browsing a Sybase server, what should I do?

Try the following:

- Check the agent browser log (sybbr.log) for errors.
- Verify that the Sybase server is running.
- Verify that the values for the Sybase server name are set properly in the installation.cfg file.

What should I do if the Sybase server I want to back up is not listed on the BrightStor ARCserve Backup tab?

Check the installation.cfg file. For every Sybase server handled by the agent, there should be an entry for it in the installation.cfg file. The installation.cfg file is in the agent home directory.

Does BrightStor ARCserve Backup Agent for Sybase support GFS (grandfather, father, son) rotation?

BrightStor ARCserve Backup Agent for Sybase supports GFS (grandfather, father, son) rotation and rotation backup for full backups, but not for differential or incremental backups.

Note: GFS rotation and rotation are two types of backup modes.

What should I do to bring the restored database online?

After running a restore, use the Sybase isql utility to bring the restored database online before using it.

How can I backup a database or transaction log?

To back up a database or back up a transaction log of a database, you must:

1. Select the database on the Source tab of the Backup Manager.

2. Select either database backup or transaction log backup on the Sybase Option tab.

Can I perform transaction log backup when the database and the transaction log are on the same device?

You cannot perform a transaction log backup when the database and the transaction log share one device. This is a Sybase property. BrightStor ARCserve Backup displays a short message under the Database option on the Sybase Options tab to remind you.

How do I restore a database to a specific point?

To restore a database to a specific point using a database backup and its transaction log backups, you must first restore the database, and then restore the transaction logs one by one.

Appendix B: Directory and File Locations

This appendix contains the locations of Sybase directories and important Sybase and BrightStor ARCserve Backup Agent for Sybase files.

Note: If you chose or created a different home directory for BrightStor ARCserve Backup, then the directories and files listed in this appendix will be located in: your_BrightStor ARCserve Backup_ home_directory/BABsybagt/

Sybase Directories

The following directories are located under $BAB_HOME/BABsybagt:

- data—Internal data (Release-specific information)

- logs—Log files

- nls—Messages files

Sybase and Agent Files

Files located under $BAB_HOME/BABsybagt

The following files are located in $BAB_HOME/BABsybagt:

- fetch_syb—the link to the appropriate fetch version
- fetch_syb_32— the program that fetches the databases from Sybase (32 bits)
- fetch_syb_64—the program that fetches the databases from Sybase (64 bits)
- libCASyb_32.so—the library used by the Sybase backup server process (32 bits, Solaris only)
- libCASyb_64.so—the library used by the Sybase backup server process (64 bits, Solaris only)
- libCASyb_32.sl—the library used by the Sybase backup server process (32 bits, HP-UX only)
- libCASyb_64.sl—the library used by the Sybase backup server process (64 bits, HP-UX only)
- sybagntd—the daemon called by the common agent to perform jobs
- sybbr—the program used to run the browser
- sybsetup—the script used to perform the agent setup

Files located under $BAB_HOME/BABsybagt/data

The following data file is located under $BAB_HOME/BABsybagt/data:

- RELVERSION—Stores the BrightStor ARCserve Backup build number which the agent was built against.

Files located under $BAB_HOME/BABsybagt/logs

The following log files are located under $BAB_HOME/BABsybagt/logs:

- sybagntd.log—logs agent activity
- sybbr.log—logs browser activity

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